Comparative analysis of the socio-economic developments and competitiveness of the agri-food sector at a sectoral and macro level in the pre-accession countries

Final report

Written by Lusine Aramyan, Michiel van Galen, Katja Logatcheva, Nera Herceglic in contribution from Ivana Janeska, Stamenkovska, Ahmet Ali Koç, Vlado Kovacevic, Milan Markovic, Aleksandra Martinovska Stojceska, Edvin Zhllima
[*November – 2022*]

EUROPEAN COMMISSION

Directorate-General for Agriculture and Rural Development

Directorate G International
Unit G.4 Neighbourhood, enlargement and pre-accession assistance

Contact content: Unit G.4

E-mail: AGRI-G4@ec.europa.eu

Directorate A – Strategy & Policy Analysis

Unit A.3 – Policy Performance

Contact dissemination: Unit A.3 – Policy Performance

E-mail: AGRI-EVALUATION@ec.europa.eu

European Commission
B-1049 Brussels

Comparative analysis of the socio-economic developments and competitiveness of the agri-food sector at a sectoral and macro level in the pre-accession countries:

Final report

Europe Direct is a service to help you find answers to your questions about the European Union.

Freephone number (*)**:**

00 800 6 7 8 9 10 11

(*) The information given is free, as are most calls (though some operators, phone boxes or hotels may charge you).

Luxembourg: Publications Office of the European Union, 2024

PDF ISBN 978-92-68-05376-8 doi: 10.2762/357839 KF-09-23-314-EN-N

Directorate-General for Agriculture and Rural Development

2024

ABSTRACT

This study is a part of a project "Comparative analysis of agricultural sectors and rural areas in the pre-accession countries: Agricultural policy developments, situation of the agri-food sector and economic context" funded by Directorate-General Agriculture and Rural Development of the European Commission. The study's main objective is to conduct a comparative analysis of the socio-economic developments and competitiveness of the agri-food sector in the IPARD (Instrument for Pre-accession Assistance rural development programmes) countries (Albania, Montenegro, North Macedonia, Serbia, and Türkiye) at the sectoral and macro levels. The study collects and analyses data on market prices, output values, yields, rural/urban disparities, and various indicators of competitiveness. The study provides insights into the state of the agri-food sector in IPARD countries, identifies areas for improvement, and offers recommendations to enhance competitiveness and rural development. At the macro level, the study finds that IPARD countries are still far behind the EU average in terms of macro-economic developments. The COVID-19 pandemic has negatively impacted the GDP growth and exports of agri-food products in the respective countries. The agricultural sector in IPARD countries is crucial for their economies and has the potential for competitive advantage. However, small farm size and low productivity, limited export quality, and compliance with standards are challenges that need to be addressed. The study highlights specific subsector strengths and weaknesses, such as high fruit and vegetable yields and low cow milk yields in most IPARD countries. Rural-urban disparities are evident, with difficulties in accessing education in rural areas and gender inequalities. Migration and brain drain contribute to rural depopulation, and poor infrastructure negatively affects competitiveness. The study recommends investing in trade and transport infrastructure, creating incentives for youth in rural areas, and increasing yields through technological innovation, education, and cultivation of unused lands, while maintaining a balance between efficiency improvements and sustainability.

CONTENTS

GLOSSARY 9

1. PROJECT BACKGROUND 16
2. METHODOLOGY 18
   - 2.1. Theoretical background 18
     - 2.1.1. Scope of the study: level of analysis 18
     - 2.1.2. Definitions of competitiveness 18
     - 2.1.3. Competitiveness at sector level 18
     - 2.1.4. Competitiveness at country level 19
     - 2.1.5. The developed analytical framework of competitiveness 19
     - 2.1.6. Calculating the competitiveness scores and comparing across countries 21
     - 2.1.7. Agricultural sector and socio-economic development 22
   - 2.2. Activities performed and data gathering 23
3. CROSS-COUNTRY OVERVIEW OF THE MAIN SOCIO- AND MACROECONOMIC INDICATORS IN THE IPARD COUNTRIES 25
   - 3.1. Introduction 25
   - 3.2. Population, health, and education 25
     - 3.2.1. Population 25
     - 3.2.2. Migration 27
     - 3.2.3. Health 27
     - 3.2.4. Education 28
   - 3.3. Employment, earnings, income distribution and social protection 29
     - 3.3.1. Employment and earnings 29
     - 3.3.2. Income distribution 32
     - 3.3.3. Social protection 33
   - 3.4. Infrastructure, innovation and science 34
     - 3.4.1. Infrastructure and ICT 34
     - 3.4.2. Entrepreneurship, innovation and science 35
   - 3.5. National accounts, government expenditures and international trade 37
     - 3.5.1. National accounts 37
     - 3.5.2. Government expenditures and finances 39
     - 3.5.3. International trade 41
   - 3.6. Prices, exchange rates and interest rates 42
     - 3.6.1. Prices 42
     - 3.6.2. Exchange rates 43
     - 3.6.3. Interest rates 43
   - 3.7. Conclusions 44
4. CROSS-COUNTRY OVERVIEW OF THE MAIN AGRICULTURAL SECTOR INDICATORS IN THE IPARD COUNTRIES 46
   - 4.1. Introduction 46
   - 4.2. Farm structure 46
     - 4.2.2. Agricultural land use 46
     - 4.2.3. Number of animals 49
   - 4.3. Production value of agriculture in economy 51
     - 4.3.1. Share of GVA of agriculture in GDP 51
     - 4.3.2. Production value of agricultural products 52
   - 4.4. International trade 53

4.4.1. Export of agricultural products 55
4.4.2. Import of agricultural products 56
4.5. Conclusions 58
5. CROSS-COUNTRY OVERVIEW OF MARKET PRICES OF THE MAIN AGRICULTURAL PRODUCTS AND REVENUES AND COSTS (E.G., INPUT COSTS, ETC.) IN THE IPARD COUNTRIES 60
5.1. Introduction 60
5.2. Agricultural sector 60
5.3. Livestock dairy sector 60
5.3.1. Producer prices of milk 60
5.3.2. Costs and revenues of milk 62
5.4. Livestock eggs and honey sector 63
5.5. Livestock meat sector 66
5.6. Fruit and vegetables 68
5.6.1. Producer prices of fruit and vegetables 68
5.6.2. Costs and revenues of apples and tomatoes 70
5.7. Cereals, potatoes and other crops 72
5.8. Showcase products 75
5.9. Conclusions 78
6. CROSS-COUNTRY OVERVIEW OF THE OUTPUTS AND YIELDS FOR THE MAIN AGRICULTURAL PRODUCTS IN THE IPARD COUNTRIES 80
6.1. Introduction 80
6.2. Livestock dairy sector 80
6.3. Livestock eggs and honey sector 81
6.4. Livestock meat sector 83
6.5. Fruit and vegetables 84
6.6. Cereals, potatoes and other crops 88
6.7. Conclusions 91
7. CROSS-COUNTRY OVERVIEW OF THE RURAL-URBAN DISPARITIES IN THE IPARD COUNTRIES 93
7.1. Introduction 93
7.2. Population 93
7.3. Education 93
7.4. Employment 94
7.5. Income 94
7.6. Health 95
7.7. Gender 95
7.8. Migration 95
7.9. Infrastructure and ICT 96
7.10. Conclusions 98
8. COMPARATIVE CROSS-COUNTRY ANALYSIS OF COMPETITIVENESS OF THE IPARD COUNTRIES, AND COMPARISON WITH THE EU 99
8.1. Introduction 99
8.2. Competitiveness at country level 99
8.3. Competitiveness at agricultural sector level 106
8.4. Competitiveness of agricultural subsectors 115
9. CONCLUSIONS AND RECOMMENDATIONS 121
9.1. Conclusions 121
9.1.1. Conclusions from the macro-economic developments 121
9.1.2. Conclusions from the country-level competitiveness 121

9.1.3. Conclusions from agricultural sector developments 122
9.1.4. Conclusions from agricultural sector-level competitiveness 123
9.1.5. Conclusions from agricultural sub-sector developments 123
9.1.6. Conclusions from rural-urban disparities 124
9.2. Recommendations 125
10. DATA GAPS 128
10.1. Agricultural data 133
10.2. Socio- and macroeconomic data 133
10.3. Rural-urban disparities data 134
10.4. Trade data 134
10.5. Competitiveness data 134
REFERENCES 146

GLOSSARY

Concept	Definition	Source
Age dependency ratio	Age dependency ratio is the ratio of dependents--people younger than 15 or older than 64--to the working-age population--those ages 15-64. Data are shown as the proportion of dependents per 100 working-age population.	https://databank.worldbank.org/metadataglossary/all/series
Agricultural products (in trade statistics, according to WTO)	Defined for the coverage of the WTO's Agriculture Agreement, by the agreement's Annex 1. This excludes, for example, fish and forestry products. It includes various degrees of processing for different commodities. https://www.wto.org/english/res_e/reser_e/ersd202112_e.pdf	https://www.wto.org/english/thewto_e/glossary_e/agricultural_product_e.htm
Agricultural products (in trade statistics, according to FAO)	Refers to imports and exports of food and agriculture products, excluding fishery and forestry products. The aggregated item "Agriculture products, Total" (FAOSTAT item code 1882) includes only the food and agriculture products. It does include some non-food items like beehives, hides and skins, cotton, silk, wool, and tobacco, and feed products. It does not include forestry products, but does include floricultural products such as cut flowers and plants, under 'Crude materials'.	FAO Statistics Division
At risk of poverty rate	The at-risk-of-poverty rate is the share of people with an equivalised disposable income (after social transfer) below the at-risk-of-poverty threshold, which is set at 60 % of the national median equivalised disposable income after social transfers. This indicator does not measure wealth or poverty, but low income in comparison to other residents in that country, which does not necessarily imply a low standard of living. The at-risk-of-poverty rate before social transfers is calculated as the share of people having an equivalised disposable income before social transfers that is below the at-risk-of-poverty threshold calculated after social transfers. Pensions, such as old-age and survivors' (widows' and widowers') benefits, are counted as income (before social transfers) and not as social transfers. This indicator examines the hypothetical non-existence of social transfers.	https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:At-risk-of-poverty_rate
Birth rate (crude birth rate)	Crude birth rate indicates the number of live births occurring during the year, per 1,000 population estimated at midyear. Subtracting the crude death rate from the crude birth rate provides the rate of natural increase, which is equal to the rate of population change in the absence of migration.	https://databank.worldbank.org/metadataglossary/world-development-indicators/series/SP.DYN.CBRT.IN
Central government	From IMF Coverage of the GFS System, par. 2.48: The political authority of a country's central government extends over the entire territory of the country. The central government can impose taxes on all resident institutional units and on non-resident units engaged in economic activities within the country. The central government typically is responsible for providing collective services for	https://datahelp.imf.org/knowledgebase/articles/577248-in-the-government-finance-statistics-gfs-what-c https://www.imf.org/external/pubs/ft/gfs/manual/pdf/ch2.pdf

Concept	Definition	Source
	the benefit of the community as a whole, such as national defence, relations with other countries, public order and safety, and the efficient operation of the social and economic system of the country. In addition, it may incur expenses on the provision of services, such as education or health, primarily for the benefit of individual households, and it may make transfers to other institutional units, including other levels of government. https://datahelp.imf.org/knowledgebase/articles/577248-in-the-government-finance-statistics-gfs-what-c : Central government CG = BA + EA + SS + CC CG (Consolidated Central Government) BA (Budgetary Government) EA (Extrabudgetary Accounts) SS (Social Security) CC (Consolidation Adjustment for CG) It is used to eliminate any double-counting between the sub-sectors of the Central Government.	
Completion rate (primary education, lower secondary education, upper secondary education)	SDG Indicator 4.1.2: Percentage of a cohort of children or young people aged 3-5 years above the intended age for the last grade of each level of education who have completed that grade. The intended age for the last grade of each level of education is the age at which pupils would enter the grade if they had started school at the official primary entrance age, had studied full-time and had progressed without repeating or skipping a grade. For example, if the official age of entry into primary education is 6 years, and if primary education has 6 grades, the intended age for the last grade of primary education is 11 years. In this case, 14-16 years (11 + 3 = 14 and 11 + 5 = 16) would be the reference age group for calculation of the primary completion rate.	http://uis.unesco.org/en/glossary
Credit to Agriculture	Credit to agriculture measures the amount of loans and advances given by the banking sector to farmers or to rural households, to agricultural cooperatives or to any agri-related businesses.	https://www.fao.org/publications/card/es/c/CB8790EN/
Current health expenditure (% of GDP)	Level of current health expenditure expressed as a percentage of GDP. Estimates of current health expenditures include healthcare goods and services consumed during each year. This indicator does not include capital health expenditures such as buildings, machinery, IT and stocks of vaccines for emergency or outbreaks.	https://databank.worldbank.org/metadataglossary/all/series Source: World Health Organization Global Health Expenditure database (apps.who.int/nha/database)
Death rate (crude death rate)	Crude death rate indicates the number of deaths occurring during the year, per 1 000 population estimated at midyear. Subtracting the crude death rate from the crude birth rate provides the rate of natural increase, which is equal to the rate of population change in the absence of migration.	https://databank.worldbank.org/metadataglossary/world-development-indicators/series/SP.DYN.CDRT.IN

Concept	Definition	Source
Deposit interest rate (%)	Deposit interest rate is the rate paid by commercial or similar banks for demand, time, or savings deposits. The terms and conditions attached to these rates differ by country, however, limiting their comparability.	https://databank.worldbank.org/metadataglossary/all/series Source: IMF.
Education level of adult population	A composite measure based on, (a) the percentage of the population without any education, (b) the proportion of workers with secondary education, and (c) the proportion of workers with tertiary education. Index, 0-1.	Legatum prosperity index https://www.prosperity.com/about/resources
Educational attainment of the population aged 25 years and above	Distribution of the population aged 25 years and above according to the highest level of education attained or completed. Education levels are defined according to the International Standard Classification of Education (ISCED).	http://uis.unesco.org/en/glossary
Employment to population ratio, 15+, total (%) (national estimate)	Employment to population ratio is the proportion of a country's population that is employed. Employment is defined as persons of working age who, during a short reference period, were engaged in any activity to produce goods or provide services for pay or profit, whether at work during the reference period (i.e., who worked in a job for at least one hour) or not at work due to temporary absence from a job, or to working-time arrangements. Ages 15 and older are generally considered the working-age population.	https://databank.worldbank.org/metadataglossary/all/series
General government	General government includes central government, state government, and local government. From IMF Coverage of the GFS System, par. 2.28: The general government sector consists of all government units and all nonmarket non-profit institutions (NPIs) that are controlled and mainly financed by government units. https://datahelp.imf.org/knowledgebase/articles/577248-in-the-government-finance-statistics-gfs-what-c : General government GG = CG + SG + LG + CT GG (Consolidated General Government) CG (Consolidated Central Government) SG (State Government) LG (Local Government) CT (Consolidation Adjustment for GG) It is used to eliminate any double-counting between the sub-sectors of the General Government.	https://datahelp.imf.org/knowledgebase/articles/577248-in-the-government-finance-statistics-gfs-what-c https://www.imf.org/external/pubs/ft/gfs/manual/pdf/ch2.pdf
GDP (Gross Domestic Product)	GDP growth (annual %): Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2015 prices, expressed in U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated	https://databank.worldbank.org/metadataglossary/all/series

Concept	Definition	Source
	assets or for depletion and degradation of natural resources. GDP (current US$): GDP at purchaser's prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. Dollar figures for GDP are converted from domestic currencies using single year official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used. GDP per capita (current US$): GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. GDP per capita, PPP (current international $): This indicator provides per capita values for gross domestic product (GDP) expressed in current international dollars converted by purchasing power parity (PPP) conversion factor. GDP is the sum of gross value added by all resident producers in the country plus any product taxes and minus any subsidies not included in the value of the products. conversion factor is a spatial price deflator and currency converter that controls for price level differences between countries. Total population is a mid-year population based on the de facto definition of population, which counts all residents regardless of legal status or citizenship.	
Gini Index	Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus, a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality.	https://databank.worldbank.org/metadataglossary/all/series
Gross debt (public debt)	All liabilities that require future payment of interest and/or principal by the debtor to the creditor. This includes debt liabilities in the form of special drawing rights, currency, and deposits; debt securities; loans; insurance, pension, and standardized guarantee schemes; and other accounts payable. (See the 2014 edition of the IMF's Government Finance Statistics Manual and Public Sector Debt Statistics	https://www.imf.org/external/datamapper/G_XWDG_G01_GDP_PT@FM/ADVEC/FM_EMG/FM_LIDC

Concept	Definition	Source
	Manual). The term "public debt" is used in the Fiscal Monitor, for simplicity, as synonymous with gross debt of the general government, unless otherwise specified. (Strictly speaking, the term "public debt" refers to the debt of the public sector as a whole, which includes financial and nonfinancial public enterprises and the central bank.)	
Gross fixed capital formation (% of GDP)	Gross fixed capital formation (formerly gross domestic fixed investment) includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. According to the 1993 SNA, net acquisitions of valuables are also considered capital formation.	https://databank.worldbank.org/metadataglossary/all/series Source: World Bank national accounts data, and OECD National Accounts data files.
Individuals using the Internet (% of population)	Internet users are individuals who have used the Internet (from any location) in the last 3 months. The Internet can be used via a computer, mobile phone, personal digital assistant, games machine, digital TV etc.	https://databank.worldbank.org/metadataglossary/all/series Source: International Telecommunication Union (ITU) World Telecommunication/ICT Indicators Database
Lending interest rate (%)	Lending rate is the bank rate that usually meets the short- and medium-term financing needs of the private sector. This rate is normally differentiated according to creditworthiness of borrowers and objectives of financing. The terms and conditions attached to these rates differ by country, however, limiting their comparability.	https://databank.worldbank.org/metadataglossary/all/series Source: IMF.
Life expectancy at 60 (years)	The average expected remaining years of life left at age 60, based on current mortality rates. Number /1 000 15-year olds	Legatum institute. Source: World Bank World Development Indicators.
Life expectancy at birth, total (years)	Life expectancy at birth indicates the number of years a new-born infant would live if prevailing patterns of mortality at the time of its birth were to stay the same throughout its life.	https://databank.worldbank.org/metadataglossary/all/series Source: United Nations Population Division.
Literacy rate	The literacy rate is defined by the percentage of the population of a given age group that can read and write. The adult literacy rate corresponds to ages 15 and above, the youth literacy rate to ages 15 to 24, and the elderly to ages 65 and above. It is typically measured according to the ability to comprehend a short simple statement on everyday life. Generally, literacy also encompasses numeracy, and measurement may incorporate a simple assessment of arithmetic ability. The literacy rate and number of literates should be distinguished from functional literacy, a more comprehensive measure of literacy assessed on a continuum in which multiple proficiency levels can be determined.	http://uis.unesco.org/en/glossary
Mean nominal monthly earnings of employees	Annual Description: The earnings of employees relate to the gross remuneration in cash and in kind paid to employees, as a rule at regular intervals, for time worked or work done	https://ilostat.ilo.org/resources/concepts-and-definitions/

Concept	Definition	Source
by sex and occupation	together with remuneration for time not worked, such as annual vacation, other type of paid leave or holidays. This is a harmonized series: (1) data reported as weekly and yearly are converted to monthly in the local currency series, using data on average weekly hours if available; and (2) data are converted to U.S. dollars as the common currency, using exchange rates or using 2017 purchasing power parity (PPP) rates for private consumption expenditures. The latter series allows for international comparisons by taking account of the differences in relative prices between countries.	
Net migration	Net migration is the net total of migrants during the period, that is, the total number of immigrants less the annual number of emigrants, including both citizens and noncitizens. Data are five-year estimates.	https://databank.worldbank.org/metadataglossary/world-development-indicators/series/SM.POP.NETM
Percentage of vocational enrolment	Total number of students enrolled in vocational programmes at a given level of education, expressed as a percentage of the total number of students enrolled in all programmes (vocational and general) at that level.	http://uis.unesco.org/en/glossary
Producer Price Index (2014-2016 = 100)	Producer prices are prices received by farmers for primary agricultural products as defined in the SNA 93. The producer's price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output minus any VAT, or similar deductible tax, invoiced to the purchaser. It excludes any transport charges invoiced separately by the producer. Time series refer to the national average prices of individual commodities comprising all grades, kinds and varieties, received by farmers when they participate in their capacity as sellers of their own products at the farm gate or first-point-of-sale. Data are obtained from Producers (farmers or farmers' groups), purchasers or markets at the point of initial sale (at the farm-gate) The index is calculated by summing the Standardised Local Currency (SLC) price for a given year multiplied by production quantity in base year for all items in the aggregate and dividing by the sum of the SLC price in the base year multiplied by production quantity for the base year for the same items. The single item indices are calculated by dividing the SLC price in a given year by the SLC price in the base year. Source: FAO Statistics Division.	https://www.fao.org/faostat/en/#data/PP
School enrolment, tertiary (% gross)	Gross enrolment ratio is the ratio of total enrolment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Tertiary education, whether or not to an advanced research qualification, normally requires, as a minimum condition of admission, the successful completion of education at the secondary level.	
School enrolment, secondary (% net)	Net enrolment rate is the ratio of children of official school age who are enrolled in school to the population of the corresponding official school age. Secondary education completes the provision of basic education that began at the primary level, and aims at laying the foundations for lifelong learning and human development, by offering more	

Concept	Definition	Source
	subject- or skill-oriented instruction using more specialised teachers.	
Unemployment, total (% of total labour force) (national estimate)	Unemployment refers to the share of the labour force that is without work but available for and seeking employment. Definitions of labour force and unemployment differ by country.	https://databank.worldbank.org/metadataglossary/all/series Source: International Labour Organization, ILOSTAT database
Vocational education	Education that is designed for learners to acquire the knowledge, skills and competencies specific to a particular occupation or trade or class of occupations or trades. Vocational education may have work-based components (e.g., apprenticeships). Successful completion of such programmes leads to labour-market relevant vocational qualifications acknowledged as occupationally-oriented by the relevant national authorities and/or the labour market	http://uis.unesco.org/en/glossary

1. PROJECT BACKGROUND

The European Union currently recognizes Türkiye and the Western Balkan states of Albania, North Macedonia, Montenegro, and Serbia as candidates for EU membership. Bosnia and Herzegovina, and Kosovo*[1] are recognized as potential candidates for membership. Together we regard these countries as pre-accession countries. The first five countries are also receiving IPARD assistance for rural development. Before accession, the pre-accession countries are required to fulfil the accession criteria (Copenhagen criteria), which among others state that they should align their legal frameworks with the *acquis Communautaire* (the accepted body of EU law which is split into 35 chapters for the purpose of the enlargement negotiations process) and that their economies should be able to withstand the competition from the EU internal market. For the agricultural sector, the Common Agricultural Policy (CAP) is the most relevant piece of EU legislation. The IPARD programmes are implemented to assist the countries in fulfilling the membership criteria with regard to the agricultural sectors and rural development. The previous IPARD II programmes covered the period 2014-2020, and the current IPARD III programmes are adopted for the period 2021-2027.

Over the recent years, the EC has initiated a number of research activities related to the agricultural sectors in pre-accession countries and their associated agricultural policies. More specifically, the economic analysis includes the analysis of agricultural policies, farming systems (e.g., income evolution, structural change), agricultural commodity markets, rural development and international trade. In addition, all IPARD countries are required to draft an extensive sector analysis with every new IPARD programme.

This study addresses the comparative analysis of the competitiveness of the agri-food sector for five IPARD countries: Albania, Montenegro, North Macedonia, Serbia and Türkiye. To do this, the IPARD countries are compared with each other as well as with the five neighbouring EU counties (Bulgaria, Croatia, Greece, Hungary and Romania). Furthermore, a comparison with the EU-27 average is used for the benchmarking purposes. This comparative analysis of sectoral and macro-economic competitiveness aims to provide more knowledge from independent sources on the state of development of the agricultural sectors in the IPARD countries. It also aims to provide information about data quality and data availability for evidence-based policymaking.

The report has the following structure:

- Methodology (Section 2);
- Cross-country overview of the main macroeconomic indicators in the IPARD countries (Section 3);
- Cross-country overview of the main agricultural sector indicators in the IPARD countries (Section 4);
- Cross-country overview of market prices of the main agricultural products and revenues and costs in the IPARD countries (Section 5);
- Cross-country overview of the outputs and yields for the main agricultural products in the IPARD countries (Section 6);
- Cross-country overview of the rural-urban disparities in the IPARD countries (Section 7);
- Comparative cross-country analysis of competitiveness of the IPARD countries, and with the EU (Section 8);
- Conclusions and Recommendations (Section 9);
- Data gaps (Section 10).

[1] * This designation is without prejudice to positions on status, and is in line with UNSCR 1244 and the ICJ Opinion on the Kosovo declaration of independence.

In addition, a separate Annex called "Comparative analysis of the socio-economic developments and competitiveness of the agri-food sector at a sectoral and macro level in the pre-accession countries; country fact sheets", is published with a detailed analysis of all competitiveness indicators per country (hereafter referred to as Annex Country Factsheets).

2. METHODOLOGY

To fulfil the objective of this study, a methodology on how to measure competitiveness was developed.

2.1. Theoretical background

2.1.1. Scope of the study: level of analysis

In correspondence to the objective of the study, we assess competitiveness at *a sectoral level* and at *a macro-economic* or *country-level*. At the sectoral level, we analyse the aggregated competitiveness of the firms which form the specific (sub)sectors (farms and related firms in supporting and related industries), whereas at the country level, we look at indicators that describe the country as a whole. It must be noted that some indicators of competitiveness of a specific sector within a country are originating from the macro-environment (such as unemployment or general education level) and are hence similar in both approaches, although their effect on competitiveness may differ.

The sectoral approach is applied to the agricultural sector as a whole and to a number of main subsectors. The agricultural sector analyses include the following sub-sectors: 1) Livestock dairy sector, 2) Livestock, eggs and honey sector, 3) Livestock meat sector, 4) Fruit and vegetables, 5) Cereals, potatoes and other crops.

2.1.2. Definitions of competitiveness

Competitiveness is a broad and complex conceptual construct. There is no general agreement on how to define and measure competitiveness. Studies often adopt their own definitions and choose a specific measurement method that fits the analysis (see definitions provided by (ZEW and WIFO 2018; Sheldon 2017; Hanafi et al. 2017; Davies and Ellis 2000; Krugman 1996; Chang Moon and Peery 1995; Porter 1990; Buckley, Pass, and Prescott 1988).

Based on the literature and given the objective of this study, we provide our definition of competitiveness. At the sectoral level we define competitiveness as: **"the ability of the sector to compete on international markets and provide return on capital to business owners and wages to employees, in a socially inclusive and sustainable way".**[2] Competitiveness at country level is defined as **"an economy with a sustained high rate of productivity growth, sustainable and inclusive, delivering high levels of employment, productivity and social cohesion."**[3] There is a notable similarity between the two levels, but also some differences.

Furthermore, competitiveness at sectoral level cannot be analysed without reference to some of the macro-economic conditions. The macro-economic conditions include both economic and social indicators, and generally include many factors that are under the control of the (general) government policies.

Many concepts of competitiveness have emerged in the literature and discussions about the essence of the concept remain (Krugman 1996; Hanafi et al. 2017; Peneder 2017; Bhawsar and Chattopadhyay 2015; Sölvell 2015). In order to choose a relevant analysis framework with the set of key indicators for our study we have carried out a review of some of these discussions.

2.1.3. Competitiveness at sector level

Competitiveness at sector level can be studied from an inter-sectoral perspective or intra-sectoral perspective. Inter-sector competitiveness compares different industries within a single country. Intra-sector competitiveness looks at the same sector in different countries (ZEW and WIFO 2018). It is primarily the latter type of comparison that we are interested in, where we will be looking specifically at agricultural sector. At the intra-sector level, competitiveness is often concerned with performance of industries

[2] This definition is drawn up by the authors, based on definition by Aiginger, Bärenthaler-Sieber, and Vogel (2013); ZEW and WIFO (2018).
[3] Following the current EU definition at https://eur-lex.europa.eu/summary/glossary/competitiveness.html and the Europe 2020 strategy.

in international markets: international competitiveness. This means that sectors from different countries are being compared based on their ability to compete against each other in international markets. While looking at the actual trade performance or developments therein we can reveal current international competitiveness, looking at the underlying factors might also be used to assess potential future competitiveness. Several indicators are used to analyse competitiveness at sector level. Some of those are heavily leaning on international economics, or industrial organisation while others are based on strategic management or marketing. Most frameworks combine various indicators. In a quantitative approach those indicators may be weighted or aggregated to produce a composite score, rank or index of competitiveness. A comprehensive overview of the competitiveness indicators has been provided by ZEW and WIFO (2018).

2.1.4. Competitiveness at country level

It is important to note that countries do not actually compete (Krugman 1996), but firms do. Nevertheless, there are several widely cited reports and rankings that focus on comparing the competitiveness of countries such as the World Economic Forum Global Competitiveness Report and the IMD World Competitiveness Ranking. At country level a definition of competitiveness used by the EU is: "A competitive economy is an economy with a sustained high rate of productivity growth"[4] and "competitiveness is a pre-requisite if the EU is to achieve the goals of 'a smart, sustainable and inclusive economy, delivering high levels of employment, productivity and social cohesion', as laid down in its Europe 2020 strategy." In this definition, emphasis is put on productivity, with the aim of being able to sell products and services at competitive prices in international markets, and to do so "the EU must outperform its competitors in terms of research and innovation, information and communication technologies, entrepreneurship, competition, education and training."

The World Economic Forum publishes at an annual basis a ranking of competitiveness of almost all countries worldwide.[5] The latest edition focuses on "productivity", "people" and "planet" targets. The index is based on 12 pillars: (1) Institutions, (2) Infrastructure, (3) ICT adoption, (4) Macroeconomic stability, (5) Health, (6) Skills, (7) Product market, (8) Labour market, (9) Financial system, (10) Market size, (11) Business dynamism, and (12) Innovation capability. Each of these pillars is populated by a number of indicators, about 160 indicators in total, which are weighted and aggregated to produce the overall index.

ZEW and WIFO (2018) also put productivity at the forefront in the assessment of competitiveness at country level. They explain that GDP per capita is one of the most comprehensive measures of overall productivity. It has a positive relation to almost all other commonly used measures of competitiveness. In the so-called iceberg model of competitiveness (Peneder 2017), where several levels are discerned, from productivity at the top (at the water-line) to cultural values and norms deep below the surface (The other levels are resources, structures, and systems. Several other indicators are called balancing constraints. These include exchange rates, the balance of payments, and unit labour costs. In this model, high labour costs are not necessarily a sign of low or high competitiveness but must always be seen in relation to the productivity measures.

Next to the above-mentioned models and theories of competitiveness, we have also reviewed Porter's Diamond model of the competitiveness of a nation, which is one of the most widely used models (Porter 1990). Although the title of the approach suggests that it is about macro-level analysis, it mostly focusses on the evaluation of the success of industries or 'clusters' within countries. This model combines many of the abovementioned elements.

2.1.5. The developed analytical framework of competitiveness

From the literature review above, it is clear that no single indicator can be used to describe competitiveness. Most frameworks and studies use a whole range of key

[4] https://eur-lex.europa.eu/summary/glossary/competitiveness.html
[5] Global Competitiveness Report 2020 | World Economic Forum (weforum.org)

indicators in various compositions. For our study, we need indicators that can be representative for competitiveness at:

A. The sector level, including the indicators that describe the macro-economic factors influencing the sector.
B. The country level, describing the competitiveness of the country as a whole.

And,

C. Can be compared between countries, i.e., are quantifiable.
D. Have a sound economic foundation that provides a basis for policy making.

Therefore, we propose our own analytical framework of competitiveness of the agricultural sectors, by combining elements from the various models in the literature (see Figure 2-1).

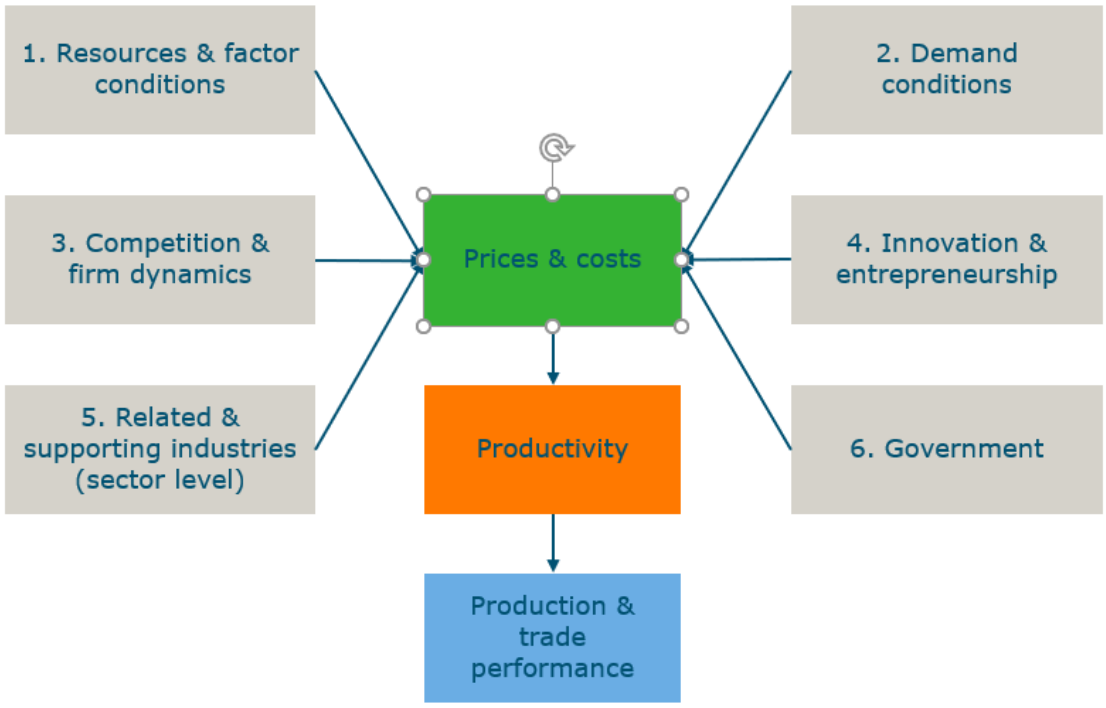

Figure 2-1 Analytical framework of competitiveness with 9 indicator groups

The main indicator groups are numbered from 1 to 6. They are largely consistent with the Porter Diamond model, although specifically 'Competition and firm dynamics' and 'Innovation and entrepreneurship' are discerned where Porter discerns 'Firm Strategy, Structure & Rivalry' under one heading. Indicator group 5 "Related and supporting industries" is only applied to the sectoral level, and not to competitiveness of the economy as a whole. This is because Related and Supporting industries can only be studied in relation to a particular sector of interest, such as the agricultural sector.

The six groups of indicators of competitiveness are thought to effect prices and costs. Technical progress can decrease the amount of land needed to produce crops, and hence decrease costs. This may result in an increase of productivity (performance indicators) (measured e.g., as output value per hectare). Ultimately, we hypothesize that increased productivity will increase a country's or sector's overall production and trade performance (performance indicators).

Each of the groups contains a number of indicators and each indicator is made up from one or more measures. The model applies both to the sector and country level, although the exact list of indicators and measures differs in some respects. Thus, the comparative

analysis of the competitiveness is carried out at two levels, at macro-level (country) and at agricultural sector level. The indicators used for these analyses are listed in Table 8-1 and Table 8-7 (in Section 8.2 and Section 8.3 respectively). In the competitiveness analysis of agricultural sector, general input price indicators of, e.g., feed and fertilizers have been collected to the extent possible. For the sub-sector level competitiveness (Livestock dairy sector, Livestock eggs and honey sector, Livestock meat sector, Fruit and vegetables, Cereals, potatoes and other crops), we have studied yields and revealed comparative advantage for 15 selected main products within the various sub-sectors.

The methodology used for product selection can be found in Product selection for comparative analysis of prices and yields, and in-depth analysis of costs and revenues. Additionally, for the same products, in our study we have compared the producer prices between the IPARD countries and neighbouring EU countries (see Section 5).

To get more insights into the costs and revenues of production at product level, we have constructed unit cost of production overviews for a limited number of selected products. Because product level data on costs of production is generally not available in the country's statistics, we need to either collect farm-level data or estimate these figures from expert knowledge. These unit production costs overviews include specific costs of production per unit of output and overhead costs and external factor costs. To collect this information, we have developed a questionnaire, with a number of specific input costs (see Questions for data collection about costs and revenues of agricultural products. For this analysis, we have selected 3 main products, which are produced in all 5 countries (see Product selection for comparative analysis of prices and yields, and in-depth analysis of costs and revenues). Having the same products for all 5 countries is a necessary condition to be able to make a comparison between the countries.

However, we think that we might have overlooked some country-specific products which can offer a potential for a specific country. To cover for this gap, we have considered one additional country-specific "show case" product based on the suggestion of the NEs. This specific product is not included in comparative analysis but is showcased as a potential for a country. For the showcase product, the NEs have collected information on prices and provided a short general qualitative description of the developments in the production and the strengths and potential weaknesses of the producers. The following showcase products have been selected: Albania - watermelon, Montenegro - lamb meat, North Macedonia - wine, Serbia - raspberries, Türkiye - cherry. The description of the showcase products can be found in Section 5.8. To collect this information, NEs have been provided with a short questionnaire.

2.1.6. Calculating the competitiveness scores and comparing across countries

The scores on the indicators of competitiveness are aggregated and compared across the various countries. Numerous methods exist, including ranking and weighting (WEF, 2020), calculating and weighting z-scores (Van Berkum, Wijnands, and Verhoog 2016), or using regression methods (Hanafi et al. 2017; Castro-Gonzáles, Peña-Vinces, and Guillen 2016).

For the country comparison we compared the five IPARD countries Albania, Montenegro, North Macedonia, Serbia and Türkiye with five neighbouring EU countries Bulgaria, Croatia, Greece, Hungary, Romania and the EU-average. That has produced 11 country/region observations per indicator. These are then compared and aggregated. Therefore, we have used a common scale of measurement for the indicators.

In our framework, we have used a two-step approach to aggregation and comparison:

1 Rescaling: the values of the different countries on each individual indicator were converted to a common scale that was used to aggregate the various indicators. We have used the following method: calculating the z-scores of the observations as compared to the EU-average (Van Berkum, Wijnands, and Verhoog 2016).[6]

[6] The z-score of the normal distribution is equal to the deviation of between the observed value for country x and mean of all countries, divided by the sample standard deviation.

This scale does not have a pre-determined minimum or maximum, but will generally produce a scale that roughly lies between -5 and 5 depending on the variation in the data. Based on observation of the data, we have seen that the five selected EU MS generally perform below or around the EU average. This means that the upper limit of the scale for the overall scores of competitiveness (see Section 8) are around the EU average, which has a score of around 0. If countries are very far from the average for a certain indicator, we suggest truncation.

2 Weighting and aggregating: to sum up the scores on the different indicators to the total category score and the total competitiveness scores, we use a weighting scheme. To determine the weights, we use the **correlation coefficients** of the indicators, with: **Labour productivity at sector level**, and **GDP per capita at national level**. Higher correlation gives the indicator a higher weight in the aggregation process. Ideally, all of the indicators are significantly correlated with these important measures of competitiveness. In the case that the correlation does not have the expected sign, i.e. negative correlation where we would expect a positive correlation and vice versa, we will investigate further into the nature of the relationship of the indicators with competitiveness.

Note that we are not using a factor analysis or regression techniques to determine which indicators need to be under which category. The categorization of indicators is based on the literature. In practice, there may be all kinds of complex interrelations and dependencies between the indicators. However, the aim of this research is not to advance the theoretical underpinning of competitiveness. Weighting each indicator based on their correlation coefficients with some of the main performance indicators, will allow us to avoid giving less important indicators an excessive weight. On the other hand, we cannot avoid that several indicators might correlate among each other. However, we, look at the correlation between the indicators and determine patterns of these intercorrelations.

2.1.7. Agricultural sector and socio-economic development

Besides the measurement of competitiveness of the pre-accession countries as a whole and their respective agricultural sectors and subsectors, we also describe the general socio-economic developments and the general developments in the agricultural sector. These developments shed the light on some of the major forces that shape the business environment as well as overall performance of the economy. There is no strictly defined set of indicators for describing socio-economic developments. However, certain elements are often included. For social development, important indicators relate to demographics, employment, health, and education. For economic development, often used indicators include gross domestic product, exchange rates, interest rates, prices, and trade. A useful set of indicators may be derived from the statistical indicators listed at Eurostat's themes 'Economy and finance' and 'Population and social conditions'. We added some indicators about infrastructure and ICT use. In Table 8-7 in Section 8, the indicators that are included in our analysis are provided. Note that some of these indicators are also used as key indicators of competitiveness.

For the assessment of **differences between rural and urban areas** we were able to use some of the indicators of socio-economic development. Some indicators, like, population density and land use, are inherently linked to urbanization, while others are more linked to the socio-economic differences between urban and rural areas, like employment, education, income, poverty and health and also the process of migration from rural areas to the cities.

In addition to the socio-economic context, we have also collected specific data on the state of agriculture. This information is partly used in constructing the competitiveness indicators for the agricultural sector, but also for the selection of products. The list of indicators on agricultural sector development is provided in Table 8-7 in Section 8 and

is in line with the data collected in earlier projects related to the WB countries.[7] This data is certainly not complete for all the countries.

2.2. Activities performed and data gathering

Figure 2-2 below presents a general framework of activities and provides an overview of the activities performed to fulfil the objective of this study.

Overall data gathering in this study (e.g., macroeconomic indicators, agricultural sector indicators, etc.) for IPARD countries has been done using open international data sources, such as World Bank, IMF, FAO and other UN databases, Eurostat, as well as National statistical offices in the IPARD countries.

In addition to data gathered for IPARD countries, similar data have been gathered for all EU MS (when available). The benchmarking has been done by comparing the IPARD countries to 5 neighbouring EU MS (Bulgaria, Croatia, Greece, Hungary, Romania) and the EU average or total. The data gathered for IPARD countries via the above-mentioned data sources have been structured and analysed by the WR research team in the country factsheets.

The information, which was not available on international websites, has been gathered by NEs from national statistics, national surveys/registers, or secondary literature. In order to assist NEs in data gathering process, WR team has prepared a questionnaire and templates for collecting missing data. The NEs have filled out the missing data to the extent possible.[8]

[7] http://app.seerural.org/agricultural-statistics/

[8] The templates for these questionnaires are available upon request.

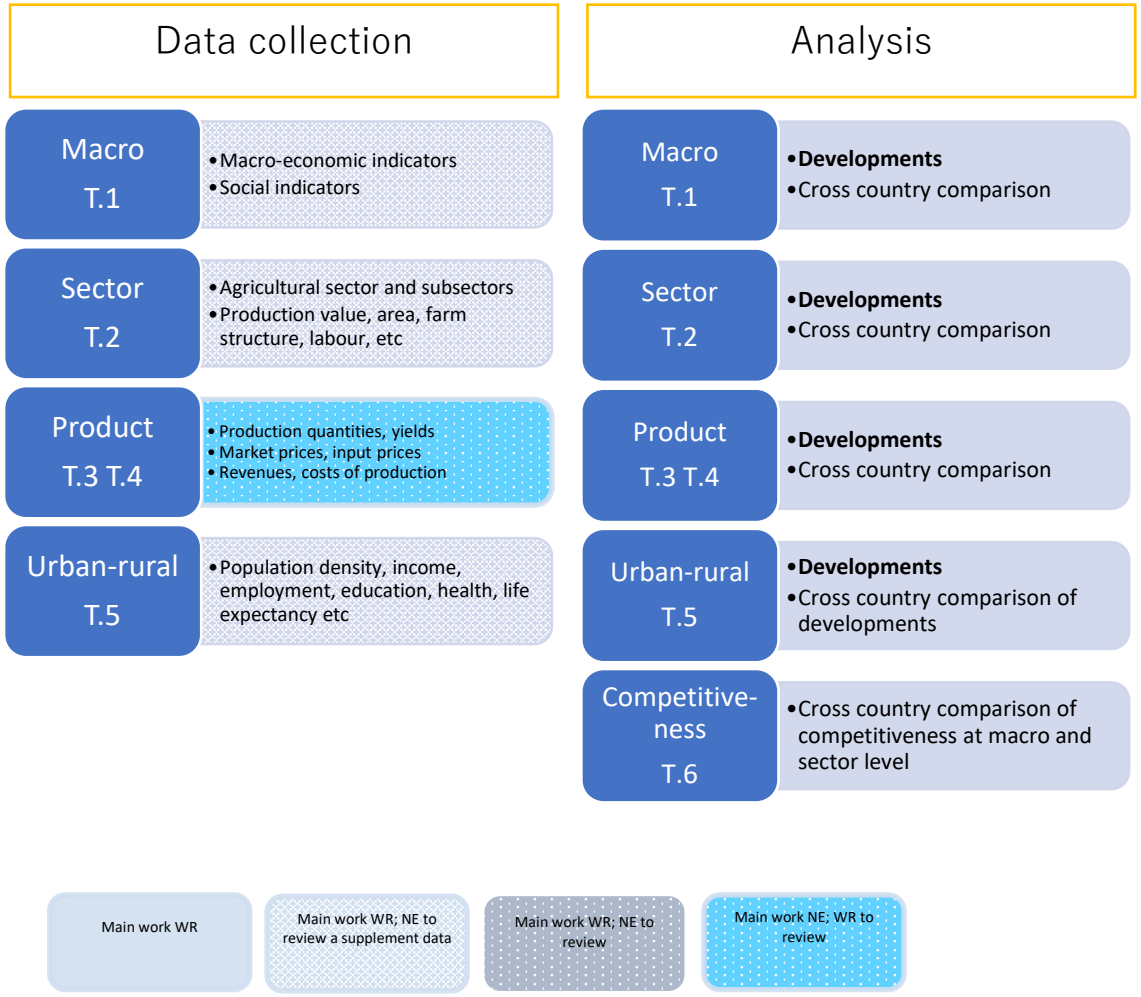

Figure 2-2 General framework of activities

An important note about the data use in this study is that often data from international statistical data bases (e.g., FAO or UN COMTRADE) were used in the analysis instead of the national statistics. The reason for this is to have a consistent comparison among countries with comparable definitions of the indicators. During the data collection, it was noticed that in some cases, some of the national statistical indicators were defined slightly different from the international data definitions (such as the definition of agricultural product trade in WTO and FAO) as well as from the definitions used within different IPARD countries, which made it difficult to use them in the comparative analysis.

3. CROSS-COUNTRY OVERVIEW OF THE MAIN SOCIO- AND MACROECONOMIC INDICATORS IN THE IPARD COUNTRIES

3.1. Introduction

This section corresponds to the activities outlined under the Task 1 (see Section 2.2). In five sub-sections below, the main socio-economic and macro-economic developments in IPARD countries are discussed and compared with five neighbouring EU countries and the EU-27. These five sections are: Population, health and education; Employment, wages and income distribution; Infrastructure, ICT and innovation; National accounts and government expenditures; and Prices, exchange rates and interest rates.

3.2. Population, health, and education

3.2.1. Population

Türkiye is by far the largest among the IPARD countries. From Figure 3-1, it can be seen that its share in the total population of the EU-27 and IPARD countries was almost 16% in 2021, while the other IPARD countries together constitute only 2.3% of total population, with Serbia being the largest country and Montenegro - the smallest.

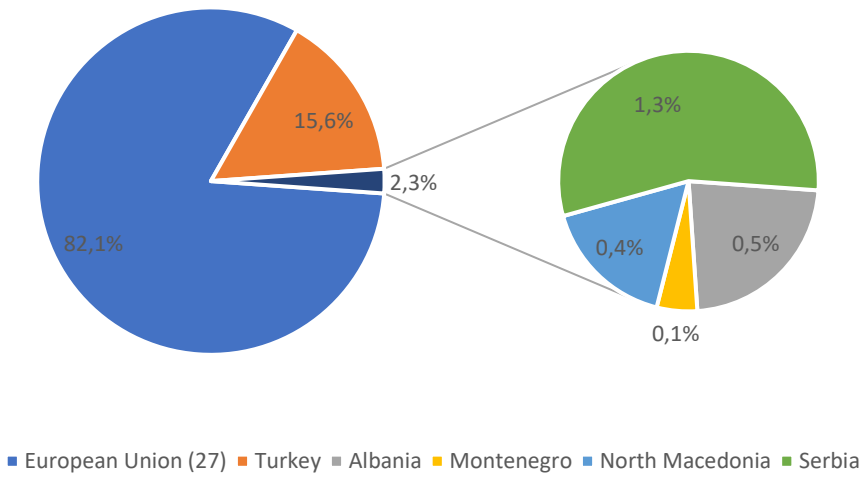

Figure 3-1 Division of total population in the EU and IPARD countries, in 2021. Source: World Bank.

The cross-country comparison in terms of population changes shows a mixed picture (see Table 3-1). In the last decade, the population of Albania has slightly decreased from 2.9 million to 2.8 million. A similar downward trend is observed in Serbia, from 7.3 million in 2010 to 6.9 million in 2021. In Montenegro and North Macedonia, the population remained stable at about 600 000 and 2.1 million people respectively, while Türkiye has seen a considerable growth in population from 72 million in 2010 to approximately 85 million in 2021. In comparison, the population of the EU-27 grew by just over 1% between 2010 and 2021, while Türkiye's population grew by 18%.

Table 3-1 Total Population in IPARD countries and EU-27, in million, 2010-2021. Source: World Bank.

	2010	2015	2020	2021	Growth 2010-2021, in %	Crude birth rate per 1,000 people, 2020	Crude death rate per 1,000 people, 2020
Albania	2.9	2.9	2.8	2.8	-3.5%	11.45	8.26
Montenegro	0.6	0.6	0.6	0.6	0.1%	11.40	11.70
North Macedonia	2.1	2.1	2.1	2.1	0.5%	9.20	12.40
Serbia	7.3	7.1	6.9	6.8	-6.1%	8.90	16.90
Türkiye	72.3	78.5	84.3	85.0	17.6%	15.53	5.48
European Union (27)	441.5	444.5	447.5	446.9	1.2%	9.04	11.61

Population growth is influenced by births, deaths, and migration. The crude birth rates (per 1 000 population) were highest in Türkiye (15.5 in 2020), Albania (11.5) and Montenegro (11.4), and lowest in Serbia (8.9) and North Macedonia (9.2). In comparison, in the EU-27 the crude birth rate was 9.0 in 2020 (Source: World Bank). Death rates also differ significantly between the countries: 5.5 per 1 000 people in Türkiye in 2020, 8.3 in Albania, 11.7 in Montenegro, 12.4 in North Macedonia, to 16.9 in Serbia. Likely due to the COVID-19 pandemic, death rates were about 1 to 2% higher in 2020 than in previous years in Serbia, North Macedonia and Montenegro. In the EU-27, the crude death rate was 11.6 per 1 000 people in 2020. The differences in death rates are directly related to the average age of the populations, with Türkiye having a younger population than the other IPARD countries.

According to World Bank data (see Figure 3-2), Türkiye has the highest share of urban population[9]. A gradual shift of the population from rural areas to urban areas is seen in all IPARD countries The shift towards urbanization (urban in % of total population) is most pronounced in Albania.

[9] TurkStat data about rural and urban population are significantly different from World Bank data. In TurkStat the rural population was only 7% of total in 2021. This is due to different definition and method. For comparability we use World Bank data.

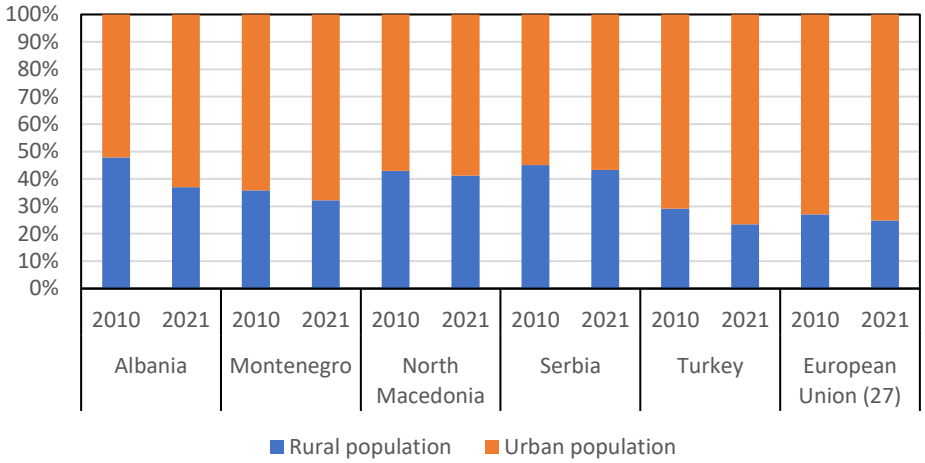

Figure 3-2 Division of population by rural and urban population in IPARD countries and EU, in %, in 2010 and 2021. Source: World Bank.

3.2.2. Migration

In Table 3-2 some data about immigration and emigration is presented for the IPARD countries, for the period 2018-2020, when available. It must be noted that migration can fluctuate very much from one year to another, as a result of crises.

Table 3-2 Average immigration and emigration per year in 2018-2020

	Immigration	Emigration	Net-migration	Net migration, % of population
Albania	17 199	35 464	-18 265	-0.64
Montenegro	9 690		-2 400, a)	-0.39, a)
North Macedonia	2 086	752	1 333	0.06
Serbia			-50 000, a)	-0.72, a)
Türkiye	627 250	327 104	300 146	0.36

a) World Bank data for 2018-2022. Source: Eurostat, TurkStat, World Bank.

As a whole, we conclude that Türkiye has a large inflow of immigrants. Albania, on the other hand, has a net migration deficit, with about 18 000 more people per year leaving the country than entering the country in 2018-2020. In Serbia, a net-migration surplus of 20 000 people in 2013-2017 turned into a net-migration deficit of 50 000 in the period 2018-2022 (Source: World Bank Net migration).

For Montenegro, only immigration data is available in the period 2018-2020. However, World Bank data for 2017 suggest a net migration deficit. In North Macedonia there was a slight surplus of people entering (see Annex Country factsheets).

3.2.3. Health

A slight increase in the life expectancy over the last 10 years is seen indicating improving health and other human development conditions in all the countries (see Figure 3-3). At the same time, similar to a trend in the EU-27, a slight decrease is noticeable in 2020

for all countries (except for Türkiye and Albania), most likely as a result of the COVID-19 pandemic. The life expectancy at birth among IPARD countries in 2021 varied between 75.7-78.7 years. This is lower than EU-27 average of 80.5 years, but similar to the neighbouring EU countries except for Greece (81.1 years).

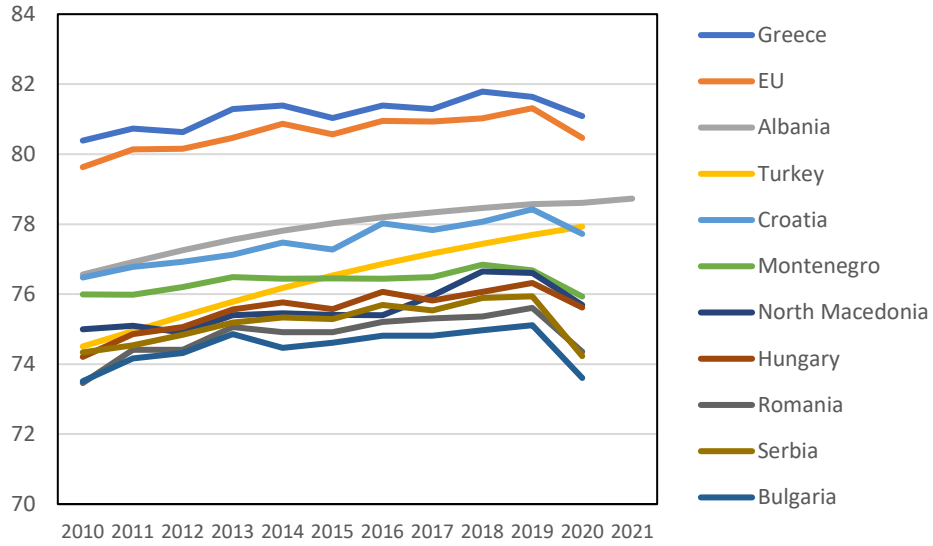

Figure 3-3 Life expectancy at birth, in years, in 2010-2021. Source: World Bank.

On average, the countries spent between 4.7%- 8.7% of their GDP on health in 2019, with the lowest level for Türkiye and highest level for Serbia.

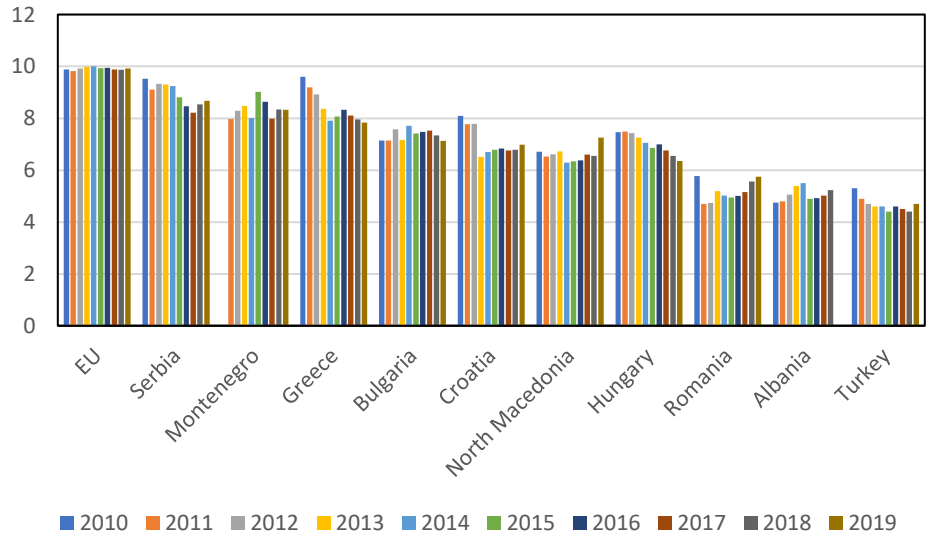

Figure 3-4 Current health expenditure, in % of GDP, in 2010-2019. Source: World Bank.

3.2.4. Education

In this section, the level of education of the population of the IPARD countries is compared to the EU-27 and neighbouring EU countries. Easily comparable education statistics are generally hard to obtain due to differences in schooling systems, data availability and statistical methods. One comparable measure is 'The Education level of adult population' from the Legatum institute. This is a composite measure based on, (a) the percentage of the population without any education, (b) the proportion of workers

with secondary education, and (c) the proportion of workers with tertiary education.[10] The Education level of adult population is an index between 0 and 1, with a higher number indicating a higher performance on education (Barro and Lee dataset).

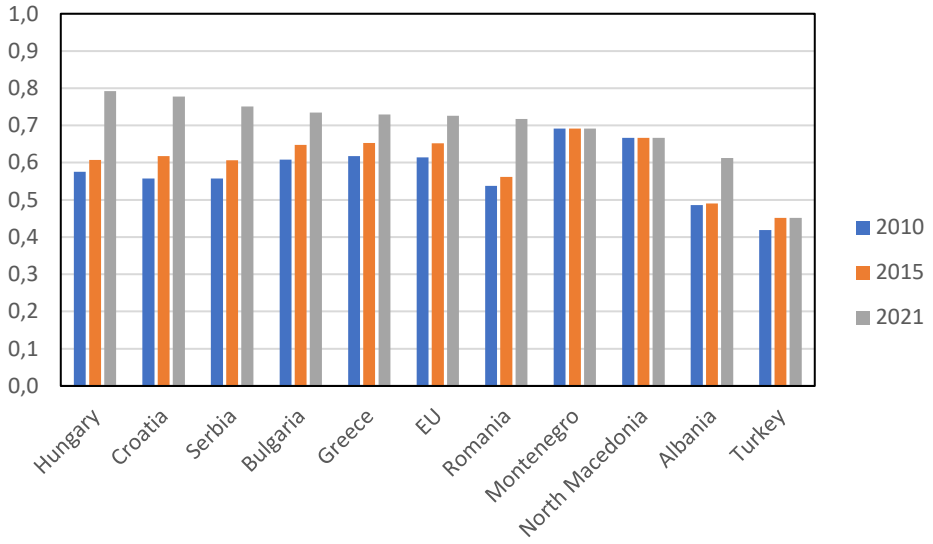

Figure 3-5 Education level of the adult population, index between 0 and 1, in 2010, 2015 and 2021. Source: Legatum Institute, Barro and Lee dataset.

From Figure 3-5, it can be concluded that Serbia has the highest score on the Education level of the adult population indicator among the IPARD countries. The indicator shows an increasing trend in Serbia starting from 2013 and a steady score of 0.8 between 2018-2021, which is even slightly higher than the EU-27 level and Greece, Romania and Bulgaria. North Macedonia and Montenegro do not experience any changes over the last decade and remain between 0.67-0.7 respectively. In Albania, the education level increased from 0.5 to 0.6 in the period of 2010-2021. The lowest level is seen in Türkiye; however, a positive trend is observed with an increase from 0.4 to 0.5 in the period of 2010-2021.

Türkiye also observes a rapid increase in the proportion of 15- to 24-year-olds enrolled in vocational education (from 9.9% in 2010 to 23.6% in 2019), while in Serbia and Montenegro this increase is moderate (from 24.1% in 2010 to 24.5% in 2020 and 21.9% in 2016 to 23.3% in 2020 respectively) (see Sections 3.2.5; 4.2.5; 5.2.5; 6.2.5; 7.2.5 in Annex Country Factsheets for more the details). In Albania, a 5% increase is reported in this indicator from 2012 to 2020. The data on this indicator for North Macedonia is missing.

Adult literacy rate of population older than 15 years has increased in the last decade in all countries and varies in 2019 between 96.7% (Türkiye lowest) and 99.5% (Serbia highest) (see Sections mentioned above in Annex Country Factsheets for more the details).

3.3. Employment, earnings, income distribution and social protection

3.3.1. Employment and earnings

In the last decade, the employment and earnings have gradually increased in all studied countries, but are still behind the EU-27 average (see Figure 3-6 and Figure 3-8). However, in all countries, except for Serbia, in 2020 there seems to be a decline in the employment and earnings development, with slight increase afterwards. In Türkiye, there is a gradual increase in employment and earning between 2010-2018. However, this declining trend has already started in 2019, with a deep point in 2020 (declined to

[10] https://docs.prosperity.com/3716/3643/5991/The_2021_Methodology_-_Part_3_-Sources_And_Indicators.pdf

the level of 2010). At the same time, the unemployment ratio (% of labour force) has been declining in2018, which indicates a decreasing share of labour force in the population (see Figure 3-7). In Albania and Montenegro, in 2020, the unemployment ratio has slightly increased to 13.3% and 17.9% respectively and while in Albania it has again decreased to 11.8 % in 2021, in Montenegro it has further increased to 18.5%. At the same time, in North Macedonia, during the whole 2010-2021 period, the unemployment share has been drastically declining from 32.0% to 16%, which indicates a decrease in the share of labour force in 2020.

The mean nominal monthly earnings of employees (see Figure 3-8) increased in Montenegro from 715 Euro in 2010 to 773 Euro in 2019, in North Macedonia from 491 Euro in 2010 to 656 Euro in 2020, in Serbia from 250 Euro in 2010 to 467 Euro in 2020. For Türkiye, for this indicator there is a larger variation is notable across the years where from 372 Euro in 2010 it has increased to 492 Euro 2016 and dropped to 356 in 2018 and even further in 2021. The mean nominal monthly earnings of employees for Albania are missing between 2010-2013, and between 2014-2020 a steady increase is observed from 378 Euro to 435 Euro. Compared to the EU-27, mean nominal monthly earnings of employees in all IPARD countries are rather low. Although, it can be observed that the gap between Montenegro and the neighbouring counties Croatia, Greece, Hungary and Romania is decreasing, while compared to Bulgaria it is even higher.

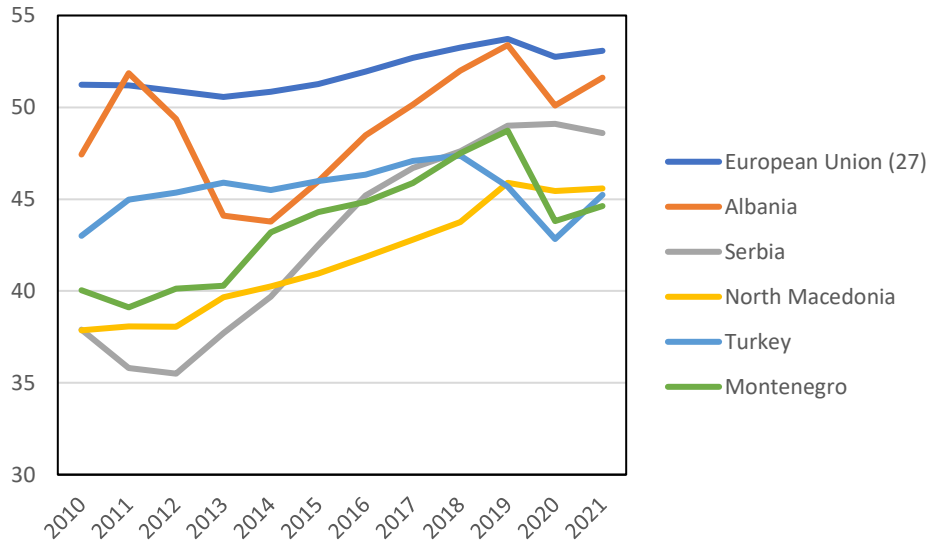

Figure 3-6 Employment to population ratio, 15 years and older, in %, in 2018-2021. Source: World Bank, SORS, INSTAT, TurkStat.

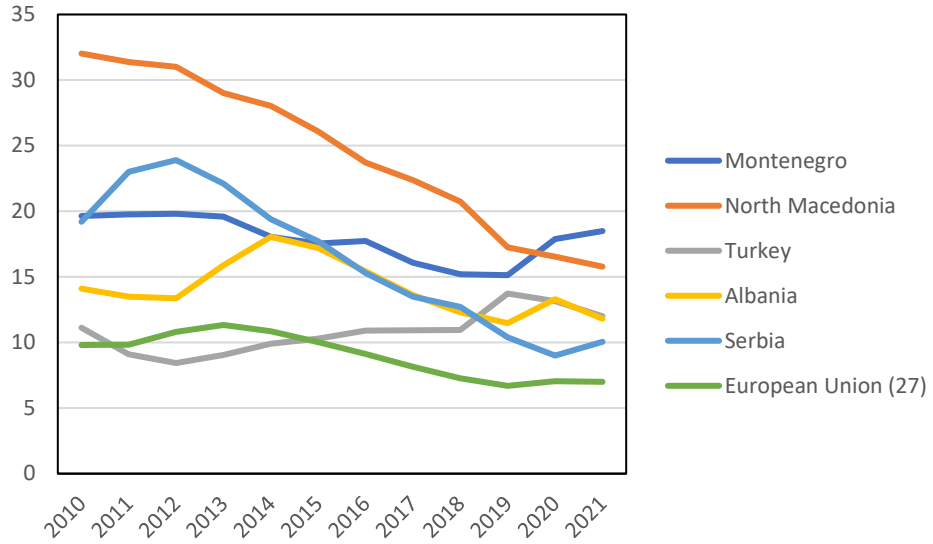

Figure 3-7 Unemployment rate as % of labour force, in 2010-2021. Source: World Bank.

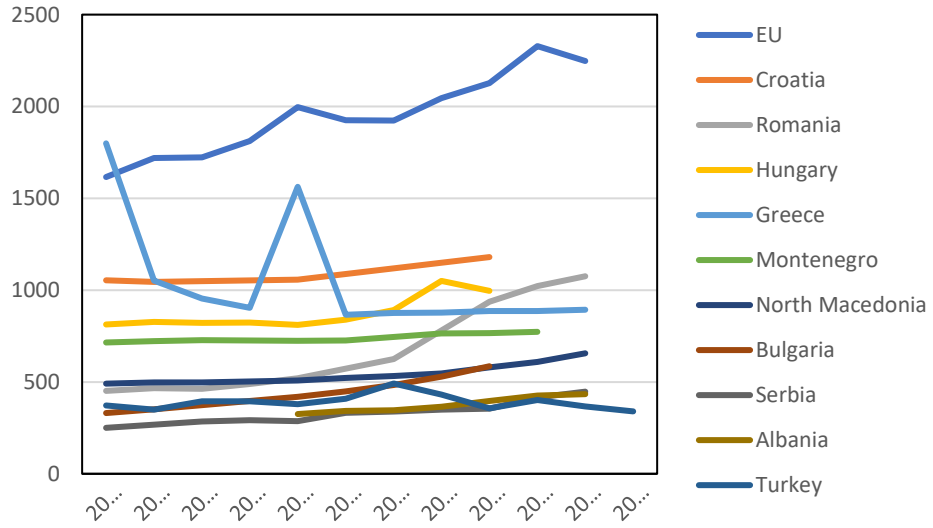

Figure 3-8 Mean nominal monthly earnings of employees, in EUR per month, in 2010-2021. Source: ILO.

3.3.2. Income distribution

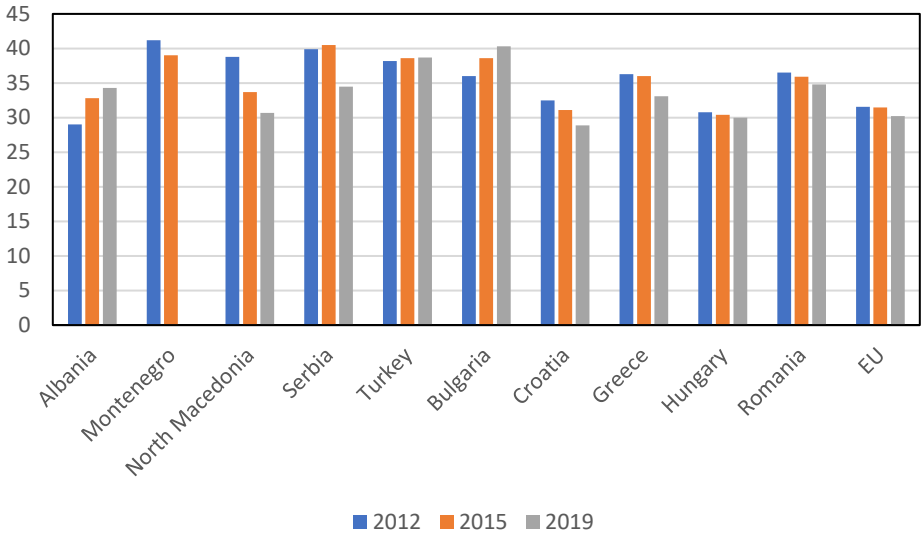

Figure 3-9 Gini index (1-100), in 2012, 2015, and 2019. Source: World Bank, INSTAT, MAKSTAT, TurkStat.

Figure 3-9 shows that in all countries Gini index tends to slightly decrease over the years, except for Albania where there has been a trend toward more income distribution inequality in recent years (in 2012 Gini index was 29, while in the period 2014-2019, the index varied between 32.9 and 35.4). A relatively large decrease of this index is seen in North Macedonia (from 41 in 2012 it has gradually decreased to 30.7 in 2019) reaching EU-27 average. In Serbia and Türkiye, a decline of this indicator is observed from 40 in 2012 to 36 in 2017 and from 41 in 2014 to 40 in 2019 respectively. With the score of 40, Türkiye has the highest income distribution inequality among IPARD countries, yet equals to the index observed in Bulgaria in 2019.

In terms of people being at risk of poverty (see Table 3-3), 2021 data are not available for IPARD countries, but from the trends between 2015-2020, it can be seen that Albania has the highest level over the year (58.5%-46% between 2017 and 2020), followed by Montenegro, Türkiye, Serbia, and lowest in North Macedonia (22.2%-21.6% between 2017 and 2020). Remarkably, in all countries a decreasing trend can be noticed, except for Serbia, Türkiye, where for the former one, increase is relatively large, while for the latter, increase is smaller. All IPARD countries, except for North Macedonia, have relatively high level of people at risk of poverty, compared to the EU-27 average, yet have comparable scores to Bulgaria and Romania (except for Albania).

Table 3-3 People at risk of poverty or social exclusion, in % of total population, 2015-2021.

	2015	2016	2017	2018	2019	2020	2021
Albania			58.5	53.9	50.8	46.2	
Montenegro	43.8	43.1	42.2	41.2	36.6	37.8	
North Macedonia	21.5	21.9	22.2	21.9	21.6	32.6	
Serbia	26.7	25.9	25.7	24.3	31.1	29.8	
Türkiye	26.7	26.6	32.3	32.4	33.2	34.1	

	2015	2016	2017	2018	2019	2020	2021
Bulgaria	43.3	41.0	38.0	33.0	33.2	33.6	31.7
Croatia	24.4	23.5	23.7	22.1	20.8	20.5	20.9
Greece	32.4	32.6	32.2	30.3	29.0	27.4	
Hungary	30.6	28.6	25.9	20.6	20.0	19.4	
Romania	44.5	46.0	42.5	38.7	36.3	35.8	34.4
EU	24.0	23.4	22.6	21.5	21.0	20.7	21.7

Source: Eurostat, MAKSTAT, SORS.

3.3.3. Social protection

The share of the GDP on social protection varies among the countries of analysis. Table 3-4 shows that Serbia has been spending the highest share of the GDP on social protection compared to all other IPARD countries. However, this share was declining in the last years. While in 2010 it was 22.6%, in 2019 this share declined to 19.5%. The data for North Macedonia and Montenegro are only available for a limited number of years (2015-2017 and 2016-2018 respectively), however it is obvious that for North Macedonia it remained steady for over 3 years, while for Montenegro it has been slightly declining in 2018. Türkiye has a constant level of GDP expenditures for social protection over the last decades, which varies between 12-13%. Albania has the lowest level of the share of the GDP on social protection, with slight increase observed in 2017 (from 8.2% in 2010 to 9.3% in 2017). No recent data available for Albania on this indicator.

Table 3-4 Social protection expenditure in % of GDP.

	2010	2015	2016	2017	2018	2019	2020
Albania	8.2	9.1	9.4	9.3			
Montenegro			18.7	17.7	16.6		
North Macedonia		14.3	14.2	14.5			
Serbia	22.6	20.7	20.3	19.4	19.4	19.5	
Türkiye	12.7	11.9	12.8	12.2	11.9	12.6	13.0
Bulgaria	17.1	17.7	17.4	16.9	16.9	16.6	
Croatia	21.2	21.8	21.9	21.5	21.6	21.8	
Greece	26.1	26.2	26.5	25.6	25.3	25.0	
Hungary	22.4	19.0	18.8	18.2	17.4	16.6	
Romania	17.5	14.6	14.6	14.8	15.0	15.3	
EU	24.0	23.3	23.1	22.7	22.5	22.6	

Source: Eurostat, TurkStat.

3.4. Infrastructure, innovation and science

3.4.1. Infrastructure and ICT

Next to the availability and quality of labour, and capital to invest in production capacity, the quality of infrastructure and the innovation system are also very important factors for competitiveness. In this section we discuss the development of the IPARD countries regarding infrastructure, ICT and innovation and compare them to the EU.

The logistics performance index, as constructed by the World Bank, measures the quality and performance of logistical infrastructure and procedures, and facilitates a comparison between countries. The index is constructed from six core components: 1) the efficiency of customs and border clearance, 2) the quality of trade and transport infrastructure, 3) the ease of arranging competitively priced shipments, 4) the competence and quality of logistics services, 5) the ability to track and trace consignments, 6) the frequency with which shipments reach consignees within scheduled or expected delivery times.[11] The value of the Logistics performance index ranges from 0 to 5, with a higher value indicating a higher performance.

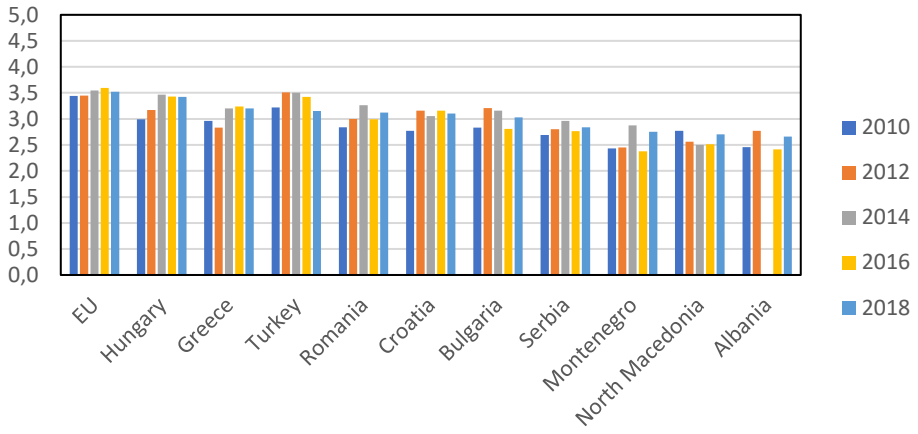

Figure 3-10 Overall Logistics performance index, index 0 (low) to 5 (high), in 2010-2018. Source: World Bank.

Figure 3-10 shows a mixed picture of the overall logistics performance. Türkiye has the highest overall logistics performance index of the IPARD countries (3.15) and is closest to the EU average. The frequency with which shipments reach consignee within scheduled time is ranked highest, 3.63. The lowest rank, 2.71, is both for the quality of trade and transport-related infrastructure, and for efficiency of customs clearance process. All other studied countries have rather similar overall logistics performance indices, ranging from 2.7 for Albania and North Macedonia, and 2.75 for Montenegro, to 2.84 for Serbia.

With respect to the use of internet, Figure 13 shows that internet usage is growing in all IPARD countries, like it is in neighbouring EU MS and the EU as a whole. North Macedonia as a higher internet usage than the other IPARD countries throughout the period 2010-2021. Especially in Albania, internet usage and growth in internet usage is lagging behind the other IPARD countries.

[11] https://wb-lpi-media.s3.amazonaws.com/LPI%20Methodology.pdf

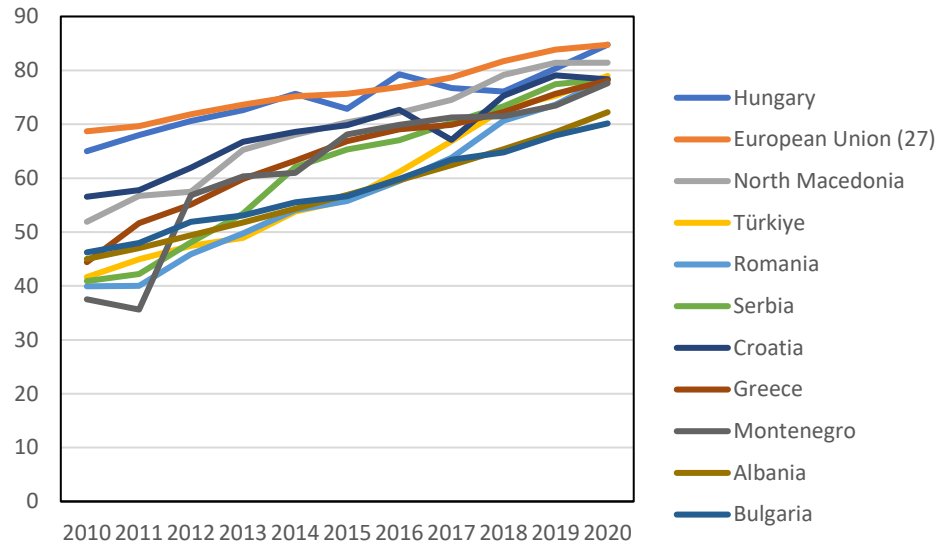

Figure 3-11 Individuals using the internet, in % of population, in 2010-2018. Source: World Bank.

3.4.2. Entrepreneurship, innovation and science

A number of indicators are available to assess the innovation system in the countries. The most comprehensive dataset available for our research that allows for country comparisons is the data from the World Economic Forum Global Competitiveness Report. Data on a range of indicators are available that are grouped under the pillars of Business dynamism, and Innovation capability[12]. For our purposes we have selected a number of indicators to present in this report.

First, an important aspect of entrepreneurial culture is measured by an indicator called Attitudes towards entrepreneurial risk (Figure 3-12). Large differences exist in the extent to which entrepreneurs are willing to take risk. In Türkiye, the indicator is much more favourable of entrepreneurial risk taking than in North Macedonia and Albania.

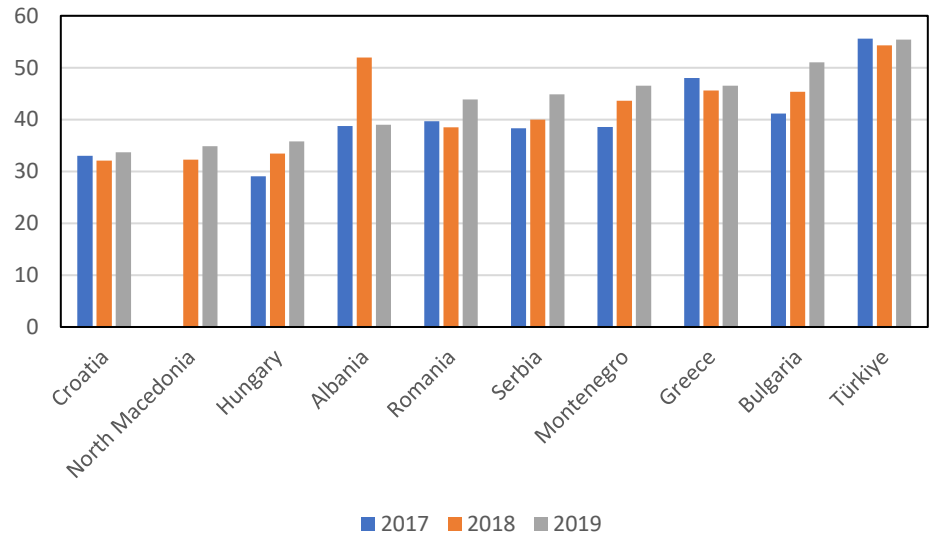

Figure 3-12 Attitudes towards entrepreneurial risk (index 0-100), in 2017-2019. Source: World Economic Forum.

[12] https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf

R&D expenditures in % of GDP are another indicator of innovation. This indicator concerns all current and capital expenditures, both private and public, on creative work undertaken systematically to increase knowledge and the use of knowledge for innovation. It includes basic research, applied research and experimental research. R%D expenditures typically are between 0 and 4% of GDP, with most advanced economies in the EU around 2 to 3%. The best performing country in our comparison is Hungary (Figure 3-13) with an index score of 40 on a scale of 1-100 in the 2019 Global Competitiveness Report. The value of R&D expenditures for Hungary was 1.2% of GDP. In Albania the value was just 0.15%.

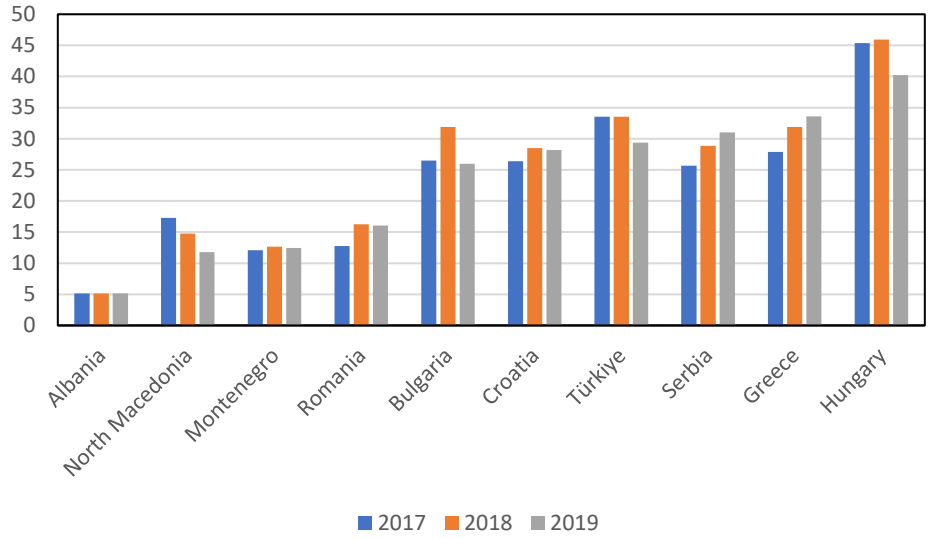

Figure 3-13 R&D expenditures % of GDP (index-100), in 2017-2019. Source: World Economic Forum.

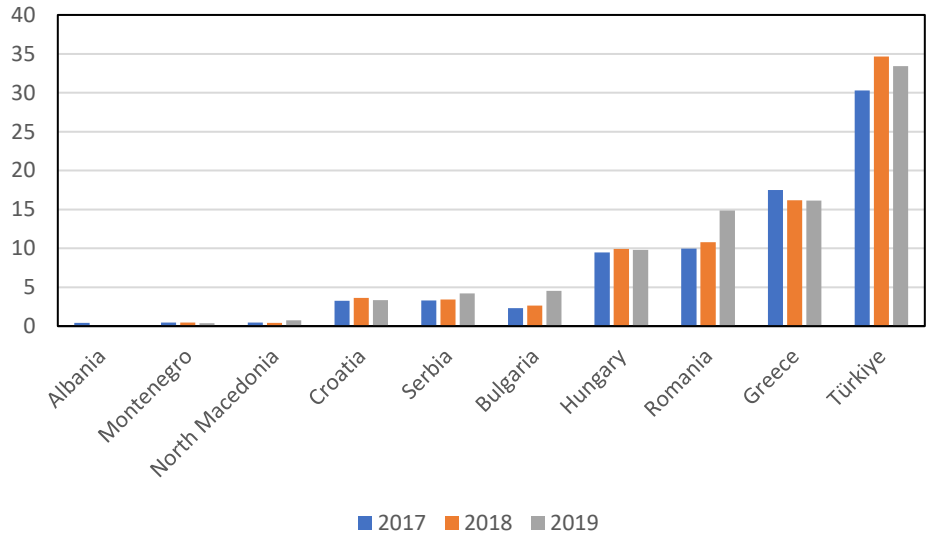

Figure 3-14 Research institutions prominence (index 0-100), in 2017-2019. Source: World Economic Forum.

Lastly, we look at the scientific performance of the countries. Again, data from the World Economic Forum Global Competitiveness Report are used. Figure 3-14 and Figure 3-15 show the level of research institutions prominence and an indicator that compares the quality of scientific publications (based on h-index: the number of published papers that were cited in other papers at least h times).

Türkiye has more prominent research institutions than the other IPARD countries and neighbouring EU MS with an index score of 33. The other IPARD countries are lagging in this respect; with the value of Albania being 0. For comparison, the value for research institutions prominence was at the maximum value of 100 for France, Germany and Spain, while e.g. the Netherlands was at 45.

The scientific publications indicator shows the normalised values of the h-index, transformed into another index with 0 being the theoretical minimum, and 100 being the (truncated) maximum of the best performing countries (more than or equal to h-index of 868 of Switzerland). In our comparison of IPARD countries and five neighbouring EU MS, Montenegro had the lowest score of 45 in the 2019 version of the Global Competitiveness Report, resulting in a score of 57 on the scientific publications index. The relative prominence of the Türkiye's research institutions is also visible in the h-index. With a score of 88 (h-index 370), Türkiye was doing equally well as the average of the EU-27. Within the EU, the Netherlands (h-index 895), Italy (h-index 897), France (h-index 1028), and Germany (h-index 1131) attained the higher possible score of 100 on this indicator. Note that larger countries generally have more and larger research institutes that publish more paper and hence have a higher probability of attaining a higher h-index.

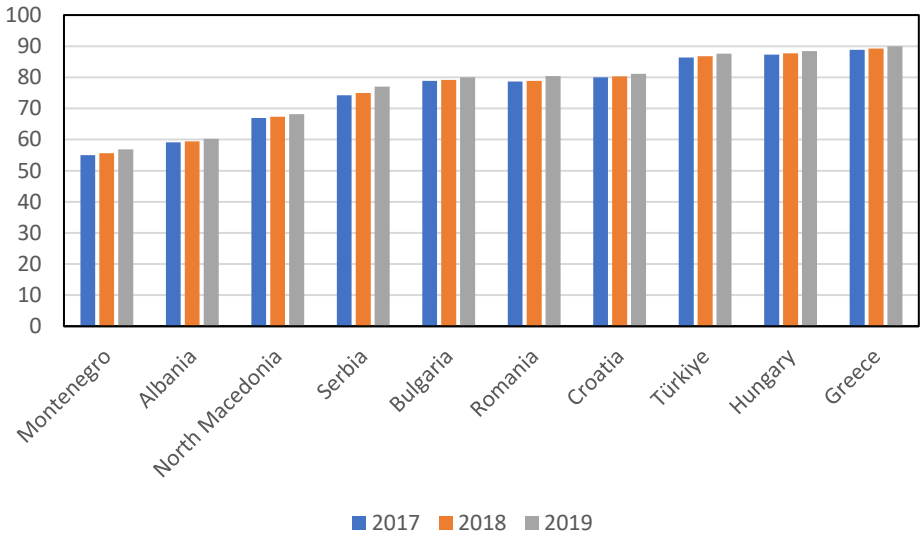

Figure 3-15 Scientific publications index based on h index (index 0-100), in 2017-2019. Source: World Economic Forum.

3.5. National accounts, government expenditures and international trade

3.5.1. National accounts

GDP per capita varies between the IPARD countries, with the highest GDP per capita of 8 065 euro in Türkiye and second highest of 7 920 euro in Montenegro in 2021 (see Figure 3-16). Serbia follows closely Montenegro, with a GDP per capita of 6 481 euro in 2021. North Macedonia and Albania have the lowest GDP per capita of the countries of analysis, 5 682 euro and 4 591 euro in 2021 respectively. In the years 2010-2020 the gap between Türkiye and remaining IPARD countries became smaller, as the GDP per capita increased for the remaining IPARD countries, while Türkiye showed an overall decrease. In 2010, Turkish GDP per capita was 8 103 euro.

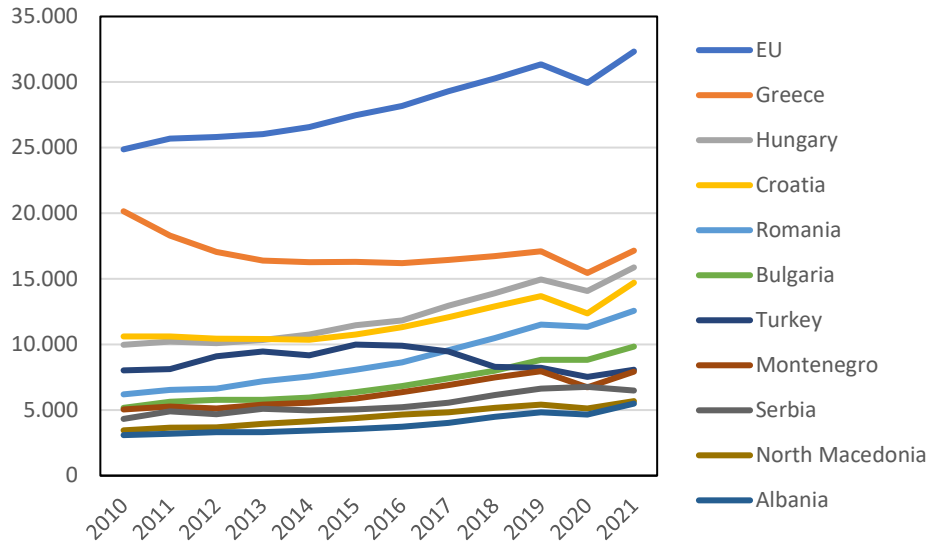

Figure 3-16 GDP per capita, in EUR, in 2010-2021. Source: World Bank.

There is a difference between the countries of analysis in the share of budget households spent on food and non-alcoholic beverages (see Figure 3-17). In Albania, this share is the highest (43.6% in 2021), which is almost double of the share in Türkiye (the lowest share, 24% in 2021). The three remaining IPARD countries have comparable share of budget households spent on food and non-alcoholic beverages (around 31-34% in 2020 for Montenegro and Serbia and 2019 for North Macedonia). Interestingly, this value has increased for all IPARD countries over the years, except for Serbia, where it has been decreasing. Although similar increasing trends can be observed among EU 5 countries, the share of budget households spend on food and non-alcoholic beverages in IPARD countries remains relatively high compared to EU 5 and EU-27 (except for Türkiye, which is comparable to the level of Romania).

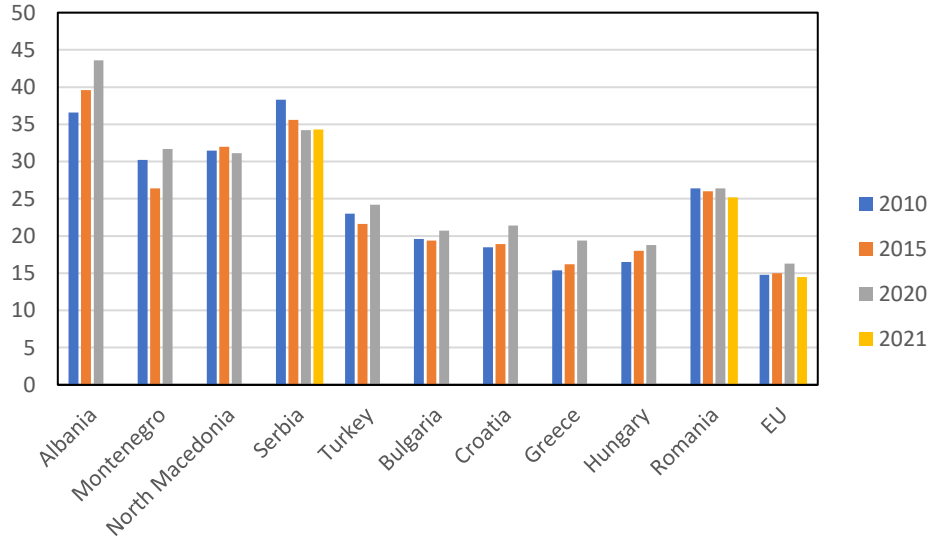

Figure 3-17 Final household consumption of food and non-alcoholic beverages, % of total, in 2010, 2015, 2020 and 2021. Source: Eurostat. North Macedonia 2020 is 2019 data.

The share of gross investments in fixed capital goods in IPARD countries was between 22.5% in Serbia and 28% in Türkiye in 2021 (see Figure 3-18); the most recent data for North Macedonia were 21% in 2019. Gross fixed capital formation has been around or above the EU average for all IPARD countries.

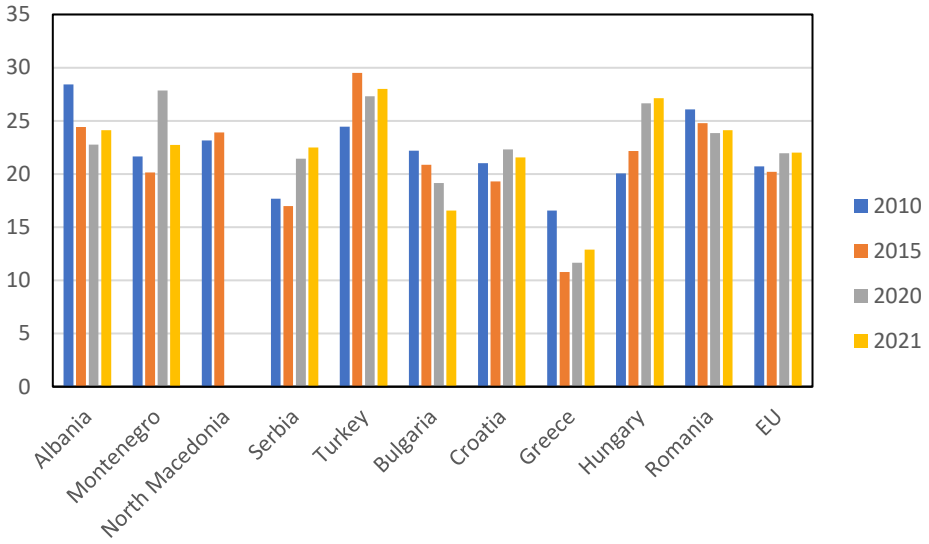

Figure 3-18 Gross fixed capital formation, % of GDP. Source: World Bank, TurkStat.

3.5.2. Government expenditures and finances

Within governmental expenditures and finances, three indicators are taken into consideration: 1) General governmental debt, 2) Central and general government expenditure for agriculture, forestry, fisheries, 3) Credit to agriculture, forestry and fisheries as a share in total credit.

Analysing Figure 3-18, one obvious trend can be observed, common for all IPARD countries as well as for EU-27, which is the increase of general government debts in 2020 as a result of COVID-19 pandemic. Hereby, it is notable that Montenegro has suffered the most (107% in 2020), followed by Albania, Serbia, North Macedonia and Türkiye.

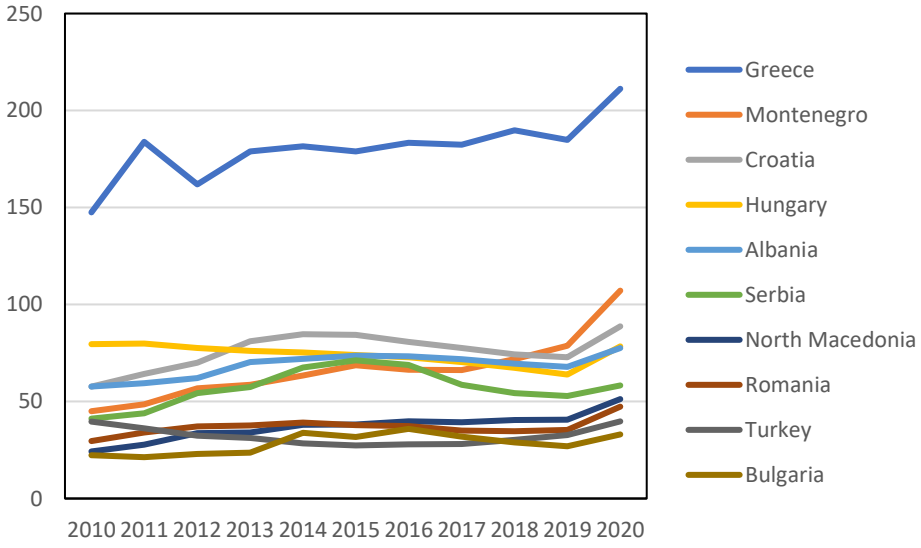

Figure 3-19 General government debt in % GDP. Source: IMF.

Looking at the total general governmental expenditures of IPARD counties (see Table 3-5), it can be seen that Montenegro had the highest general government final consumption expenditure (20.2% of total GDP) in 2021 comparable to neighbouring EU countries, such as Greece (20.6%), Croatia (21.1%) and even higher than Bulgaria (16%) and Romania. Serbia and North Macedonia follow Montenegro with 16.8% and 16.3% (14.0%) respectively. This indicator is relatively low in Türkiye and Albania (13.2

and 11.8 respectively). Data on government final consumption expenditure show to which extent governments participate in providing goods and services for the direct needs of the population.

Analysing the data of IPARD countries on central government expenditure in agriculture, forestry, fisheries (see Table 3-5), it can been seen that Türkiye and Serbia had a similar level in 2019 (3.5% and 3.6% respectively), comparable to Bulgaria (3.2%), while Albania had somewhat lower level (2.1% of total expenditures), comparable to Croatia. From the available data, it can be seen that over the years Türkiye has slightly decreased its expenditure on agriculture, forestry and fisheries, while Albania has slightly increased it. For Montenegro and North Macedonia, we could not obtain recent information on central government budget expenditures on agriculture.

In terms of general government expenditure on agriculture, forestry, fisheries as % of total government expenditures, Serbia, Türkiye and Albania have had fairly similar level of expenditures in agriculture, forestry and fisheries in 2020, while in North Macedonia this indicator is almost twice as high as in other IPARD countries (4.4% according to FAO). Compared with the neighbouring EU countries (in 2019), in all IPARD countries, the general government expenditure on agriculture, forestry, and fisheries is relatively high compared to neighbouring EU countries, such as Croatia, Greece and Hungary.

Table 3-5 Total general government expenditure, in % of GDP, in 2015 and 2021; and government expenditure agriculture, forestry, fisheries, in % of total expenditure, in 2015, 2019 and 2020

	General government final consumption expenditure		Central Government Expenditure Agriculture, forestry, fisheries			General Government Expenditure Agriculture, forestry, fisheries		
	(% of GDP)		(% of total expenditure)			(% of total expenditure)		
	2015	2021	2015	2019	2020	2015	2019	2020
Albania	11.1	11.8	2.5	2.1	2.5	2.0	2.0	2.1
Montenegro	19.2	20.2	0.6					3.1 in 2021, a)
North Macedonia	17.0	16.3					4.6	4.4
Serbia	16.4	16.8	3.7	3.6	3.9	2.5	2.4	2.1
Türkiye	13.8	13.2	4.2	3.5	3.5	3.1	2.7	2.7
Bulgaria	16.1	20.0	5.3	3.2	2.8	4.6	2.4	2.2
Croatia	21.1	22.4	2.3	2.4		1.5	1.6	
Greece	20.6	21.3	0.6	0.7		0.4	0.5	
Hungary	19.7	20.5	1.5	1.4		1.1	1.0	
Romania	14.0	17.4	2.9	2.4		2.0	1.7	

a) From Study I; 31 million total budgetary expenses on agriculture divided by 991 million total government final consumption expenditures is 3.1% in 2021. Source: World Bank, FAO.

The share of credit to agriculture, forestry and fisheries in the total credit is the highest for Serbia, with an increasing trend between 2010-2020 from 5.6% to 6.7% and the lowest for Türkiye, with a decreasing trend from 0.4% to 0.04% (see Figure 3-20). In Albania, this indicator has slightly increased in 2015 compared to 2010 to decrease again in 2020 to the same 2010 level. The information for North Macedonia and Montenegro is missing.

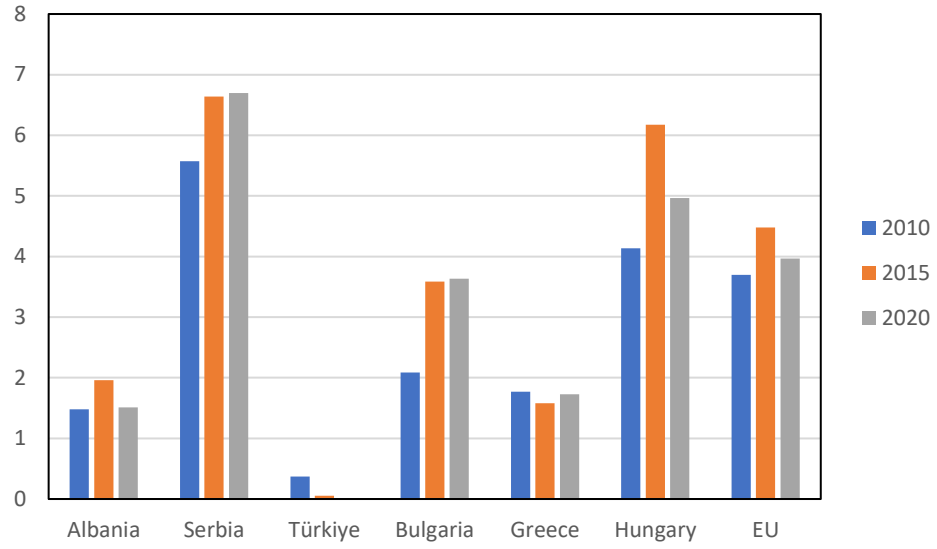

Figure 3-20 Credit to Agriculture, forestry and fisheries, in % of Total credit. Source: FAO.

3.5.3. International trade

The trade balance of merchandise exports and imports shows that all IPARD countries are net importers of goods (see Table 3-6) includes merchandise trade in goods only and excludes services and other payments. Agricultural trade is discussed in section 4.4.

In all the IPARD countries, imports and exports are increasing in value in the years between 2010 and 2020. This picture is comparable to the neighbouring EU countries. In most countries the trade balance, in million euro, decreased (more net imports than before). The only exception is Türkiye that succeeded to have a higher pace in increasing exports than imports.

Table 3-6 Merchandise exports, imports and balance of merchandise trade, in million Euro, in 2010, 2015 and 2021

	Exports			Import			Trade balance		
	2010	2015	2021	2010	2015	2021	2010	2015	2021
Albania	1 165	1 728	3 009	3 324	3 877	6 526	-2 159	-2 150	-3 517
Montenegro	330	317	435	1 646	1 839	2 499	-1 316	-1 521	-2 064
North Macedonia	2 528	4 088	6 355	4 129	5 793	8 709	-1 601	-1 704	-2 354
Serbia	7 389	12 056	21 615	12 624	16 112	28 576	-5 235	-4 056	-6 961
Türkiye	85 904	136 081	190 489	139 959	192 536	229 495	-54 055	-56 455	-39 007
Bulgaria	15 562	22 867	34 549	19 245	26 323	39 043	-3 683	-3 456	-4 494
Croatia	8 905	11 649	19 161	15 137	18 541	29 043	-6 231	-6 891	-9 882
Greece	21 134	25 736	39 844	49 715	42 169	64 080	-28 581	-16 433	-24 235
Hungary	72 025	88 800	119 833	66 514	82 896	119 996	5 510	5 904	-162
Romania	37 398	54 615	73 884	46 850	62 933	98 271	-9 452	-8 318	-24 387

Source: World Bank; converted to EUR with Eurostat average EUR exchange rates.

3.6. Prices, exchange rates and interest rates

3.6.1. Prices

There is a difference in the development of consumer prices between countries of the analysis (see Figure 3-21). Although for all countries the consumer prices increased between 2010 and 2021, Türkiye stands out as a country with the highest price increase compared to the other countries. The Turkish price index went from 100 (2010 = 100) to 314 in 2021. Besides Türkiye, among other IPARD countries, Serbia has faced a relatively high price increases of 52 index points, while the three remaining countries have kept relatively stable consumer price indexes between 2010-2021, comparable to the EU-27 countries.

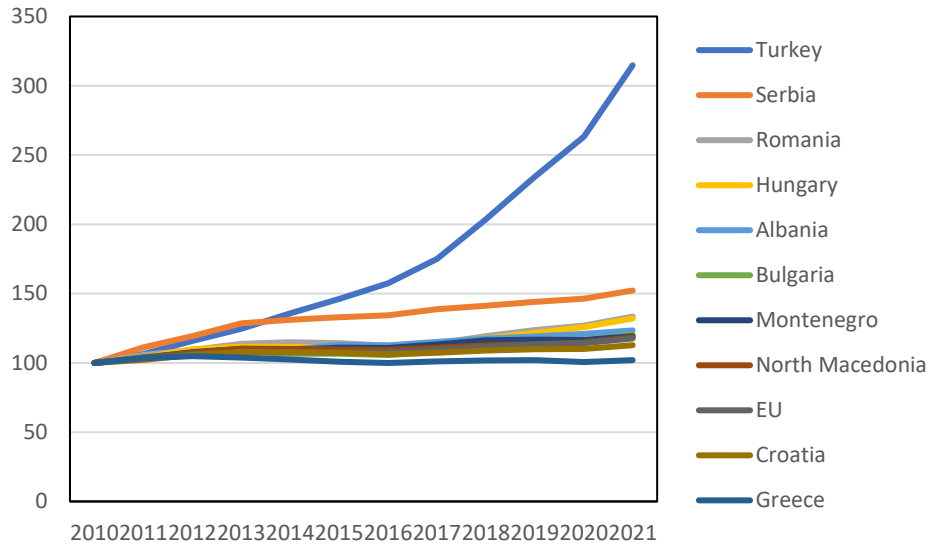

Figure 3-21 Consumer price index, 2010 is 100, in 2010-2021. Source: World Bank.

3.6.2. Exchange rates

The exchange rate developments of the national currencies of the IPARD countries are shown in Table 3-7. There are some notable differences between the Western Balkan countries and Türkiye. This is mainly due to different monetary policies. Montenegro uses the euro as a de facto national currency and North Macedonia pegged the Macedonian denar to the euro, with an exchange rate of about 61.6 MKD/EUR. The Albanian lek became somewhat stronger compared to the euro in the last decade with an exchange rate decreasing from 137.8 ALL/EUR in 2010 to 122.5 ALL/EUR in 2021 (see Table 3-7). On the other hand, the Serbian dinar somewhat lost to the euro in the same period, with an exchange rate increasing from 103.0 RSD/EUR to 117.6 RSD/EUR. Türkiye stands out as a country that faced a substantial devaluation of the lira against the euro from 2 TRY/EUR in 2010 to 10.5 TRY/EUR in 2021.

Table 3-7 Exchange rates, local currency units per EUR

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
ALL	137.8	140.3	139.0	140.3	140.0	139.7	137.4	134.2	127.6	123.0	123.8	122.5
MKD	61.5	61.5	61.5	61.6	61.6	61.6	61.6	61.6	61.5	61.5	61.7	61.6
RSD	103.0	102.0	113.1	113.1	117.3	120.7	123.1	121.3	118.3	117.9	117.6	117.6
TRY	2.0	2.3	2.3	2.5	2.9	3.0	3.3	4.1	5.7	6.4	8.1	10.5
USD	1.3	1.4	1.3	1.3	1.3	1.1	1.1	1.1	1.2	1.1	1.1	1.2

Source: Eurostat.

3.6.3. Interest rates

Also, concerning interest rates, Türkiye showed a different development compared to the Western Balkans countries of analysis (see Figure 3-22). In the Western Balkans, lending rates went down between 2011 and 2021 and varied between 8% (Serbia) and 12% (Albania) in 2011 and between 5% (North Macedonia) and 6% (Albania and

Montenegro) in 2021. The data for Serbian lending interest rates is lacking starting from 2016.

In Türkiye, lending interest rates increased from 14% to 25% between 2011 and 2018. Between 2018 and 2020 the rates dropped to 15% to increase again to 22% in 2021.

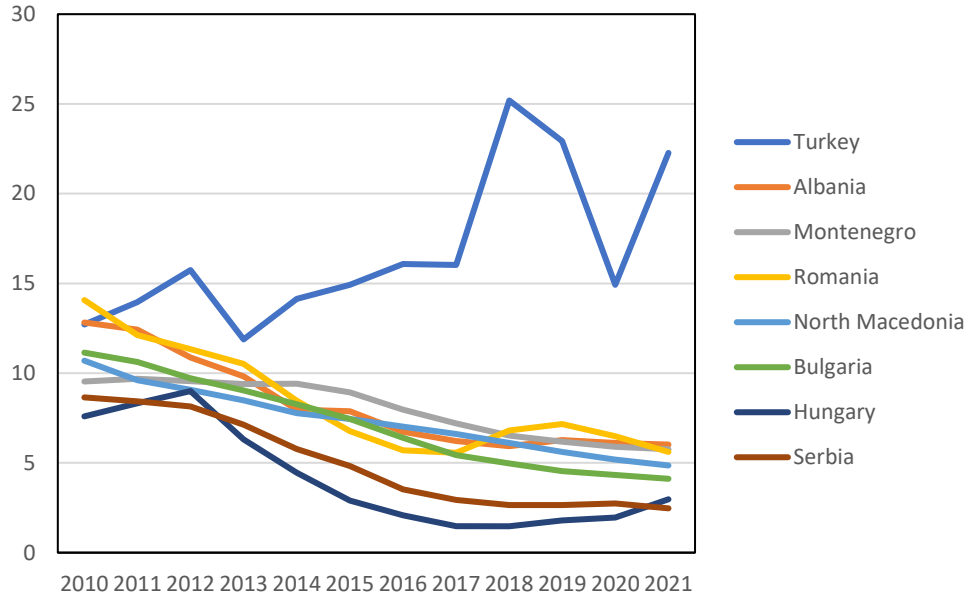

Figure 3-22 Lending interest rate, in %. Source: World Bank.

3.7. Conclusions

The IPARD countries show both similarities and differences, when considering the state of play and the developments on social and macro-economic indicators. By far the most populated IPARD country is Türkiye, with a population of 85 million inhabitants, about 16% of the EU total. Türkiye is about twelve times bigger than the largest country in the Western Balkans - Serbia - and forty-two times bigger than the smallest country Montenegro. Türkiye also has the highest urban population rate, with strongest progressive growth numbers, while in the Western Balkan IPARD countries only moderate shifts have been observed.

Migration and population development patterns in Albania, Montenegro and Serbia indicate net immigration in the recent years, although the hard migration data for the latter two countries is not available. The migration patterns are different from North Macedonia and Türkiye, both net-emigration countries.

The employment and earnings have gradually increased in all studied IPARD countries, with Türkiye, Albania and Montenegro experiencing temporary employment decreases in the years after 2018. At the same time all IPARD countries are still behind the EU-27 averages regarding the employment and earnings. In North Macedonia and Montenegro, the earnings are the highest and show similarities with neighbouring EU countries like Bulgaria and Greece. In general, in almost all IPARD countries, the income distribution is increasingly equal, with less risk of poverty, except for Albania, a country with the highest rates of people at risk of poverty and a trend towards more income distribution inequality in recent years. The highest share of the GDP spent on social protection is seen in Serbia.

In all IPARD countries, an increase in life expectancy is seen, which indicates improving health and other human development conditions. Also, the education levels are improving, but only Serbia has higher rates than the EU average. The positive trend in human development conditions is difficult to relate to health expenditures, as in most IPARD countries the share of the GDP spent on healthcare has been declining. At the

same time, in the case of Serbia and Montenegro this share is even higher than for all selected neighbouring EU countries Greece, Bulgaria, Croatia, Hungary and Romania. Other IPARD countries show about similar rates as these countries.

The IPARD countries have increasing GDP's per capita, with the highest GDP per capita of 8 065 euro for Türkiye, but this is far below the EU average of 32 328 and less than in Greece, Bulgaria, Croatia, Hungary and Romania. In all IPARD countries consumers spend a higher share of their budgets on food. In general, the government expenditures and debt of the IPARD countries are comparable to the neighbouring EU countries, except for Greece, which has a very high general government debt.

Prices and interest rates on internal markets of the IPARD countries are notably affected by the developments of the currency exchange rates and the economy as a whole. The development in the exchange rate of the national currency against euro differs significantly between the studied Western Balkan IPARD countries on one side and Türkiye on the other side. This is mainly due to different monetary policies of pegging to euro or using the currency in the Balkans and not in Türkiye. Türkiye stands out in the data as a country that faced a substantial devaluation of lira against the euro in the period between 2010 and 2021. Although for all countries the consumer prices increased between 2010 and 2021, Türkiye stands out as a country with the highest price increase. The same trend is seen for lending interest rates.

All IPARD countries are net importers of goods. This picture is comparable to the neighbouring EU countries. All countries faced growing imports and exports in the years after 2010, with only Türkiye having less net imports than before in 2021. Of all countries Türkiye has the largest trade flows. Türkiye has the highest overall logistic performance, close to the EU average.

4. CROSS-COUNTRY OVERVIEW OF THE MAIN AGRICULTURAL SECTOR INDICATORS IN THE IPARD COUNTRIES

4.1. Introduction

This section corresponds to activities outlined under Task 2 (see Section 2.2) and presents the cross-country analysis of main agricultural sector indicators of IPARD countries. The main agriculture indicators include, for example: a total share of gross value added of agriculture in GDP, farm structure including number of farms, farm sizes and agricultural land use structure, the total agricultural production value and international trade. The analyses provide a cross country comparison of agricultural sectors among IPARD countries and their comparison with the European Union. To keep the Tables and Figures concise, the analysis in this section is presented for 2 or 3 years (e.g., 2010, 2015, 2020 or 2021 if available). The detailed analysis of trends of 2010-2020 (and whenever available 2021) can be found in Annex Country Factsheets.

4.2. Farm structure

4.2.1. Number of farms and farm sizes

All IPARD countries, except for Türkiye, are characterised by a small farm size ranging in average between 1.2-6.2 ha. According to the IPARD III Programmes, adopted in 2022, the average farm size in Albania is around 1.2 ha.[13] In 2016 in North Macedonia there were 178 128 agriculture holdings, with an average size of 1.8 ha, which has decreased with 3% since 2013.[14] In 2018, in Serbia there were 564 541 agricultural holdings of which 99.7% are family holdings. The number of agricultural holdings is decreasing, but the average size increased from 5.4 ha (2012) to 6.2 ha (2018).[15] In Montenegro, the agricultural census reports 43 791 agricultural holdings in 2016 with an average farm size of about 5.8 ha per holding, although by far the most farms are utilised (kitchen) gardens of about 0.5 ha.[16]

For Türkiye, the average farm size was 7.0 ha in 2017 and according to the data from the Farmer Registration System, the number of agricultural holdings was 3 022 127 as of 2019[17](about a fourth of the EU number).

In Albania, the very limited size of holdings (average of 1.2 ha – less than one tenth of the average farm size in the EU) is one of the limiting factors in the agriculture development.

In North Macedonia, the structure of the agricultural sector is characterised by small-sized family farms, owned or leased, and highly fragmented into small parcels (EC, 2022). Employment in agriculture, forestry and fisheries was about 120 000 persons in 2016 and decreased to 95.5 thousand in 2020. Both the share in value added and the share in employment has been gradually decreasing.

4.2.2. Agricultural land use

Table 4-1 shows the Agricultural land use in IPARD countries and the EU for 2010 and 2020. In all assessed countries, as in the EU, the agricultural land use, cropland and arable land have slightly decreased in 2020 compared to 2010, except for North Macedonia, where a slight increase can be observed.

In Albania, the use of arable land has decreased with 26 000 ha, cropland - with 8 500 ha and land with temporary fallow by 44 000 ha. Land under permanent crops has increased by 18 000 ha as well as land under temporary meadows and pastures - by 23 000 ha.

[13] IPARD III Programme Albania 2022.
[14] IPARD III Programme North Macedonia 2022.
[15] IPARD III Programme Serbia 2022.
[16] IPARD III Programme Montenegro 2022 reports agricultural and non-agricultural activities of 11,860 registered farms in the Register of Agricultural Holdings kept by the Ministry of Agriculture, Forestry and Water Management.
[17] IPARD III Programme Türkiye 2022.

Data for Montenegro in 2020 shows significant difference compared to 2010, which can be explained by a change in classification of land use. FAOSTAT classifies 260 000 ha as other land (item 6 670) in 2020 for Montenegro, which explains the significant decrease in agricultural land shown in Table 4-1. Other land is not included in table 5.1.

Agricultural land in North Macedonia with 1.26 million ha makes it about 50% of the total country territory. Land use in North Macedonia has increased with 143 000 ha between 2010-2020. The use of cropland has increased - by 8 000 ha, arable land - by 2 000 ha, land under permanent meadows and pastures - by 135 000 ha. Perm. meadows & pastures - Nat. growing with 134 000, land with temporary fallow by 4 000 ha and land under permanent crops with 6 000 ha. Other land has decreased with 185 000 ha (FAOSTAT).

In Serbia agricultural land use has slightly decreased with 18 000 ha, only land under permanent crops has increased by 17 000 ha. Similar trend is to be seen in Türkiye, where the agricultural land use has decreased by 1.25 million ha, but the usage of land under permanent crops has increased by 548 000 ha.

Table 4-1 Agricultural land use, in IPARD countries and the EU, in 1 000 hectares, 2010, 2020

	Albania		Montenegro		North Macedonia		Serbia		Türkiye		European Union (27)	
	2010	2020	2010	2020	2010	2020	2010	2020	2010	2020	2010	2020
Agricultural land	1 201	1 166	512	258	1 119	1 262	3 522	3 504	39 012	37 762	169 417	163 962
Cropland	696	688	188	15	449	457	2 844	2 811	24 395	23 145	113 029	110 777
Permanent meadows and pastures			324	243								
Arable land [a]	626	600	172	9	414	416	2 654	2 604	21 384	19 586	101 066	98 653
Land under temp. meadows and pastures [b]	202	225	127	1	0	0	0	0	0	0	13 988	14 768
Land under temporary crops	202	197	31	8	277	275	2 631	2 596	17 135	16 412	77 917	77 851
Land with temporary fallow	222	178	14	0	137	141	23	9	4 249	3 173	9 161	6 034
Land under permanent crops [c]	70	88	16	6	35	41	190	207	3 011	3 559	11 963	12 122

Source: FAOSTAT. a) land under temporary crops (double-cropped areas are counted once), temporary meadows for mowing or for pasture, land under market or kitchen gardens, and land temporarily fallow. This also includes land under horticultural products, such tomato and cucumber, but excludes land abandoned as a result of shifting cultivation, b) grassland for livestock, c) mostly fruit crops.

4.2.3. Number of animals

From Table 4-2 it can be seen that IPARD countries in most of the cases follow the EU trend, with some slight exceptions. With regards to the number of laying hens, there is an increase in all assessed countries following similar trend as it is in the EU, except for North Macedonia and Serbia. In all countries there is an increase in number of chickens for meat, similar to the EU, except for North Macedonia where the number of meat chickens has halved in 2020, compared to 2010.

In the assessed WB countries there is a decrease in the number of cattle for meat, similar to the EU. This is not the case for Türkiye, where there is an increase in the number of cattle for meat.

The number of pigs has increased in Montenegro and in North Macedonia by about 45% since 2010. In Albania and Serbia, there has been a small decrease in the number of pigs. Whilst in the EU, the number of pigs has stayed stable. In Türkiye, there are almost no pigs, provided the country tradition of having no pig meat on the menu.

In Türkiye the number of sheep for meat has decreased with by than two thirds to 4.4 million sheep in 2020, compared to 15 million in 2010. Similar trend is noticeable for the EU with 36.3 million in 2020, compared to 47.7 million in 2010. In Albania and North Macedonia, the number of sheep has also decreased, whilst in Montenegro and Serbia it has lightly increased.

In all countries in Table 4-2, the number of sheep for milk has decreased between 2010-2020, which is also the case for the EU. Only in Türkiye there is an increase of almost 50% (10 million sheep). Similar trend is noticeable for the number of cows for milk, where in all countries there is a decrease similar to the EU-27. Only in Türkiye there are 2 million more cows for milk in 2020 compared to 2010 level (increase of roughly 25% compared to 2010).

Table 4-2 Number of animals, in IPARD countries and the EU, in 1 000 head or head, 2010, 2020

	Albania		Montenegro		North Macedonia		Serbia		Türkiye		European Union (27)	
	2010	2020	2010	2020	2010	2020	2010	2020	2010	2020	2010	2020
in 1000 Head:												
Laying hens	4 500	5 006	425	600	1 500	1 188	9 412	8 510	70 934	122 711	448 051	456 472
Meat, chicken	6 889	10 785	2 400	3 255	4 100	1 999	53 715	71 543	843 898	916 126	5 385 886	6 424 549
Meat, Poultry total	7 241	10 996	2 400	3 255	4 100	1 999	53 751	71 756	848 825	924 217	5 750 101	6 767 394
In Head:												
Meat, cattle	370 000	283 437	27 147	18 953	54 600	19 000	435 756	308 913	2 602 246	3 190 663	26 310 397	23 568 390
Meat, pig	187 000	182 046	16 583	31 761	82 500	150 000	5 728 226	5 501 599		76	247 345 114	247 313 030
Meat, sheep	1 488 900	1 219 264	23 329	27 937	294 000	127 000	1 152 364	1 355 641	15 000 000	4 358 732	47 713 926	36 301 720
Milk, Total	2 268 030	2 085 393	225 762	152 653	716 800	632 326	819 697	608 135	17 563 349	32 151 788	56 834 224	55 106 450
Milk, whole fresh cow	355 000	296 311	67 259	55 841	124 500	111 083	523 106	421 748	4 361 840	6 309 235	22 056 800	20 561 890
Milk, whole fresh sheep	1 337 000	1 150 824	158 503	96 812	535 500	451 111	210 895	67 242	10 583 608	20 428 674	27 044 363	24 895 802

Source: FAOSTAT.

4.3. Production value of agriculture in economy

The analysis shows that agricultural sector is very important to all IPARD countries, although the value of production varies, mainly related to the country size. Montenegro has no data about the value of agricultural production, but the value added of agriculture, forestry and fisheries is about 0.3 billion Euro. Türkiye had the largest production value of 47.6 billion Euro in 2020, followed by Serbia (4 billion) and Albania (2 billion Euro). North Macedonia had the lowest production value of 0.9 billion Euro in 2020.

With regards to trends, IPARD countries show difference in agricultural production value between 2010 and 2020 (see Table 4-3). Albania and Serbia showed steady growth, while in North Macedonia production value remains stable over the years. In Türkiye, the agricultural production value showed a slightly decreasing trend, with fluctuations during most of the periods, but in 2018 the value showed a significant drop, followed by growth in 2019.

Table 4-3 Production value of agriculture (in billion EUR) 2010, 2015, 2018-2020, and share of agriculture, forestry and fisheries in GDP (in %) 2010, 2015, 2018-2021

	Agriculture, production value (billion EUR) (FAO)					Agriculture, forestry and fisheries, Value Added (% of GDP) (World Bank)					
	2010	2015	2018	2019	2020	2010	2015	2018	2019	2020	2021
Albania	1.4	2.0	2.1	2.2	2.2	18.0	19.8	18.4	18.4	19.3	17.7
Montenegro, a)	0.3	0.3	0.3	0.3	0.3	7.7	8.1	6.7	6.4	7.6	6.3
North Macedonia	0.7	0.9	0.9	0.9	0.9	10.1	9.7	8.5	8.1	8.6	7.6
Serbia	3.4	3.3	3.6	3.6	4.0	10.2	8.0	7.7	7.2	7.8	7.8
Türkiye	59.6	62.6	43.9	50.7	47.6	9.0	6.9	5.8	6.4	6.7	5.6
Bulgaria	2.7	3.3	3.5	3.6	3.2	4.0	4.1	3.4	3.2	3.5	3.7
Croatia	1.3	1.3	1.4	1.3	1.4	3.7	3.0	3.0	2.9	3.2	3.1
Greece	14.2	14.4	13.9	13.9	13.9	3.0	3.9	3.6	3.8	4.2	3.9
Hungary	4.7	6.0	6.2	6.3	6.0	3.0	3.8	3.5	3.3	3.4	3.3
Romania	12.5	13.4	14.9	15.0	13.1	5.0	4.2	4.3	4.1	4.0	4.3
EU (27)	247	275	291	295	297	1.6	1.6	1.6	1.6	1.7	1.6

a) value added of agriculture, forestry and fisheries in billion euro (World Bank). Source: FAOSTAT.

4.3.1. Share of GVA of agriculture in GDP

Gross value added of agriculture (GVA) in GDP for IPARD countries, and EU countries in comparison, are provided in the right column of Table 4-3. From this Table, it can be seen that Albania has the largest GVA in agriculture (17.7% in 2021), followed by Serbia (7.8%), North Macedonia (7.6%), Montenegro (6.3%) and Türkiye 5.6%. Over the last

decade, the share of GVA in Albania has been stable, with a decrease in the last year of 1.7%. In North Macedonia, Serbia and Türkiye the share of GVA has been steadily decreasing, whilst Montenegro shows some fluctuations over the years, with slight decrease in 2021, compared to 2010.

All assessed countries have a higher share of GVA of agriculture in GDP, compared to the selected EU countries, that in general have a share between 3.1-4.3%. The EU average is 1.6%. According to the IPARD report, agriculture in Albania employs 47.8% of the total of active population and about 24.3% of the land is used for agricultural purposes. For Montenegro, agriculture is by far the largest activity of the rural population – more than 60 000 households obtain their income partly or entirely from agriculture. Agriculture is of key importance to Türkiye, in both social and economic terms. About half of Türkiye's total land area is devoted to agriculture. In 2010-2020, about 17-22% of the workforce was employed in agriculture.

Although agricultural income is an important indicator for the analysis of the agricultural sector, unfortunately there is no reliable data available for the assessed countries.

4.3.2. Production value of agricultural products

Figure 4-1 shows the production value of agricultural products in 2020 in all IPARD countries, selected five EU countries and the EU-27. For Montenegro there is no data available.

In all IPARD countries, primary vegetables and fruits have a large proportion in total agriculture, 27-45%; Albania (36%), North Macedonia (45%), Serbia (28%) and Türkiye (27%). In all these countries except Serbia, vegetables and fruits generate the largest value compared to other crops. In Serbia, cereals have the highest share in total agriculture production value of products, comparable to Bulgaria (44%), Croatia (34%) and Hungary (38%).

For Albania and Türkiye, meat[18] represents roughly 17% of production value in agricultural products, whilst in Serbia it is not a main aggregate and in North Macedonia it is 6%.

Production values of milk are between 11-18% for the represented IPARD countries, which is very similar to the selected EU countries (9-15%) and the EU-27 average (19%).

Albania has the highest share of egg production (7%) value in total agriculture compared to all IPARD countries as well as compared to the EU average (3%). Romania, with 5% is the only neighbouring countries which comes close to the level of Albania. For the remaining IPARD countries this value is around 1-3% (similar to EU average).

Other products include, among others, olives, nuts, fodder crops like dry peas and beans, tobacco and tea. Tobacco is a relatively important product in North Macedonia, which falls under other products. In Türkiye, anise, fennel and coriander are large product groups included under other products.

[18] Refers to indigenous meat, not wild.

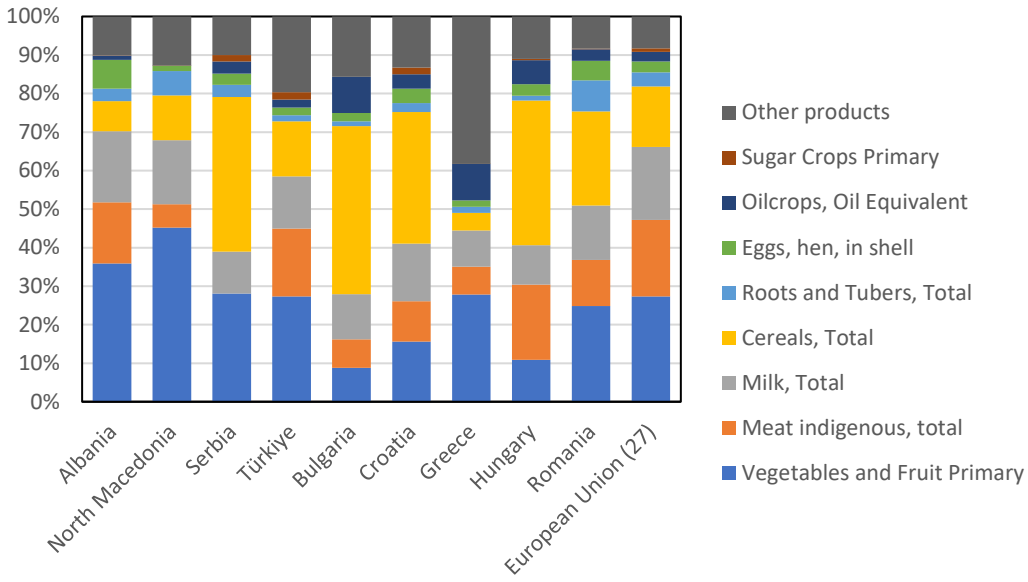

Figure 4-1 Production value of agricultural products, for main aggregates, in % of total agriculture, in 2020. Source: FAOSTAT.

4.4. International trade

Türkiye is by far the largest market among the five IPARD countries, which is also reflected in the size of the international trade flows in agricultural products[19]. In 2021, Türkiye had a positive agricultural trade balance of about 3.5 billion euro. Serbia is also a net exporter of agricultural products (see Figure 4-2). The other IPARD countries are net importers of agricultural products. Especially Albania and Montenegro are importing more agricultural products than they are exporting.

Table 4-4 shows export and import of agricultural products in million euro and trade percentages with the EU and other IPARD countries for the years 2010, 2015, 2020 and, where available, also for 2021.

According to the data available, Albania's export of agricultural products has increased by about 400% between 2010 and 2020. Serbia's and Türkiye's export of agricultural products have increased by 209% and 133% respectively, between 2010 and 2021. Figures for North Macedonia also show a steady increase of agricultural products export after 2010. In Montenegro, the export of agricultural products is slowly increasing, with a minor decrease in 2020, the first year of the COVID-19 pandemic, followed by an increase of 16 million euro in 2021.

[19] Agricultural products are defined in accordance to the WTO Agreement on Agriculture. This excludes fish and fish products, and forestry products. It includes various degrees of processing for different commodities.

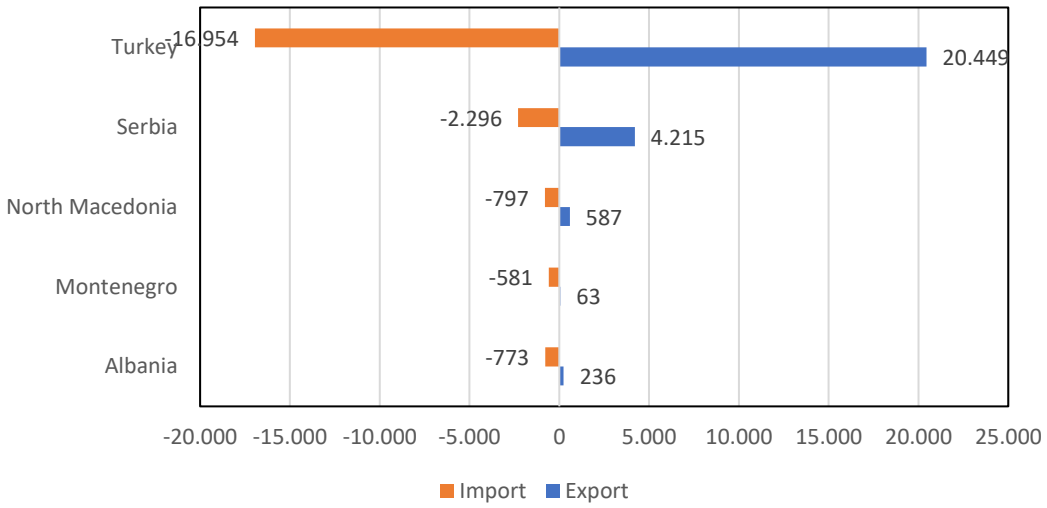

Figure 4-2 Import and export of agricultural products, for IPARD countries, in 2021 for Türkiye, Serbia and Montenegro and 2020 for Albania and North Macedonia, in million EUR. Source: UN Comtrade, calculations WR.

Table 4-4 Export and import of agricultural products, in million EUR and % of trade with EU and IPARD countries, 2010, 2015, 2020 and 2021

	World, in million EUR				% EU				% IPARD			
	2010	2015	2020	2021	2010	2015	2020	2021	2010	2015	2020	2021
Export:												
Albania	47	109	236		68	48	39		20	33	27	
Montenegro	51	60	52	63	13	10	12	12	53	37	48	45
North Macedonia	415	485	587		48	47	50		39	31	26	
Serbia	1 696	2 599	3 639	4 215	50	47	50	53	22	18	14	15
Türkiye	8 963	16 237	17 459	20 449	35	29	27	26	1	1	1	1
Import:												
Albania	611	653	773		61	54	50		14	17	16	
Montenegro	394	456	466	581	28	35	38	37	56	52	47	48
North Macedonia	517	679	797		47	48	47		29	27	30	
Serbia	744	1 374	1 984	2 296	50	65	66	67	16	10	8	8
Türkiye	7 262	12 586	14 638	16 954	28	24	20	20	0	1	1	1

Source: UN Comtrade, calculations WR.

In 2010, Albania exported 68% of its agricultural products to the EU. In 2020, this number dropped to 39%, whilst the export to the other IPARD countries has increased by 7% in the same period. Montenegro's share of export of agricultural products that are destined for the EU has stayed stable between 10-13% over the last ten years. The share of export of agricultural products to the other IPARD countries was about 45% in 2021. North Macedonia's export of agricultural products to the EU was rather stable - at about 50% in 2020, while its export to the other IPARD countries was steadily decreasing between 2010-2020 - from 39% to 26%. The figures for Serbia are similar to North Macedonia with respect to the share of exports going to the EU. Like in North Macedonia, there is also some decrease in the share of exports going to the other IPARD countries.

In terms of import, Serbia's and also Montenegro's share of imports of agricultural products from the EU has gradually increased between 2010-2021, whilst their imports from other IPARD countries have slightly decreased. On the other hand, in Albania the import share of agricultural products from the EU has decreased by 3%. Albania's import from the other IPARD countries shows minor fluctuations and increase between 2010-2015 and stabilisation between 2015-2020.

Türkiye's share in import and export of agricultural products from IPARD countries is low, at around 1%. The export to the EU shows a decrease of 9% between 2010-2021 and the share of total imports of agricultural products coming from the EU has decreased with 7% in the same period.

4.4.1. Export of agricultural products

Table 4-5 shows the share of agricultural products in the total export per IPARD country and the division of selected agricultural subcategories in 2020 and 2021.

The share of agricultural products in the total export of the IPARD countries varies between 10.1% and 19.5%. North Macedonia (10.1%) and Türkiye (10.7) have the lowest share of agricultural products in the total export, followed by Albania (11.1% in 2020), and Montenegro (14.5%). Serbia's (19.5%) share of export of agricultural products represents one fifth of the total export.

The main agricultural export products of Albania are edible vegetables and certain roots and tubers, with a total value of 71 million euro in 2020, followed by oilseeds, with a total value of 42 million euro.

Beverages, spirits and vinegar, with a value of 17 million euro, and meat (12 million euro) are the largest agricultural export products from Montenegro. Tobacco (125 million euro, not shown in the table) and beverages, spirits and vinegar (69 million euro) are the top agricultural export product of North Macedonia, followed by preparations of cereals, flour, starch or milk, with a value of 67 million euro.

Serbia's main agricultural export products are fruit and nuts, with a value of 824 million euro, followed by cereals, with a value of 767 euro. Other agricultural products for Serbia, that are not shown in the table, include tobacco and manufactured tobacco substitutes (387 million euro), animal or vegetable fats and oils and their cleavage products (268 million euro), miscellaneous edible preparations (263 million euro) and food industries, residues and wastes thereof, which also includes animal fodder (245 million euro).

Türkiye's export of agricultural products was 20 billion euro in 2021. The top product category was fruit and nuts, with a value of 4.5 billion euro. Other agricultural products for Türkiye, that are not shown in the table, include animal or vegetable fats and oils and their cleavage products (1.8 billion euro), miscellaneous edible preparations (742 million euro), tobacco and manufactured tobacco substitutes (661 million euro), food industries, residues and wastes thereof (593 million euro) and cotton; not carded or combed (281 million euro).

Table 4-5 Export of agricultural products, in million EUR and in % of all commodities and division into selected agricultural subcategories, 2020 and 2021 depending on country

	Albania 2020	Montenegro 2021	North Macedonia 2020	Serbia 2021	Türkiye 2021
All Commodities	2 116	436	5 807	21 611	190 400
Total agricultural products	236	63	587	4 215	20 449
Agricultural products' share in all commodities	*11.6*	*14.5*	*10.1*	*19.5*	*10.7*
Live animals and meat	1	13	12	86	833
Dairy produce; birds' eggs; natural honey; ...	3	0	8	102	726
Edible vegetables and certain roots and tubers	71	3	63	114	1 479
Fruit and nuts	23	6	59	824	4 538
Cereals	0	0	7	767	352
Products of the milling industry; malt; starches; ...	1	0	2	77	1,217
Oil seeds and oleaginous fruits; miscellaneous grains,...	42	1	5	164	490
Preparations of cereals, flour, starch or milk ...	8	1	67	175	1 833
Preparations of vegetables, fruit, nuts ...	24	0	63	141	2 279
Sugars and sugar confectionery	0	0	7	102	840
Cocoa and cocoa preparations	1	2	12	72	656
Beverages, spirits and vinegar	12	17	69	281	382

Source: UN Comtrade, calculations WR.

4.4.2. Import of agricultural products

The share of agricultural products in the total import of the IPARD countries (see Table 4-6) shows the share of agricultural products in the total imports and the division varies between 7.4% and 23.3%. Türkiye (7.4%) and Serbia (8%) have the lowest share of agricultural products in their total import, followed by North Macedonia (10.5%). Albania (16.3%) and especially Montenegro (23.3%) have the highest relative imports of agricultural products.

Table 4-6 Import of agricultural products, in million EUR and in % of all commodities and division into selected agricultural subcategories, 2020 and 2021 depending on country

	Albania 2020	Montenegro 2021	North Macedonia 2020	Serbia 2021	Türkiye 2021
All Commodities	4 747	2 490	7 625	28 567	229 461
Total agricultural products	773	581	797	2 296	16 954
Agricultural products' share in all commodities	*16.3*	*23.3*	*10.5*	*8.0*	*7.4*
Live animals and meat	64	111	109	125	327
Dairy produce; birds' eggs; natural honey; ...	27	49	60	116	93
Edible vegetables and certain roots and tubers	18	21	20	121	618
Fruit and nuts	58	31	48	286	777
Cereals	88	10	32	29	3 592
Products of the milling industry; malt; starches; ...	13	21	21	18	149
Oil seeds and oleaginous fruits; miscellaneous grains,...	13	5	19	96	2 193
Preparations of cereals, flour, starch or milk ...	56	49	57	162	223
Preparations of vegetables, fruit, nuts ...	38	20	33	123	128
Sugars and sugar confectionery	33	11	40	56	119
Cocoa and cocoa preparations	19	24	45	139	643
Beverages, spirits and vinegar	93	68	44	142	410

Source: UN Comtrade, calculations WR.

The largest amounts of agricultural imports of Albania consist of beverages, spirits and vinegar, with a value of 93 million euro, followed by cereals, with a value of 88 million euro.

Live animals and meat represent one sixth of Montenegro's agricultural products import, with a value of 111 million euro, followed by beverages, spirits and vinegar, with a value of 68 million euro. Live animals and meat with a value of 109 million euro are the main agricultural import products for North Macedonia, followed by dairy produce; birds' eggs; natural honey, with a value of 60 million euro.

Serbia's top agricultural import products are fruit and nuts, with a value of 286 million euro, followed by preparations of cereals, flour, starch or milk, with a value of 162 euro. Other agricultural imports (not in the table) for Serbia include miscellaneous edible preparations (224 million euro), tobacco and manufactured

tobacco substitutes (221 million euro), food industries, residues and wastes thereof (125 million euro), animal or vegetable fats and oils and their cleavage products (100 million euro) and coffee, tea, mate and spices (80 million euro).

Türkiye's import of agricultural products in 2021 had a value of 17 billion euro. The main agricultural product are cereals, with a value of 3.6 billion euro, followed by oil seeds and oleaginous fruits; miscellaneous grains, worth of 2.2 billion euro. Other agricultural products (not shown in the table) for Türkiye include animal or vegetable fats and oils and their cleavage products (2.1 billion euro), cotton; not carded or combed (2 billion euro), food industries, residues and wastes thereof (1.8 billion euro), miscellaneous edible preparations (691 million euro) and tobacco and manufactured tobacco substitutes (544 million euro).

4.5. Conclusions

Summarising the analysis of the main agricultural sector indicators, it can be concluded that all IPARD countries except for Türkiye, are characterised with small scale and fragmented production, where average farm size varies between 1.2-6.2 ha, (in Albania being the smallest and in Serbia – the largest). For Türkiye, with 7.0 ha in 2017, the average farm size is slightly bigger. The small farm size is one of the weaknesses of the agricultural sector in IPARD countries as small farms usually are characterised with a low level of technology and equipment, low quality of buildings and storage facilities, low marketing barging power and high production costs, which in their turn lead to inefficiencies in production.

The analysis of the sector shows that agricultural sector is very important and can offer a competitive advantage to all IPARD countries. The value of production varies among the countries, mainly related to the country size. Türkiye had the largest production value of 47.6 billion euro in 2020, followed by Serbia (4 billion) Albania (2 billion euro) and North Macedonia (0.9 billion euro). Montenegro has no data about the value of agricultural production, but the World Bank reports a total value added in agriculture, forestry and fisheries of about 0.3 billion euro.

The importance of agricultural sector in the economy for all IPARD counties is also to be seen from a high share of GVA of agriculture in GDP (between 17.7% for Albania and 5.6% for Türkiye), compared to the selected EU countries (Bulgaria, Croatia, Greece, Hungary, Romania), that in general have a share between 3.1-4.3%, while the EU average is 1.6%. It is noticeable that in 2021, in all IPARD countries the share of GVA has decreased (except for Serbia) as a possible consequence of COVID 19 pandemic with disruptions in agricultural exports and changing market demands.

With regards to the number of animals, IPARD countries follow mostly the EU trend with some slight exceptions. For instance, following the EU trend, the number of laying hens has been increasing in all assessed countries except for North Macedonia and Serbia. In North Macedonia next to this decrease, the number of meat chickens has also drastically decreased (it has halved in 2020 compared to 2010).

Similar to the EU MS, in IPARD countries, except for Türkiye, there is a decrease in the number of cattle for meat.

Judging from the production values of agricultural products, primary vegetables and fruits can offer a high potential to improve the competitiveness of IPARD countries, since primary vegetables and fruits have the largest proportion in total agriculture production value of these countries (a share of 27-45%). In Serbia, cereals are dominating and with 40%, have the highest share in total agriculture production value of products, comparable to Bulgaria (44%), Croatia (34%) and Hungary (38%).

Production values of milk are between 11-18% for the represented IPARD countries, which is very similar to the selected five neighbouring EU countries (9-15%) and the EU-27 average (19%).

For Albania, the egg production can offer a good potential to increase the competitiveness as it has the highest share of production (7%) value in total agriculture compared to all IPARD countries as well as compared to the EU average (3%).

In terms of trade, Serbia is a net exporter of agricultural products. Furthermore, in 2021 Türkiye had a positive agricultural trade balance of about 3.5 billion euro. The other IPARD countries are net importers of agricultural products, where Albania and Montenegro are importing more agricultural products than they are exporting.

In general, it can be concluded that all IPARD countries have increased their export of agricultural products over the years, but in some countries the increase was large and rapid, while in the others it was steadier and slower. The most drastic increase is seen by Albania (by about 400% between 2010 and 2020). Serbia's and Türkiye's export of agricultural products have also largely increased (by 209% and 133% respectively, between 2010 and 2021). In North Macedonia agricultural products export has had a steady increase during the last decade. In Montenegro the export of agricultural products has also increased but with slower pace than in other countries.

The main agricultural export products of Albania in last years were edible vegetables and certain roots and tubers, while for Montenegro and North Macedonia these were beverages, spirits, vinegar and tobacco (mainly for North Macedonia). Serbia's main agricultural export products were fruit and nuts, followed by cereals and tobacco.

The top product category in Türkiye's export of agricultural products in 2021 was fruit and nuts.

5. CROSS-COUNTRY OVERVIEW OF MARKET PRICES OF THE MAIN AGRICULTURAL PRODUCTS AND REVENUES AND COSTS (E.G., INPUT COSTS, ETC.) IN THE IPARD COUNTRIES

5.1. Introduction

This section corresponds to activities outlined under the Task 3 (see Section 2.2) and presents the cross-country analysis of market prices of main agricultural products and revenues of IPARD countries. The data on market prices (farm-gate) for selected 15 products for IPARD countries are analysed and cross-compared. The data on input costs and revenues is gathered and analysed for selected 3 products (milk, tomato and apples). The prices and the costs of the products are discussed under each agricultural sub-sector to which they belong to. To keep the Tables and Figures concise, the analysis in this section is presented for 2 or 3 years (e.g., 2010, 2015, 2020 or 2021 if available). The detailed analysis of trends of 2010-2020 (and whenever available 2021) can be found in Annex Country Factsheets.

5.2. Agricultural sector

The producer price indices of agriculture in Figure **5-1** show that, with exception of Türkiye and Albania, most IPARD countries faced a moderate price increase in local currency between 2015 and 2021. Price developments for Montenegro are not shown in the figure due to the lack of data.

In Albania, the agricultural prices remained stable in the same period. North Macedonia and Serbia faced a price increase of about 10% in the same period. This is comparable to the developments in the EU countries Greece, Croatia and Bulgaria. Other EU countries Hungary and Serbia showed an even higher price increase of about 22% in the same time. Türkiye showed exceptional producer prices increase of about 110% in the 2015-2021 period. This increase went hand-in-hand with the devaluation of the Turkish lira against euro, with the lira accounting for less than one third of its 2015 value in 2021.

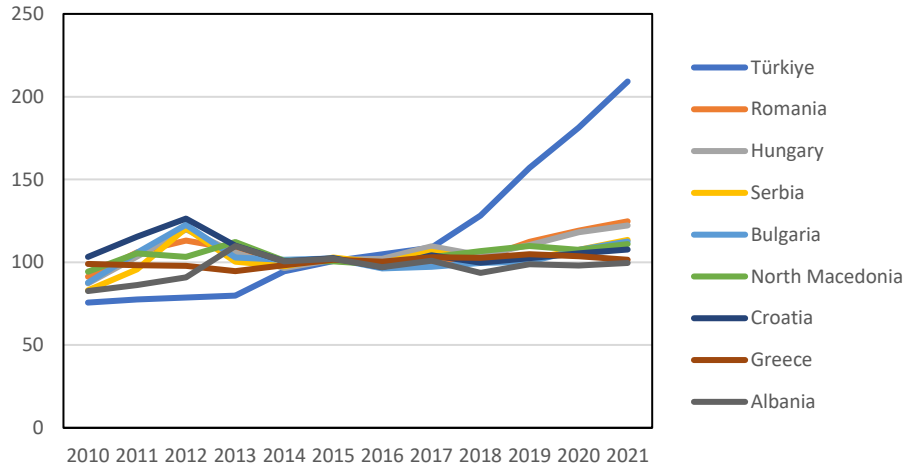

Figure 5-1 Producer price index of Agriculture, 2014-2016 = 100, in 2010-2021. Source: FAO.

5.3. Livestock dairy sector

5.3.1. Producer prices of milk

Serbian, Albanian and North Macedonian milk prices in local currency showed only a slight increase of no more than 4% between 2015 and 2021 (see Figure **28**). This is in line with EU countries like Croatia and Romania, while EU countries Bulgaria and Hungary faced a higher increase than most of IPARD countries of up to 26% in the same

period. Greece faced a milk price decrease in the 2015-2021 period. Türkiye showed a notable milk price increase of 132% between 2015 and 2021. No milk price information is provided for Montenegro because of lack of data.

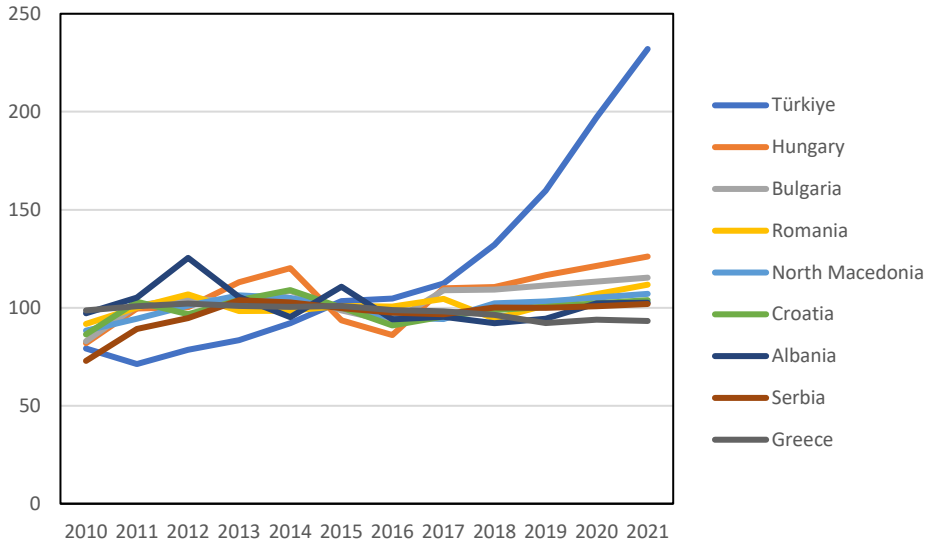

Figure 5-2 Producer price index of Milk, Total, 2014-2016 = 100, in 2010-2021. Source: FAO.

Within the group of analysed IPARD countries, the prices of cow milk in euro are the lowest in Türkiye, 275 euro per tonne, and the highest in Albania, 355 euro per tonne. For the shown EU countries Bulgaria, Croatia, Greece, Hungary and Romania, this price lies between 295 and 437 euro per tonne, with an average of 346 euro per tonne for the whole EU.

Table 5-1 Producer prices in EUR/tonne, of milk, in 2010, 2015 and 2020

	Milk, whole fresh cow			Milk, whole fresh goat			Milk, whole fresh sheep		
	2010	2015	2020	2010	2015	2020	2010	2015	2020
Albania	338	377	355	334	374	467	327	393	747
North Macedonia	276	313	322	258	302	317	472	523	610
Serbia	226	262	272	342		384	385		682
Türkiye	458	386	275	682	626	478	650	666	503
Bulgaria	257	295		219	311		453	650	
Croatia	294	326	336	480	587	604	1 298	1 336	1 366
Greece	373	418	387	593	619	610	953	941	861
Hungary	261	265	303					666	
Romania	468	461	437				351	529	582
EU average	317	317	346	483	648	670	797	902	1 004

Source: FAO; converted with Eurostat Euro-USD average exchange rates. EU average is unweighted average of available prices of EU MS.

For goat milk, Türkiye has the highest price and North Macedonia - the lowest, 478 and 317 euro per tonne respectively. In the EU, the goat milk price is with an average of 670 euro per kg, somewhat higher than in the IPARD countries.

For sheep milk, prices in the IPARD countries lie between 503 euro per tonne in Türkiye and 747 euro per tonne in Albania. Although the average EU sheep milk price is higher, i.e., 1 004 euro per tonne, sheep milk prices in countries like Romania and Hungary have comparable levels as in the IPARD countries.

5.3.2. Costs and revenues of milk

For cow milk, an estimation of costs and revenues in the countries of analysis is made by the NEs using a combination of data published in secondary sources, databases and interviews. Table 5-2 provides an overview of the estimations and gives some insights in costs and revenues in euro per kg of milk for all countries of analysis, although it is difficult to directly compare between countries for all indicators. The main reasons are the differences in the availability of data, in data structure and aggregation, in definitions of indicators, and in calculation methods. In addition, the characteristics of (groups of) farms for which the data estimation was made, differ per country. To each country also applies that the farms are not always representative for the whole domestic sector (see Sections 3.4.2; 4.4.2; 5.4.2; 6.4.2; 7.4.2 in Annex Country Factsheets for a more detailed overview of costs and revenues per country).

The market price is included in the revenue estimation for all countries of analysis. The average market price per kg was more or less the same in Montenegro, North Macedonia and Serbia in 2021, i.e., 0.31-0.32 euros. Compared to the other countries of analysis, the market price per kg for the group of farms used for estimation was highest in Albania, i.e., 0.43 euros, and lowest in Türkiye, i.e., 0.26 euros.

In all countries, there is a governmental budgetary support of agriculture and rural development, which includes market and direct producer support. At the same time, not all NEs could provide the estimations of subsidies per kg of milk specifically. For Montenegro, North Macedonia and Türkiye, estimations of subsidies per kg of milk were provided. Of the three countries, Montenegrin group of dairy farmers used for estimation, include the highest estimated subsidy per kg of milk in their revenue, i.e., 0.09 euros. In North Macedonia and Türkiye, dairy farmers used for estimation received 0.03 and 0.02 euro per kg of milk respectively. For Albania and Serbia, the information about subsidies per kg of milk was not provided, and therefore not shown in the table.

Dairy farms have milk as their main product. In addition, these farms sell meat, life animals (e.g. calves) and manure in addition to their farm income. The method of attribution of costs and margins to milk and to other products on milk farms differs among countries. Albania, North Macedonia include other revenues per kg of milk in the overall costs and revenue calculation. For Albania and North Macedonia, other revenues are 0.28 euro per kg of milk and 0.08 euro per kg of milk respectively. Serbia estimates the total costs of milk by attributing the total farm costs to milk by using the share of milk sales in the total sales, including meat. Türkiye estimates the total costs of milk per kg by i) subtracting the meat and calf revenues per head from the total farm costs per head, and ii) dividing the result by the milk yield per head. For Montenegro, the method of attribution of other revenues is unknown. Therefore, for the latter three countries of analysis, data for other revenue is not shown in the table.

The total costs per kg in the table represent the costs of milk per kg, or the costs of milk production expressed in kg of milk, depending on the other revenue attribution method per country as described above. Furthermore, the inclusion of the reimbursement of family labour (if applicable) varies per country as well. North Macedonia and Serbia estimate costs excluding family labour of around 0.24 and 0.26 euro per kg of milk respectively. Albania and North Macedonia report the estimated costs of kg milk of 0.60 and 0.30 euro respectively, including the reimbursement of family labour. The total costs account for 0.30 euro per kg in Türkiye, including total amount of labour cost. The total costs include specific costs, and overhead and external costs. No estimations of the specific costs of milk were provided for Montenegro. The

overhead and external factor costs in Montenegro account for around 0.37 euro per kg of milk.

The information on farm income follows from the estimations of costs and revenues. Dairy farmers in North Macedonia and Serbia receive a farm income of 0.07 and 0.06 euro per kg of milk respectively, excluding subsidies. In Albania, dairy farmers receive 0.10 euro per kg of milk, but whether this amount includes subsidies is unknown. For these three countries, family labour is yet to be reimbursed from the calculated farm income. In Türkiye, dairy farmers receive a negative income, whether the subsidies are included or not. Cost calculation includes total labour cost, which means opportunity cost of family labour is counted. For Montenegro, an indication of farm income could not be given due to insufficient cost data.

Table 5-2 Costs and revenues of milk, in euro per kg, 2021

in EUR/kg	Albania	Montenegro	North Macedonia	Serbia	Türkiye
Revenues:					
Market price	0.43	0.32	0.31	0.32	0.26
Meat, calf or manure revenue	0.28		0.08		
Subsidies		0.09	0.03		0.02
Total costs:					
excluding family labour			0.24	0.26	
including family labour	0.60		0.30		
no information on inclusion of family labour					0.30
Specific costs					
Overhead and external factor costs		*0.37*			
Farm income:					
excluding family labour and subsidies			0.07 (23%)	0.06 (19%)	
including subsidies, excluding family labour			0.11 (31%)		
excluding subsidies, including family labour			0.01 (5%)		-0.04 (-15%)
including subsidies and family labour			0.05 (14%)		-0.02 (-8%)
excluding family labour, status subsidies unknown	0.10 (14%)				

5.4. Livestock eggs and honey sector

The IPARD countries show differences in the development of prices of eggs in local currency, see Figure 5-3. For Montenegro, price developments could not be assessed,

since egg price data is lacking. While in Serbia and in North Macedonia the prices of eggs hardly changed in the 2015-2021 period, Albania showed a moderate price increase of around 7%. For comparison, the EU countries Croatia and Bulgaria faced egg price decreases in the 2015-2021 period, while egg prices in Greece remained stable. Romania and Hungary had higher increases of 23% and 43% respectively. Up to 2020, the egg price increase of Türkiye was comparable to the Hungarian egg price development. But in 2021, Türkiye showed the highest increase of all countries shown in the figure, including the EU countries - 55% compared to 2015.

From Table 5-3 could be seen that Türkiye has the lowest price in euro for eggs of the IPARD countries and of the EU countries shown in the table, i.e. 763 euro per tonne. Albania has the highest price, i.e. 3 075 euro per tonne in 2020. Serbia has a price of 1 357 euro per tonne, which is almost similar to the EU average price for eggs.

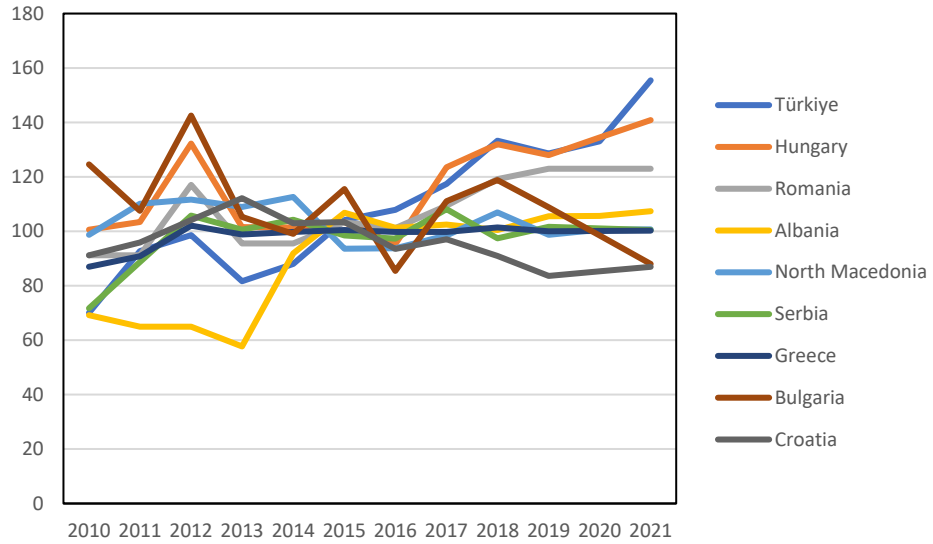

Figure 5-3 Producer price index of Eggs, Primary, 2014-2016 = 100, in 2010-2021. Source: FAO.

For natural honey, the producer prices in local currency did not change much in Albania and North Macedonia in the 2015-2021 period, see Figure 5-4. This trend is comparable to the most EU countries shown in the figure, with the exception of Bulgaria. In Serbia, an increase of 30% comparable to Bulgaria could be seen in the figure for the same period. In Türkiye, natural honey became 120% more expensive in the period 2015-2021, which went hand in hand with the devaluation of the Turkish lira. No producer price information for honey is provided for Montenegro because of missing data.

Table 5-3 shows that of the IPARD countries, Albania has the highest price for natural honey in euros, i.e., 11 012 euro per tonne in 2020. This price is also higher than the EU average and in the selected EU countries surrounding the Western Balkan region shown in the table. Serbia has the lowest natural honey price of the IPARD countries, i.e., 3 455 euro per tonne. The prices of EU countries Bulgaria, Croatia and Hungary are lower than in Serbia.

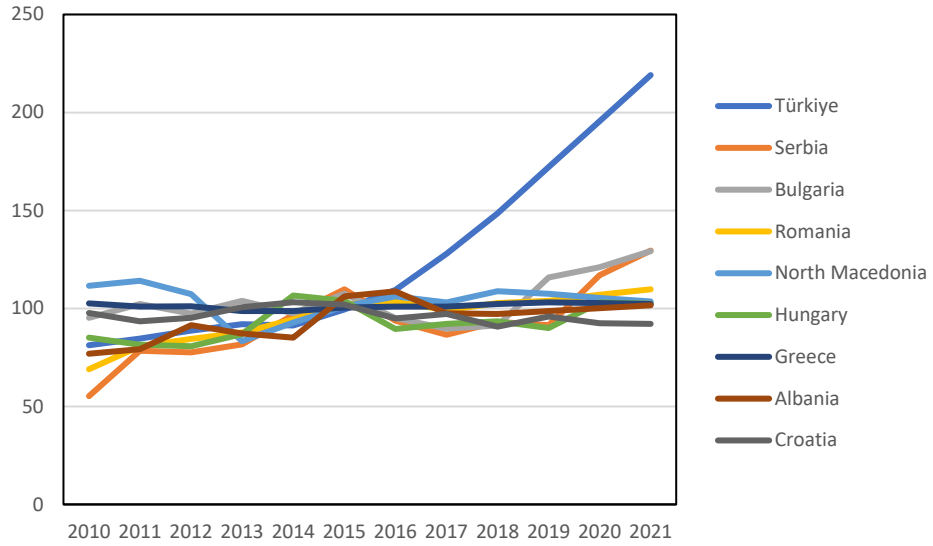

Figure 5-4 Producer price index of Natural Honey, 2014-2016 = 100, in 2010-2021. Source: FAO.

Table 5-3 Producer prices in EUR/tonne, of eggs, hen in shell, and natural honey, in 2010, 2015 and 2020

	Eggs, hen, in shell			Honey, natural		
	2010	2015	2020	2010	2015	2020
Albania	1 814	2 760	3 075	7 620	10 374	11 012
North Macedonia	1 344			4 053	3 674	3 814
Serbia	1 100	1 290	1 357	1 865	3 161	3 455
Türkiye	1 615	1 5 85	763	8 834	7 136	5 293
Bulgaria	1 358	1 259	1 069	2 445	2 758	3 101
Croatia	1 621	1 761	1 463	3 471	3 468	3 169
Greece	2 401	2 774	2 767	5 932	5 813	5 949
Hungary	1 217	1 112	1 284	2 756	2 992	2 615
Romania	2 184	2 340	2 558	3 826	5 371	5 155
EU average	1 316, n=26	1 416, n=24	1 410, n=24	4 198, n=15	5 577, n=16	5 536, n=14

Source: FAO; converted with Eurostat Euro-USD average exchange rates. EU average is unweighted average of available prices of EU MS.

5.5. Livestock meat sector

Figure 5-5 shows that the meat prices in the local currency in North Macedonia and Albania were stable or slightly decreasing in the period 2015-2021. This is comparable to the meat price developments in Bulgaria, Croatia and Greece. Serbia and Türkiye have the highest meat price increases in the local currency of the IPARD countries. No producer price information for meat is provided for Montenegro because of missing data.

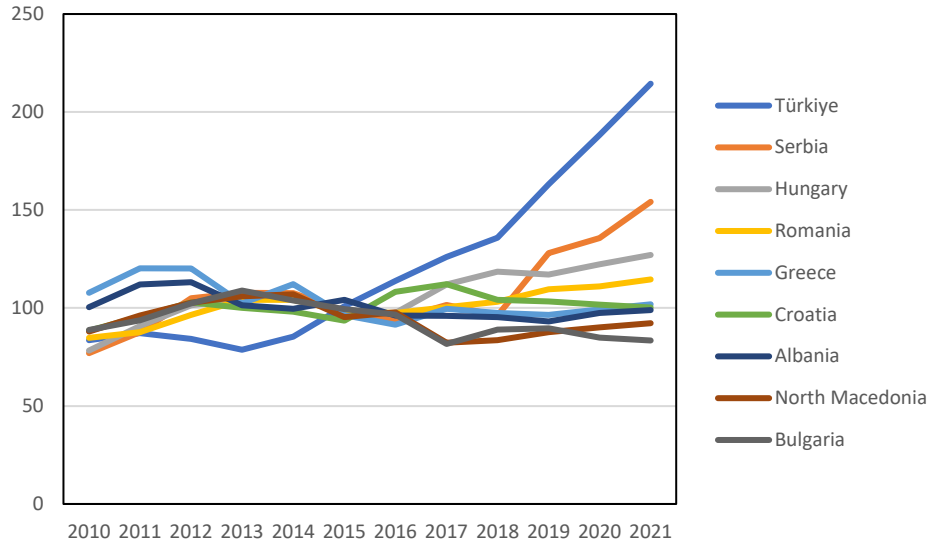

Figure 5-5 Producer price index of Meat, Total, 2014-2016 = 100, in 2010-2021. Source: FAO.

Of the IPARD countries, cattle prices in euro per tonne were the lowest in Serbia with 1 710 per tonne, and the highest in Türkiye, with 3 373 euro per tonne, see Table 5-4. Also in the EU, there is a variation in cattle prices, with, e.g. Greece having a price of 4 018 euro per tonne and the EU average being about 1 836 euro per tonne.

The variation in prices is also visible for chicken, pig and sheep. Within the group of the IPARD countries, the average chicken price was relatively high in Türkiye, with 2 670 euro per tonne in 2020, and relatively low in North Macedonia, with 808 euro per tonne. In the selected EU countries, this price varied between 902 euro per tonne and 1 451 euro per tonne in 2020. The EU average price for chicken was 1 043 euro per tonne in 2020. Pig prices in euro were the highest in Albania, with 3 109 euro per tonne in 2020 and the lowest in Serbia, with 1 296 euro per tonne. The EU average price for pig was 1 336 euro per tonne in 2020. Türkiye has no reported prices for pig as this product is sold in limited number of shops. For sheep, prices in Albania, North Macedonia and Serbia were comparable to the selected EU countries. The EU average price for sheep meat was 2 170. Türkiye had a relatively high price of sheep meat in euro, with 4 601 euro per tonne in 2020.

Table 5-4 Producer prices in EUR/tonne, of meat, live weight, in 2010, 2015 and 2020

	Meat live weight, cattle			Meat live weight, chicken			Meat live weight, pig			Meat live weight, sheep		
	2010	2015	2020	2010	2015	2020	2010	2015	2020	2010	2015	2020
Albania	2 639	2 724	3 170	1 996	2 475	2 492	2 103	2 467	3 109	2 607	2 478	2 137
North Macedonia	1 414	1 815	1 899	512	493	808	1 370	1 848	1 882	2 271	2 455	2 083
Serbia	1 523	1 826	1 710	879	935	819	1 185	1 231	1 296	1 917	2 157	1 843
Türkiye	5 484	4 550	3 373		2 707	2 670				6 719	5 081	4 601
Bulgaria	1 173	1 267	1 511	924	1 031	757	1 153	1 484	1 361	2 168	1 898	2 677
Croatia	1 704	1 919	1 932	993	970	963	1 211	1 173	1 280	2 983	2 661	2 813
Greece	2 444	3 955	4 018	1 494	1 451	1 408	2 059	2 014	2 180	1 333	2 308	2 305
Hungary	1 331	1 343	1 218	775	984	729	1 078	1 117	1 252	2 417	2 465	2 722
Romania	1 151	1 361	1 626	921	902	844	1 170	1 177	1 386	1 277	1 820	1 972
EU average	1 621 n=18	1 839n=20	1 836 n=20	998 n=22	1 139 n=21	1 043 n=21	1 172 n=17	1 198n=18	1 336 n=18	1 821 n=20	1 964 n=20	2 170 n=19

Source: FAO; converted with Eurostat Euro-USD average exchange rates. EU average is unweighted average of available prices of EU MS.

5.6. Fruit and vegetables

5.6.1. Producer prices of fruit and vegetables

In Albania, fruit prices remained stable in the period of 2015-2021 (see Figure 5-6). In North Macedonia and Serbia, fruit prices increased up to 16%, which is comparable to the most selected EU countries shown in the figure. The prices were also less volatile than for example in Hungary in the 2010-2021 period. Only Türkiye showed a strong fruit price increase of about 125%. No producer price information for fruit and vegetables is provided for Montenegro because of missing data.

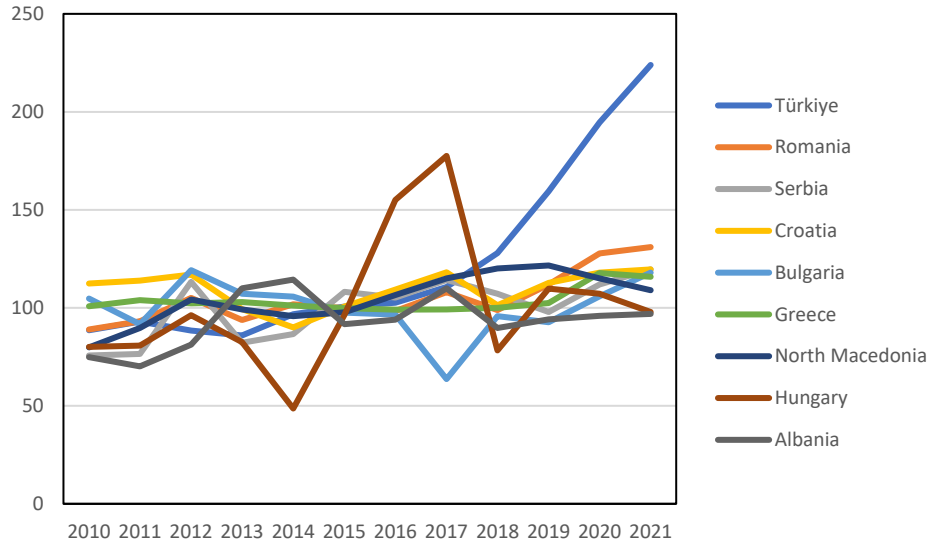

Figure 5-6 Producer price index of Fruit, Primary, 2014-2016 = 100, in 2010-2021. Source: FAO.

Table 5-5 Producer prices in EUR/tonne, of fruit, in 2020

	Apples	Cherries	Cherries, sour	Grapes	Oranges	Raspberries	Watermelons
Albania	447	897		537	439		147
North Macedonia	358	978	397	193			141
Serbia	421	1 597	663	701			218
Türkiye	256	709	421	373	183		126
Bulgaria	287	678	377	332		1 563	136
Croatia	425	2 189	406	634	732		192
Greece	646	1 730		835	455		198
Hungary	169	1 018	483	484		2 801	181
Romania	662	2 032	1 607	713			340
EU average	653, n=26	2 611, n=17	1 383, n=9	812, n=13	566, n=7	6 752, n=10	259, n=9

Source: FAO; converted with Eurostat Euro-USD average exchange rates. EU average is unweighted average of available prices of EU MS.

The producer prices of different fruit products vary between the IPARD countries, see Table 5-5. For apples, cherries, sour cherries, grapes, oranges, raspberries and watermelons prices were below the EU average in 2020, and similar to the variation in price levels of the selected EU countries.

In Albania, North Macedonia and Serbia, fruit prices in local currency increased up to 14%, which is comparable to the most selected EU countries shown in Figure 5-7, with exception of Romania and Hungary, which experienced higher price increases. Türkiye showed a strong vegetable price increase of about 65%, somewhat higher than the price increase in Romania, i.e. 54% between 2015 and 2021.

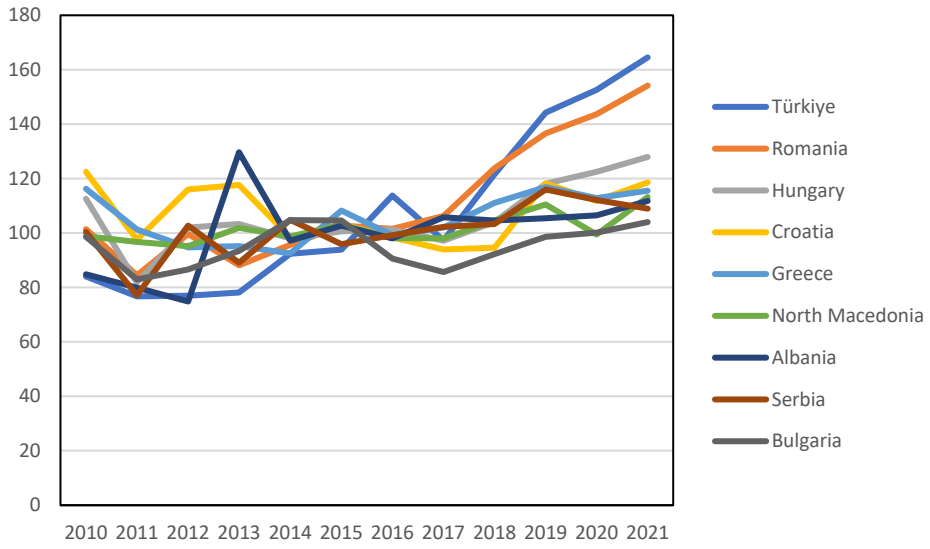

Figure 5-7 Producer price index of Vegetable, Primary, 2014-2016 = 100, in 2010-2021. Source: FAO.

Table 5-6 Producer prices in EUR/tonne, of vegetables, in 2020

	Cabbages and other brassicas	Chillies and peppers, green	Cucumbers and gherkins	Tomatoes
Albania	229	469	472	404
North Macedonia	155	389	465	607
Serbia	158		373	497
Türkiye	163	294	228	203
Bulgaria	173	389	628	457
Croatia	202	542	464	466
Greece	359	577	584	683
Hungary	266	546	618	323
Romania	349	869	689	953
EU average	367, n=24	821, n=12	828, n=22	1 078, n=25

Source: FAO; converted with Eurostat Euro-USD average exchange rates. EU average is unweighted average of available prices of EU MS.

The producer prices of selected vegetable products vary between the IPARD countries, see Table 5-6. For cabbages and other brassicas, chillies and peppers, cucumbers and gherkins, and tomatoes, prices in the IPARD countries were below the EU average in 2020, and comparable to the variation in price levels of the selected EU countries.

5.6.2. Costs and revenues of apples and tomatoes

For apples and tomatoes, an estimation of costs and revenues in the countries of analysis is made by the National Experts using a combination of data published in secondary sources, databases and interviews. Table 5-8 provides an overview of the estimations and gives some insights in costs and revenues in euro per kg of apples and tomatoes respectively for all countries of analysis, although it is difficult to directly compare between countries for all indicators. The main reasons are the differences in the availability of data, in data structure and aggregation, in definitions of indicators, and in calculation methods. In addition, the characteristics of (groups of) farms for which the data estimation was made differ per country. To each country applies that the farms are not always representative for the whole domestic sector (see Sections 3.7.2; 4.7.2; 5.7.2; 6.7.2; 7.7.2 in Annex Country Factsheets for a more detailed overview of costs and revenues per country).

In all countries, there is a governmental budgetary support of agriculture and rural development, which includes market and direct producer support. At the same time, not all NEs could provide the estimations of subsidies per kg of product specifically. For North Macedonia an estimation of subsidies of 0.02 euro per kg of apples was provided. For other countries, the information about subsidies per kg apples was not provided, and therefore is not shown in the table.

The market price is included in the revenue estimation for all countries of the analysis. For apples, the average market price per kg for farms used for estimation was more or less the same for Albania and Serbia (0.31 – 0.32 euro). Compared to the other countries of analysis, the market price per kg of apples was highest in Montenegro, i.e., 0.51 euro, and lowest in Türkiye, i.e. 0.11 euro.

The total costs per kg of apples include specific costs, and overhead and external costs. No estimations of the specific costs of apples were provided for Montenegro. The specific costs in Montenegro account for around 0.32 euro per kg of apples. Furthermore, the inclusion of the reimbursement of family labour (if applicable) varies per country. North Macedonia and Serbia estimate costs excluding family labour reimbursement of around 0.11 and 0.14 euro per kg of apples respectively. Albania and North Macedonia report the estimated costs of kg of apples of 0.12 and 0.11 euro respectively, including family labour reimbursement. The total costs account for 0.07 euro per kg in Türkiye, family reimbursement is included in this amount.

The information on farm income follows from the estimations of costs and revenues. Apple growers in North Macedonia and Serbia receive a farm income of 0.05 and 0.15 euro per kg of apples respectively, excluding subsidies. In Albania, apple growers receive 0.19 euro per kg of apples, but whether this amount includes subsidies is unknown. For these three countries, family labour is yet to be reimbursed from the revenue. In Türkiye, apple growers receive an income of 0.04 euro per kg of apples, excluding subsidies. For Montenegro, an indication of farm income could not be given due to insufficient cost data.

Also, for tomatoes, the average prices were estimated. The average market price per kg was 0.42-0.47 euro for North Macedonia, Albania and Serbia. Compared to these three countries of analysis, the market price per kg was highest in Montenegro, i.e., 0.69 euro, and lowest in Türkiye, i.e., 0.23 euro.

Table 5-7 Costs and revenues of apples, in euro per kg, 2021

in EUR/kg	Albania	Montenegro	North Macedonia	Serbia	Türkiye
Revenues:					
Market price	0.31	0.51	0.16	0.32	0.11
Subsidies			0.02		
Total costs:					
excluding family labour			0.11	0.14	
including family labour	0.12		0.11		
no information on inclusion of family labour					0.07
Specific costs		0.32			
Overhead and external factor costs					
Farm income:					
excluding family labour and subsidies			0.05 (33%)	0.18 (55%)	
including subsidies, excluding family labour			0.08 (41%)		
excluding subsidies, including family labour			0.05 (30%)		0.04 (38%)
including subsidies and family labour			0.07 (39%)		
excluding family labour, status subsidies unknown	0.19 (61%)				

It is evident that in all countries of the analysis tomato growers receive some governmental support as indicated above, but only for North Macedonia, an estimation of subsidies of about 0.01 euro specifically per kg of tomatoes was provided. For other countries, the information about subsidies per kg tomatoes was not provided, and therefore is not shown in the table.

The total costs per kg of tomatoes include specific costs, and overhead and external costs. No estimations of the specific costs of apples were provided for Montenegro. The specific costs in Montenegro account for around 0.61 euro per kg of tomatoes. Also, for tomatoes, the inclusion of the reimbursement of family labour (if applicable) varies per country. North Macedonia and Serbia estimate costs of around 0.24 and 0.23 euro per kg of tomatoes respectively, excluding family labour. Albania and North Macedonia report the estimated costs of kg of tomatoes of 0.28 and 0.29 euro respectively including the reimbursement of family labour. The total costs account for 0.21 euro per kg in Türkiye, the reimbursement of family labour is included in this amount.

Given the above costs and revenues, tomato growers in North Macedonia and Serbia receive an estimated farm income of 0.18 and 0.24 euro per kg of tomatoes respectively, excluding subsidies. In Albania, tomato growers receive 0.15 euro per kg

of apples, but whether this amount includes subsidies is unknown. For these three countries, family labour is yet to be reimbursed from the revenue. In Türkiye, tomato growers receive an income of 0.02 euro per kg of tomatoes, no subsidies are existing and family labour reimbursement is included in this income. For Montenegro, an indication of farm income could not be given due to insufficient cost data.

Table 5-8 Costs and revenues of tomatoes, in euro per kg, 2021

in EUR/kg	Albania	Montenegro	North Macedonia	Serbia	Türkiye
Revenues:					
Market price	0.43	0.69	0.42	0.47	0.23
Subsidies			0.01		0
Total costs:					
excluding family labour			0.24	0.23	
including family labour	0.28		0.29		
no information on inclusion of family labour					0.21
Specific costs		0.61			
Overhead and external factor costs					
Farm income:					
excluding family labour and subsidies			0.18 (44%)	0.24 (51%)	
including subsidies, excluding family labour			0.19 (44%)		
excluding subsidies, including family labour			0.13 (31%)		0.02 (10%)
including subsidies and family labour			0.19 (44%)		
excluding family labour, status subsidies unknown	0.15 (36%)				

5.7. Cereals, potatoes and other crops

For Montenegro no producer price assessment for cereals, potatoes and other crops could be made because of missing data. In Albania, North Macedonia and Serbia, prices of cereals have not been changing a lot during the 2015-2021 period, see Figure 5-8. Cereals prices in Albania decreased by about 15% between 2015 and 2021. In North Macedonia, cereal prices remained stable, and in Serbia increased by about 13% in the same period. These developments are comparable with the selected EU countries Greece, Croatia, Bulgaria and Romania. In Türkiye, cereal prices notably increased, i.e. with more than 132% in the 2015-2021 period.

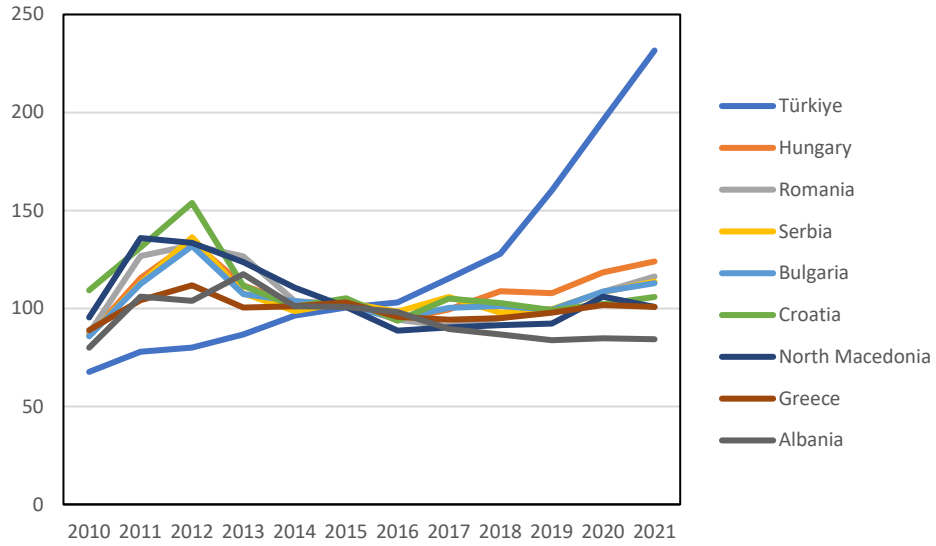

Figure 5-8 Producer price index of Cereals, Total, 2014-2016 = 100, in 2010-2021. Source: FAO.

In the IPARD countries, prices of roots and tubers, including potatoes, changed between 6% and 43% in 2015-2021, see Figure 5-9. These growth numbers are comparable to the developments in the selected EU countries.

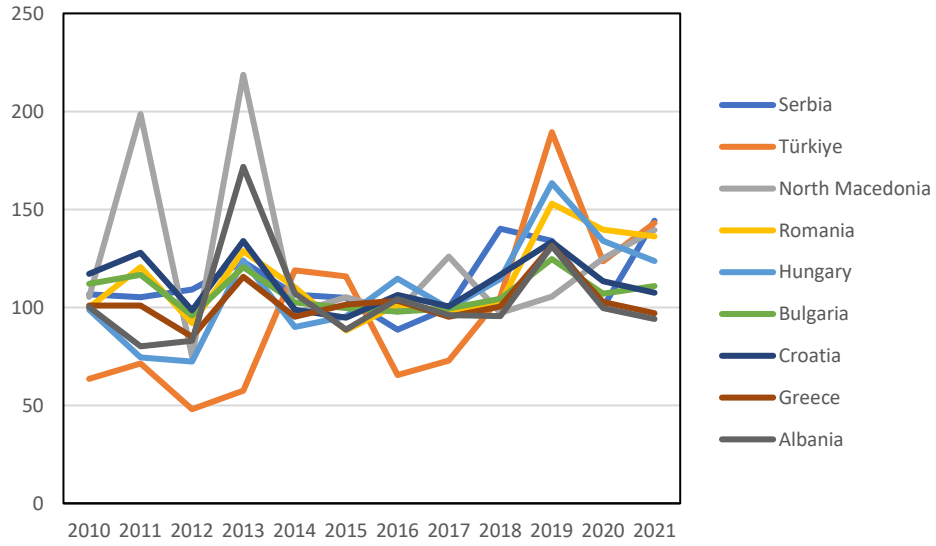

Figure 5-9 Producer price index of Roots and tubers, Total (i.e., potatoes), 2014-2016 = 100, in 2010-2021. Source: FAO.

The developments of oil crop prices in local currency vary significantly between the IPARD countries (see Figure 5-10). While the oil crop prices decreased by about 37% in Albania, Türkiye faced a 125% price increase in the 2015-2021 period. In the selected EU countries, oil crop prices changed between 7% to 65%.

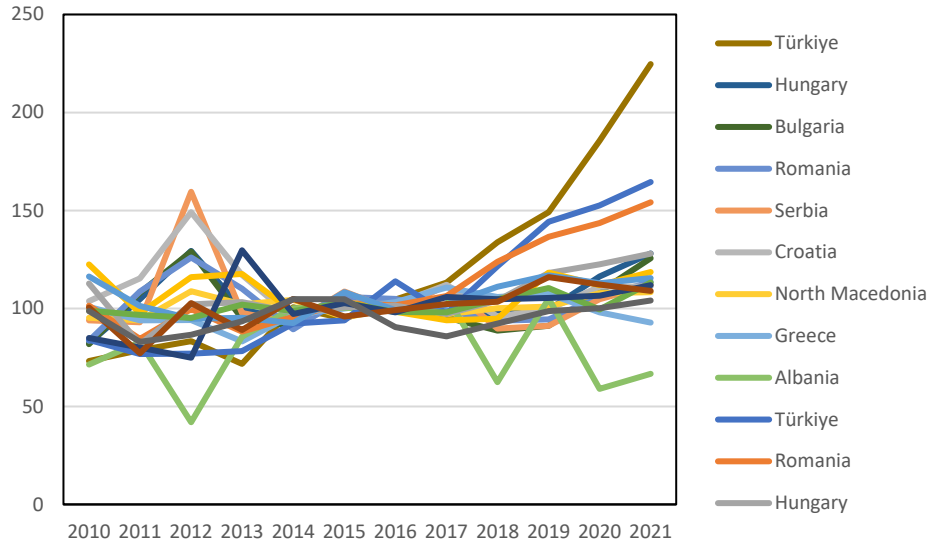

Figure 5-10 Producer price index of Oilcrops, Oil Equivalent, 2014-2016 = 100, in 2010-2021. Source: FAO.

IPARD countries show differences in the development of prices of pulses in local currency (see Figure 5-11). While in North Macedonia and Albania the prices of pulses hardly changed in the 2015-2021 period, Serbia showed a significant price increase of around 20%. For comparison, the EU country Bulgaria faced pulses price decreases in the 2015-2021 period, while pulses prices in Greece and Croatia remained stable. Hungary and Romania had higher increases of 20% and 50% respectively. Türkiye showed the highest increase of all countries shown in the figure, including the EU countries, 102%.

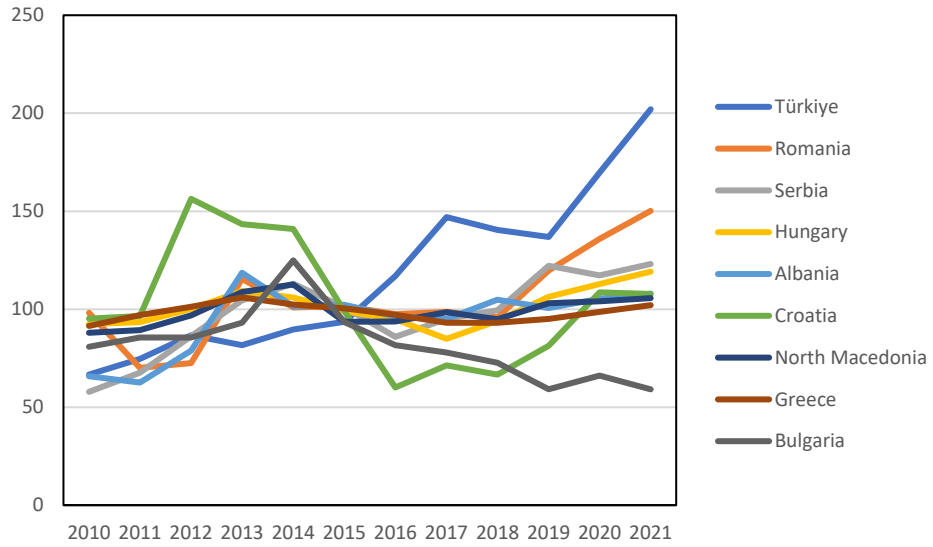

Figure 5-11 Producer price index of Pulses, Total, 2014-2016 = 100, in 2010-2021. Source: FAO.

Producer prices in euro for a number of selected products are shown in Table 5-9 for the year 2020. For wheat, potatoes, sugar beet and beans, prices in euro vary between the IPARD countries, but the variation and the level are not much different from the selected EU countries shown in the table. For wheat, Albania has the highest price of 258 euro per tonne of the IPARD countries, Serbia with 153 euro per tonne the lowest. The EU average price for wheat was about 174 euro per tonne. For potatoes, North Macedonia has the highest price, i.e., 298 euro per tonne, and Türkiye with 151 euro per tonne the lowest. The EU average potato price was 243 euro per tonne. For sugar beet, Serbia and Türkiye had a significant market with a producer price of 34 and 40

euro per tonne respectively. The EU sugar beet average price was 27 euro. For dry beans, prices in the IPARD countries were between 1 019 euro per tonne (Türkiye) and 1 839 euro per tonne (Albania), while the average EU price for dry beans was 1 638 euro per tonne in 2020.

Table 5-9 Producer prices in EUR/tonne, of wheat, potatoes, sugar beet and dry beans, in 2020

	Wheat	Potatoes	Sugar beet	Beans, dry
Albania	258	281		1 839
North Macedonia	171	298		1 617
Serbia	153	194	34	1 657
Türkiye	188	151	40	1 019
Bulgaria	167	212		906
Croatia	139	192	32	2 002
Greece	221	490	24	2 863
Hungary	156	267	28	634
Romania	163	392	29	2 028
EU average	174, n=26	243, n=26	27, n=14	1 638, n=12

Source: FAO; converted with Eurostat Euro-USD average exchange rates. EU average is unweighted average of available prices of EU MS.

5.8. Showcase products

As described in Section 2 for each IPARD county **1 high potential product** has been selected as a showcase product. The following showcase products have been selected: Albania - watermelon, Montenegro-lamb meat, North Macedonia - wine, Serbia - raspberries, Türkiye - cherry. Below a snapshot of showcase products with their strengths and weakness is presented. The detailed description of the showcase products with the information about the trade and price developments of the products as well as on their potential in the market and supply chain descriptions can be found in Annex Country Factsheets "Country Factsheets" under the sections 3.9, 4,9, 5.9, 6.9 and 7.9.

Watermelon production in Albania

Albania is one of the leading watermelon producers in the South-eastern European region (Skreli and Imami, 2019). Watermelon production in Albania is relatively higher compared to the other countries of the region, such as North Macedonia or Serbia (FAOSTAT, 2022) due to agro-climate advantages. There are no data projections available on the expected quantity of exports. Although lately considerable efforts have been made in terms of quality certification, yet market orientation towards Western markets is limited. Improving quality certifications is a factor, which can create a moderate increase in terms of exports.

STRENGTHS	WEAKNESSES
Tradition in watermelon production Rather solid production base in specific area, namely Divjaka / Existence of clusters with accumulation of expertise, services etc. Growing number of large farms Consolidating trade channels Fast technology development Presence of contract farming and vertical integration Stable relation between farmers and exporters, who also provide the farmers with the high-quality seedlings, in line with export market demand. Export-oriented success story, strong features of cluster development, with good factors of competitiveness and growing emphasis on using high quality inputs.	Small farm size and fragmentation of production base Inappropriate cover plastic for low tunnels High losses of production, due to lack of post-harvest infrastructure Insufficient investment in greenhouse industry for watermelon production Insufficient cooling storage rooms for produce, pre-cooling Export is focused on regional countries (Kosovo*, Bosnia and Herzegovina) at relatively low reported prices.

Lamb meat production in Montenegro

Based on relevant data from different sources (Statistical office of Montenegro – MONSTAT; Ministry of Agriculture, Forestry and Water Management - two Meat sector studies, first done in 2010 by ADT[20] and the second done in 2021 by SEEDEV[21]) and the expert knowledge of the National Expert gathered during more than 30 years of professional experience, lamb meat is one of the most important products of Montenegrin agriculture.

STRENGTHS	WEAKNESSES
Many pastures and meadows available for fodder production • long tradition with livestock-oriented family farming, • increasing tourism demand is a main driving force for this sector, • and export market for Montenegrin lamb meat is opening.	Many small semi-subsistence farms with small and fragmented plots • weak networking among farmers, • weaknesses in rural infrastructure in mountain areas of the Northern part of the country where sheep sector is mainly located, • insufficient financial support for the sector.

[20] https://www.adtproject.de

[21] https://www.seedev.org/

High-quality wine production in North Macedonia

The production of wine grapes and the production of wine are one of the key agriculture related economic activities in the Republic of North Macedonia. With its terroir, climate, soil, terrain and tradition, the country has all the preconditions for production of high-quality wine.

Viticulture, together with wine production contributes with about 17% -20% of agricultural GDP in 2020 (MAFWE, 2021), and the area under vineyards is increasing from about 20 000 ha in 2010 to about 24 000 ha in 2020 (SSO, 2021). Wine, after tobacco and processed vegetables, is the third most important product in terms of export value of agri-food products.

The wine sector participates in the economy with an annual export of about 50 million euro and contributes to the livelihood of around 21 400 family agricultural households (individual grape growers), 52 companies (grape growing companies and wineries with own grape area), 12 000 seasonal workers and more than 2 500 full-time employees in 99 registered wineries (MAFWE, 2020).

STRENGTHS	WEAKNESSES
Most important strategic sectors in the country The production of wine together with viticulture contributes with 17% -20% of the gross agricultural product Ranks first in terms of exports of alcoholic beverages and third in terms of export value of agricultural products Wine trade has positive development trend, where the number of bottled wine exports versus bulk wine exports is increasing over the years Established protocol for wine trade with the European Union that contributes to wine export development in the last years Due to the favourable climatic conditions for grape production and considering that there is no heavy industry in the country, there is potential for organic production of wine grape varieties.	Due to the lack of systematic approach in the industry and no GI system defined in the country, the wine growers are focused on quantity over quality, mainly stimulated by the direct support programme. Relatively low technological development within smaller wineries and outdated equipment are some of the weaknesses that hinder the wine production.

Raspberry Production in Serbia

Raspberry is included in the report due to constantly increasing production and export. It is expected that this increasing trend will continue. Raspberries are mostly exported frozen (roll, semolina, block, belly, original), but in recent years there has been an increase in the production of processed products, especially juice, jams, as well as high-quality products - lyophilized raspberries.

According to MAFWM, Commodity valances, available at: http://www.minpolj.gov.rs/download/bilans-malina-15-03-2020/) area under raspberry has increased from 15 000 ha in 2011 to 23 000 in 2020. It is estimated that area and total production trend upwards will continue in the future. Forecast is based on good agro-ecological conditions for raspberry growing, increased prices and small average farms sizes in Serbia suitable for high-value products, such as raspberry. The number of the cooling houses are estimated to be around 300. Each cooling house is a wholesaler, collecting the raspberry from small farms.

STRENGTHS	WEAKNESSES
Suitable agro-ecological conditions Growing production Raspberry can be cultivated on less fertile mountain land. Sentral Serbia is characterised with small and fragmented land parcels not suitable for mass production of the standard quality products, so Serbian farmers are relying on intensive high value products, such as raspberry.	Although Serbian raspberry yields are the highest in the EU, Serbia is not taking advantage and exporting fresh raspberry, which usually generates higher price, than exporting of frozen. Despite Serbian well known high quality, exported raspberries are not labelled as produced in Serbia.

Cherry production in Türkiye

Both in terms of production area and production volume, Türkiye is by far the leading country in cherry production, in the world. According to FAO data, Türkiye produced about 25% of world production during the 2017-2019 period. USA and Chile followed Türkiye, with 12% and 9% production share in 2018 and again 2019. Cherry production reached 689.8 thousand tons in 2021, which is 307% higher than in 2011 production record. During the last three decades, production has exhibited an upward trend.

STRENGTHS	WEAKNESSES
Relatively long harvest period (up to 90 days) due to richness of production location in various regions Existence of domestic varieties with desirable attributes and better-quality attributes than competitor countries Relatively low labour cost and organic production potential in highland areas	Small scale of cherry gardens Low yields and water scarcity Lack of corporation among growers Lack of corporation among growers Lack of knowledge of growers and insufficient extension/advisory services.

5.9. Conclusions

IPARD countries, with the exception of Montenegro, show both similarities and differences, when considering the developments of prices and revenues of agriculture. For Montenegro, for most indicators, no conclusions can be drawn due to the lack of data.

When expressed in local currency, Türkiye showed sharp agriculture price increases, whereas other IPARD countries faced only moderate increases or, in some situations, slight decreases. This is the case for the entire agricultural sector, but also for products like cow milk, honey, fruit, vegetables, cereals, oil crops and pulses. For Türkiye, a recent strong devaluation of the Turkish lira against the euro should be kept in mind. At the same time, some other IPARD countries showed comparably high price increases for specific products like meat (Serbia) and roots (North Macedonia). Having said that, the picture is not different when looking at the group of selected EU countries, i.e., Romania, Hungary, Bulgaria, Croatia and Greece. Also, countries like Romania and Hungary faced sharper price increases for a number of products compared to some IPARD countries. In this sense, we can argue that price developments in the IPARD countries fall in the same range of development as in the selected EU countries. In addition, considering the recent price levels for different products in euros, the IPARD countries face different prices levels, with a range that does not differ significantly from the selected EU countries for most products.

With regards to the costs and revenues in agriculture, a comparison was made for cow milk, apples and tomatoes. The figures shown in this chapter give some insights in costs and revenues per unit of product in the IPARD countries at farm level. At the same time,

a full comparison between the IPARD countries is difficult due to differences in background data from each country. These differences arise from (i) data availability, e.g. no data is available for overhead and external factor costs of apples and tomatoes in Montenegro, (ii) data structure and aggregation, e.g. different breakdowns into different cost items: some have FADN-based cost structure, some have other cost and margin structure, (iii) definitions of indicators, e.g. the inclusion or exclusion of subsidies and taxes in prices and revenues, (iv) calculation method, e.g. the method of attribution of costs and margins to milk and meat products on milk farms differs among countries, (iv) the characteristics of farms where background data were collected, e.g. sizes and production methods.

Due to data limitations, no hard conclusions could be drawn about similarities and differences in costs and revenues, although some patterns are visible. There are comparable positive farm incomes for kg of cow milk for North Macedonia and Serbia, i.e., 0.06-0.07 euro. For both countries, this income is excluding subsidies and remuneration for family labour. In Albania, this income per kg of milk is higher, i.e., 0.10 euro, although here we lack information about the inclusion of subsidies per kg. For North Macedonia, a positive farm income is also the case when family labour is remunerated. Türkiye has a negative income per kg after the remuneration of family labour, -0.04 euro, also when subsidies (0.02 euro) are added.

Also, when looking at the revenues for apples, comparable positive farm incomes per kg of apples are the case for Türkiye and North Macedonia (0.04-0.05 euro excluding subsidy, including family labour remuneration). In Serbia and Albania, the incomes per kg of apples before family labour remuneration are higher and also comparable (0.18-0.19 euro), but for Albania it is unknown whether subsidies are added to this income in the background data. For tomatoes, in Albania, North Macedonia and Serbia an income between 0.13 and 0.24 euro per kg is earned with or without inclusion of family labour remuneration and subsidies per kg. In Türkiye, the income after family labour remuneration is significantly lower, i.e., 0.02 euro per kg.

6. CROSS-COUNTRY OVERVIEW OF THE OUTPUTS AND YIELDS FOR THE MAIN AGRICULTURAL PRODUCTS IN THE IPARD COUNTRIES

6.1. Introduction

This section corresponds to activities outlined under the Task 4 (see Section 2.2) and presents the cross-country analysis of the outputs and yields of the 15 selected agricultural products for IPARD countries. The outputs and yields of the products are discussed under each agricultural sub-sector to which they belong. To keep the Tables and Figures concise, the analysis in this section is presented for 2 or 3 years (e.g., 2010, 2015, 2020 or 2021 if available). The detailed analysis of trends of 2010-2020 (and whenever available 2021) can be found in Annex Country Factsheets.

6.2. Livestock dairy sector

The analysis of a dairy sector of IPARD countries shows that in all countries the output of the dairy sector remained stable over the years, with a slight decrease in the numbers of animals, which was compensated with a higher productivity of cows, ensuring that the production of milk remained stable over the years (see Table 6-2 and Annex Country Factsheets). This is especially notable for Montenegro, where the number of animals has substantially dropped over the last 10 years, while thanks to a good growth in productivity, overall production of milk in tonnes has remained at the stable level of 168 000 tonnes in 2020 (see Table 6-1 below and Annex Country Factsheets for the trends). For goat milk, an overall increasing trend can be seen in production volumes for almost all IPARD countries (no information is available for a goat milk for Montenegro). Especially, in Türkiye and Serbia goat milk volumes have increased in recent years, where in Serbia it has tripled in 2015 and decreased somewhat in 2020, but still, it is more than double of the volume of 2010 (see Table 6-1). Sheep milk production remained more or less stable in all countries, with some increase notable for Türkiye in 2020.

Table 6-1 Production quantities of milk, in IPARD countries and the EU, in 1,000 tonnes, 2010, 2015, 2020

	Cow milk			Goat milk			Sheep milk		
	2010	2015	2020	2010	2015	2020	2010	2015	2020
Albania	930	964	897	63	80	80	77	87	75
Montenegro	136	171	168	0	0	0	7	8	8
North Macedonia	358	361	405	15	16	16	33	41	27
Serbia	1 507	1 546	1 539	15	45	35	10	19	10
Türkiye	12 419	16 934	20 000	273	481	554	817	1 177	1 207
European Union (27)	133 693	146 201	154 400	2 073	1 967	2 503	2 917	2 954	2 968

Source: FAOSTAT.

With a yield of about 3,650 kg/animal for cow milk, Serbia and Macedonia have reached the highest productivity in 2020 among IPARD countries (see Table 6-2). Despite the noticeable increase in the productivity of cow milk in recent years in all IPARD countries, there is still a room for improvements as it is still half of the productivity of the EU average. On the contrary to cow milk yields, the yields for a goat milk per animal are substantially higher in Serbia, where with the 363 kg/animal in 2015 and 291kg/animal

in 2020 they have outreached the EU averages of 307 and 267 kg/animal respectively. With goat milk yields, North Macedonia is relatively close to EU averages. Hereby, Türkiye and Albania are lacking behind. Similar to goat milk yield, in Serbia sheep milk yields either outweigh the EU average (in 2020) yield or are in a similar level (in 2015). It is remarkable that the productivity of the sheep milk has almost tripled in Serbia in 2020 compared to 2010, while it has doubled for Montenegro, though the yield of sheep milk in Montenegro is still below the EU average.

Table 6-2 Yield of milk, in IPARD countries and the EU, in kg/animal, 2010, 2015, 2020

	Cow milk			Goat milk			Sheep milk		
	2010	2015	2020	2010	2015	2020	2010	2015	2020
Albania	2 620	2 700	3 028	109	125	126	58	61	65
Montenegro	2 020	2 718	3 005	0	0	0	44	82	83
North Macedonia	2 875	2 828	3 648	260	243	222	62	77	60
Serbia	2 880	3 581	3 650	175	363	291	47	118	143
Türkiye	2 847	3 059	3 170	106	105	104	77	77	59
European Union (27)	6 061	6 739	7 509	277	307	267	108	123	119

Source: FAOSTAT.

6.3. Livestock eggs and honey sector

The developments in outputs and yields of eggs and honey sector in IPARD countries have been more turbulent in comparison to dairy sector, with variation in the development trends among countries. From Table 6-3, it is noticeable that the production of eggs in recent years has mainly increased in Albania, Montenegro and Türkiye, where Montenegro has doubled its production in 2020 compared to 2010 and in Albania and Türkiye it has increased by about 1.7 times. On the contrary, in North Macedonia, egg production has drastically decreased, where the production of 2020 has halved in comparison to production level in 2010. The reduction in the number of eggs is conditioned by the drastic reduction in number of laying hens (see Annex Country Factsheets for the trends). In Serbia, the fluctuation of egg production was less turbulent and shows a slight decrease in 2020 in comparison to 2015. Honey production was steadily increasing over the years in all IPARD countries, with highest increase for Montenegro (almost 3 times in 2020 compared to 2010).

Table 6-3 Production quantities of eggs and honey in IPARD countries and the EU, in tonnes, 2010, 2015, 2020

	Eggs, hen, in shell			Honey, natural		
	2010	2015	2020	2010	2015	2020
Albania	31 300	52 290	54 244	2 886	3 200	4 599
Montenegro	3 210	5 656	6 359	173	489	514
North Macedonia	18 820	9 966	8 974	825	688	899
Serbia	69 487	103 030	85 275	4 479	12 263	6 838
Türkiye	740 025	1 045 469	1 236 754	81 115	108 128	104 077
European Union (27)	6 097 533	6 216 018	6 349 964	200 423	250 102	217 864

Source: FAOSTAT.

With regards to yields of eggs, from Table 6-4, in terms of yield in kg/animal, in Albania, Macedonia and Serbia it has increased almost 1.5 times. In North Macedonia, on the contrary, a substantial decrease has taken place, while in Türkiye it remained relatively stable. Despite the increase in yields, all IPARD countries are below EU average in terms of egg yields, which is calculated in kilograms per animal. In number of eggs/animals, an increasing trend is seen in Macedonia and Serbia and a decreasing trend in Albania and North Macedonia. While for North Macedonia this decrease is reasonable, for Albania such a discrepancy might be explained as a result of an increasing size of eggs over the years and the change in the type of laying hens. Data on yields for honey are not available.

Table 6-4 Yield of eggs, in IPARD countries and the EU, in kg/animal and in number of eggs per animal, 2010, 2015, 2020

	Eggs, hen, in shell, in kg/animal			Eggs, hen, in shell, in number/animal		
	2010	2015	2020	2010	2015	2020
Albania	7.0	10.8	10.8	188	171	172
Montenegro	7.6	10.4	10.6	151	186	205
North Macedonia	12.5	7.4	7.6	224	150	154
Serbia	7.4	10.1	10.0	130	202	200
Türkiye	10.4	10.6	10.1	167	170	161
European Union (27)	13.6	14.2	13.9	225	237	238

Source: FAOSTAT

6.4. Livestock meat sector

The analysis of outputs of livestock meat sector shows that the total meat production in IPARD countries remained stable over the years (see Table 6-5 and Annex Country Factsheets for detailed trends), with some slight decrease for Albania and a more remarkable increase for Türkiye (about 30% increase in 2020 compared to 2010). Within total meat sector, different trends and shifts can be seen for different types of meat. While in Albania, Montenegro, and North Macedonia, a declining trend can be seen in all types of meat (except for increase in pig meat production in North Macedonia and a negligible increase in cattle and pig meat in Montenegro), in Serbia and Türkiye a growing trend can be seen for all types of meat, except for cattle in Serbia and sheep meat in Türkiye. In comparison with the production trends in the EU countries, IPARD countries more or less follow the EU trend with slight increase in total meat production (except for Albania) and decreasing trend in sheep meet production (except for Albania and Serbia).

Table 6-5 Production quantities of meat, in IPARD countries and the EU, in 1 000 tonnes, 2010, 2015, 2020

	Meat, cattle		Meat, chicken		Meat, pig		Meat, sheep		Meat, Total	
	2010	2020	2010	2020	2010	2020	2010	2020	2010	2020
Albania	41	33	17	12	13	9	13	16	91	79
Montenegro	5	6	4	4	2	3	1	1	11	14
North Macedonia	7	4	3	1	8	15	5	3	23	23
Serbia	96	67	84	114	269	304	23	30	474	517
Türkiye	619	962	1 444	2 138	0	0	136	95	2 262	3 275
European Union (27)	7 241	6 902	8 317	11 037	22 218	23 219	620	514	41 300	44 324

Source: FAOSTAT.

In terms of yields per kg of animal (carcass weight), for chicken meat in all IPARD countries a decreasing tendency is observed (except for Türkiye), with a noticeable decrease for Albania (see Table 6-6 and Annex Country Factsheets for more 10 years trend). The chicken meat yields in IPARD countries (except for North Macedonia) are rather comparable to the EU average yields, where Türkiye has relatively higher yields than EU average (23 kg/animal in 2020 compared to 17 kg/animal of EU average). Cattle meat yields in IPARD countries have remained relatively stable and have seen a slight increase (except for Serbia, which has a negligible decrease in 2020 compared to 2010). In comparison with the EU average, obviously all IPARD countries (except for Albania) are close to EU average, where Türkiye and Montenegro have even higher yields per kg of animal carcass weight in 2020. Interestingly, Montenegro has almost doubled its productivity per animal for cattle meat. While pig meat yields have been steadily increasing in North Macedonia and Serbia in 2020 and are even higher of EU average yields, in Albania and Montenegro they have been considerably decreasing (about 1.2-1.3 times). Sheep meat yields have been slightly increasing over the years in all IPARD countries, except for a minor decrease in Montenegro and a major increase in Türkiye (by 60%). It is worth to mention that all IPARD countries have either comparable or much higher yields for sheep meat compared to EU average.

Table 6-6 Yield of meat in carcass weight, in IPARD countries and the EU, in kg/animal, 2010, 2015, 2020

	Meat, chicken		Meat, cattle		Meat, pig		Meat, sheep	
	2010	2020	2010	2020	2010	2020	2010	2020
Albania	25	11	110	116	67	49	9	13
Montenegro	15	12	174	317	114	95	20	21.2
North Macedonia	8	7	130	205	97	100	17	25
Serbia	16	16	219	217	47	55	20	22
Türkiye	17	23	238	301	0	0	9	22
European Union (27)	15	17	275	293	90	94	13	14

Source: FAOSTAT. a) data for sheep meat carcass weight in Montenegro were obtained from MONSTAT.

6.5. Fruit and vegetables

Analysing the production quantities of fruits and vegetables, it can be noted that due to its size, Türkiye is by far the largest producer of fruit and vegetables, which makes its comparison with other IPARD countries rather difficult. It is also notable, that the total production volumes of almost all fruits and vegetables have been increasing in Türkiye over the years (see Table 6-7 and Annex Country Factsheets), where tomatoes generate by far the highest output. With 13.2 million tonnes in 2020, the quantity of tomatoes produced by Türkiye was almost equal to the entire tomato output produced by the EU-27 (16.5 million in 2020). In fruit production, citruses, grapes, and apples are main fruits generating almost equal output (over 4 million tonnes in 2020). Interesting observation is that the output of 3.5 million tonnes of watermelon in 2020 in Türkiye was higher than the total output generated by the EU-27 in 2020 (3 million). This applies also to cherries, where with 725 000 tonnes (not sour cherries) it outweighed the total EU production of cherries almost by 1.4 times in 2020, while for sour cherries, it equalled to more than half of the production produced by countries in the EU-27 (189 000 tonnes compared to 291 000 tonnes in 2020). In other IPARD countries, a similar trend of increasing output over years for almost all fruit and vegetables can be observed for Albania, while in Montenegro, a major decrease in grapes and tomatoes output is observed, though the output for other fruit and vegetables has slightly increased or remained stable. Some slight decrease in fruit and vegetable output is observed for Macedonia for watermelon, apples and tomatoes. In Serbia, especially the output of vegetables has declined, where the output of cabbage and cucumbers and gherkins has declined almost twice. Remarkably, the production of sour cherries has more than doubled.

In Albania, watermelon, grapes and apples are the most important fruit generating 249 000, 199 000 and 102 000 tonnes of output in 2020 respectively. Tomatoes with the output of 313 000 tonnes are the most important vegetables in Albania. Compared to other IPARD countries, Montenegro is lacking behind and has the least output of fruit and vegetables. For North Macedonia, grapes are the most important fruit, generating in 2020 the highest output of all IPARD countries of 318 000 tonnes (except for Türkiye). This is also the case for chilli papers. In Serbia, the production of grapes in 2020 has decreased more than twice, while the production of apples has increased almost twice. The production of raspberries has increased almost 1.5 times. It is remarkable that

compared to total EU-27 output of 229 000 tonnes of raspberries in 2020, the total output of raspberries in Serbia in 2020 was 119 000 tonnes, which equals to about 50% of the output produced by the entire EU-27.

When looking at the yields of fruit and vegetables in h/tonnes (see Table 6-8), it can be observed that Albania is leading in terms of productivity, where for all fruit and cabbages and other brassicas, it has higher productivity compared to all IPARD countries (except for Türkiye for citruses and apples) as well as to the EU-27. Montenegro and North Macedonia, have the lowest productivity for all fruit within IPARD countries and compared to the EU-27 (except for watermelon in Montenegro). Moreover, in Montenegro a decreasing trend in productivity of fruit is observed, while in Macedonia it remained mostly stable. In terms of vegetables, in Montenegro the productivity of tomatoes and chilli papers has somewhat declined, while the productivity of cabbages has slightly increased and is higher than EU-27 average. In North Macedonia, a substantial increase (1.4 times) in the yields of cucumber and gherkins took place in 2020 compared to 2010. In Serbia, in 2020 compared to 2010 the productivity of all fruits and vegetables has slightly increased, with most remarkable increase for apples (almost twice), watermelons and tomatoes (1.5 times). Despite this increase, the productivity of all fruit and vegetables remained relatively low in Serbia, in comparison to EU average (except for sour cherries and grapes).

Türkiye has the highest productivity in citruses, apples and tomatoes per ton/ha compared to all IPARD counties as well as compared to the EU-27 average. In general, an overall productivity growth is seen for all fruits and vegetable in Türkiye in 2020 compared to 2010 (except for a negligible reduction in the yields of citruses), with highest growth in apples, watermelon and tomatoes (see Table 6-8).

For more details in the trends (2010-2020) in yields and outputs of IPARD countries, please refer to Annex Country factsheets.

Table 6-7 Production quantities of fruit and vegetables, in IPARD countries and the EU, in 1 000 tonnes, 2010, 2020

	Albania		Montenegro		North Macedonia		Serbia		Türkiye		European Union (27)	
	2010	2020	2010	2020	2010	2020	2010	2020	2010	2020	2010	2020
Fruit Primary	634	819	83	74	588	636	1 553	1 910	19 229	24 153	64 272	67 462
Citrus Fruit, Total	14	49	10	13	0	0	0	0	3 572	4 349	11 411	11 407
Apples	55	102	2	2	121	106	240	489	2 600	4 300	10 313	11 833
Cherries	13	20	2	2	6	6	22	15	418	725	494	532
Cherries, sour	15	17	0	0	5	10	66	166	195	189	245	291
Grapes	185	199	41	15	253	318	330	160	4 255	4 209	24 270	25 999
Raspberries	0	0	1	1	0	0	84	119	0	0	132	229
Watermelons	199	249	9	17	135	125	197	141	3 683	3 492	2 791	3 086
Vegetables Primary	605	989	23	23	633	696	1 165	669	20 656	25 961	59 089	52 706
Cabbages and other brassicas	36	65	8	11	149	168	337	179	693	852	4 912	4 094
Chillies and peppers, green	65	103	3	4	168	205	155	107	1 987	2 637	2 192	2 908
Cucumbers and gherkins	69	114	0	0	47	49	70	31	1 739	1 927	2 711	2 712
Tomatoes	199	313	8	3	168	155	189	103	10 052	13 204	16 800	16 544

Source: FAOSTAT.

Table 6-8 Yield of fruit and vegetables, in IPARD countries and the EU, in tonnes/hectare, 2010, 2020

	Albania		Montenegro		North Macedonia		Serbia		Türkiye		European Union (27)	
	2010	2020	2010	2020	2010	2020	2010	2020	2010	2020	2010	2020
Fruit:												
- Citrus Fruit, Total	17	26	10	12	0	0	0	0	30	28	20	22
- Apples	14	23	21	7	9	9	10	19	16	25	20	24
- Cherries	9	9	3	3	1	1	3	3	6	9	4	4
- Cherries, sour	6	5	0	0	7	5	2	8	9	9	4	6
- Grapes	21	19	17	7	13	13	7	8	9	10	7	8
- Raspberries	0	0	3	3	9	6	6	5	0	0	3	8
- Watermelons	36	46	40	42	24	24	14	27	39	45	32	42
Vegetables:												
- Cabbages and other brassicas	22	36	32	35	32	30	16	24	27	31	30	31
- Chillies and peppers, green	21	31	31	24	20	22	8	11	24	29	32	50
- Cucumbers and gherkins	32	45	0	0	37	52	8	11	44	50	49	79
- Tomatoes	32	46	39	34	30	28	9	14	56	73	55	71

Source: FAOSTAT. Note: Yield in quantity per area harvested. For temporary crops, area harvested may be higher than area in land use statistics if there is more than one harvesting cycle.

6.6. Cereals, potatoes and other crops

Analysis of cereals, potatoes and other crops has revealed that IPARD countries do not have a substantial amount of production in these crops (see Table 6-9). This is not entirely true for Türkiye, which has somewhat large output in total cereals, sugar beets, potatoes and pulses comparable to 13% of the EU-27 cereals output in 2020 (mostly in wheat), 22% of the sugar beets output, 30% pulses output and 9% of potato outputs respectively. Serbia, in its turn, produces relatively large quantities of cereals, comparable to 4% of the EU-27 cereals output in 2020. In Montenegro, this sector is negligible. In Albania, the total cereals output has slightly decreased in 2020, compared to 2010 due to mostly reduction in wheat output, while the production of potatoes somewhat increased. North Macedonia has a large increase in the output of potatoes in 2020 (almost twice) and slight increase in cereals output. In Serbia, a large decrease in potato output took place in 2020 compared to 2010 (about 40% decrease).

In terms of yields ton/ha (see Table 6-10), it can be observed that for cereals, Albania and Serbia have the highest productivity equal to or higher than the EU average, while North Macedonia and Türkiye have somewhat lower productivity. For sugar beets, it is notable that in Türkiye the yields have largely increased in 2020 and were even slightly higher than EU-27 average yields. For potatoes, in all IPARD countries except for Türkiye, there is room for improvements in productivity compared to the EU-27 as in most of the countries the yield is twice lower than in the EU-27.

For more details in the trends (2010-2020) in yields and outputs of IPARD countries for cereals, potatoes and other crops, please refer to Annex Country Factsheets.

Table 6-9 Production quantities of cereals, roots and tubers and sugar crops, in IPARD countries and the EU, in 1 000 tonnes, 2010, 2020

	Albania		Montenegro		North Macedonia		Serbia		Türkiye		European Union (27)	
	2010	2020	2010	2020	2010	2020	2010	2020	2010	2020	2010	2020
Cereals, Total	69	68	0	1	54	58	930	1 147	3 276	3 718	26 342	28 636
Wheat	29	23	0	0	24	25	163	287	1 967	2 050	12 250	12 666
Maize	36	40	0	0	13	15	721	787	431	650	5 983	6 784
Potatoes	21	25	2	2	20	19	89	66	455	520	5 092	5 396
Sugar beet	4	3	0	0	1	0	332	202	1 794	2 303	9 877	10 015
Pulses, Total	3	3	0	0	2	2	10	6	134	130	344	446

Source: FAOSTAT.

Table 6-10 Yield of cereals, roots and tubers and sugar crops, in IPARD countries and the EU, in tonnes/hectare, 2010, 2020

	Albania		Montenegro		North Macedonia		Serbia		Türkiye		European Union (27)	
	2010	2020	2010	2020	2010	2020	2010	2020	2010	2020	2010	2020
Cereals, Total	5	5	3	3	3	4	5	7	3	3	5	5
Wheat	4	4	3	3	3	4	3	5	2	3	5	6
Maize	7	7	4	5	4	5	6	8	7	9	7	7
Potatoes	23	26	15	17	16	15	12	22	32	35	28	35
Sugar beet	20	32			29	30	50	54	55	68	66	67
Pulses, Total	1	1	2	3	2	2	3	2	1	1	2	2

Source: FAOSTAT. Note: Yield in quantity per area harvested. For temporary crops, area harvested may be higher than area in land use statistics if there is more than one harvesting cycle.

6.7. Conclusions

The analysis of agricultural outputs and yields in IPARD countries shows both similarities and differences in comparison with the outputs and yields in the EU.

In all IPARD countries, an increase in the productivity of the cow milk is seen over the last decade. This is especially noticeable for Serbia and Macedonia, which have reached the highest level of cow milk production in IPARD countries in 2020 (with a yield of about 3 650 kg/animal). Despite the obvious increase in the productivity of cow milk in recent years in all IPARD countries, the countries are still lacking behind the EU average (which has the double of the milk productivity of IPARD countries).

A contrasting picture can be seen for the yields of a goat and sheep meat in some of IPARD countries, where the yields for a goat milk per animal are substantially higher in Serbia, outweighing the EU averages, while North Macedonia is relatively close to EU averages. Hereby, Türkiye and Albania are lacking behind. In Serbia sheep milk yields again outweigh the EU average and it is remarkable to notice that the productivity of the sheep milk has almost tripled in Serbia in 2020 compared to 2010, while it has doubled for Montenegro, though the yield of sheep milk in Montenegro is still below the EU average.

The production of eggs has also increased over the years in IPARD countries (except of North Macedonia), where Montenegro has doubled its production in 2020, compared to 2010, while in Albania and Türkiye it has increased by about 1.7 times. Next to a production increase, yields in kg/animal, in Albania, Macedonia and Serbia have also increased almost 1.5 times.

Türkiye is by far the largest producer of fruit and vegetables, mainly due to its size, which makes its comparison with other IPARD countries rather difficult. Hereby Türkiye has a relatively large competitive advantage in comparison to the other IPARD countries as well as to the EU-27. In vegetable production, tomatoes generate by far the highest output in Türkiye, almost equal to the entire tomato output produced by EU-27 (13.2 million tonnes in Türkiye versus 16.5 million in the EU-27 in 2020). In fruit production, citruses, grapes, and apples are main fruit generating almost equal output to the output of the EU (over 4 million tonnes in 2020). The output of watermelons and cherries in 2020 in Türkiye largely outweighed the total EU production of these products. A similar trend of increasing output over years for almost all fruit and vegetable can be observed for Albania, while in Serbia, the output of vegetables has declined, with the output of a cabbage and cucumbers and gherkins declining almost twice. On the contrary to this, the production of sour cherries has more than doubled in Serbia. The production of raspberries has also increased by 1.5 times and in 2020 its total output equalled to about 50% of the raspberry output produced by the entire EU-27. For North Macedonia, grapes are the most important fruit, generating in 2020 the highest output of all IPARD countries (except for Türkiye). Compared to the other IPARD countries, Montenegro is lacking behind and has the least output of fruit and vegetables

In terms of yields of fruit and vegetables, Albania has a leading position, where for all fruit and cabbages and other brassicas, it has higher productivity compared to all IPARD countries (except for Türkiye for citruses and apples) as well as to the EU-27. Montenegro has a high productivity in watermelons and cabbages and other brassicas comparable to Albania. North Macedonia, on the contrary, has the lowest productivity for all fruit within IPARD countries and compared to the EU-27. In Montenegro, a decreasing trend in productivity of fruit is observed, while in North Macedonia it remained mostly stable. In North Macedonia, a substantial increase (1.4 times) in the yields of cucumber and gherkins took place in 2020 compared to 2010. In Serbia, in 2020 compared to 2010 the productivity of all fruit and vegetables has slightly increased, with most remarkable increase for apples (almost twice), watermelons and tomatoes (1.5 times), however, it remains relatively low in comparison to EU average (except for sour cherries and grapes). An overall productivity growth is seen for all fruit and vegetable in Türkiye in 2020, compared to 2010, with the highest growth in apples, watermelon and tomatoes. While the productivity of citruses, apples and tomatoes was the highest in Türkiye, compared to all IPARD counties as well as to the EU-27 average.

In terms of yields for cereals, Albania and Serbia have the highest productivity equal or higher than EU average, while North Macedonia and Türkiye have somewhat lower productivity. For sugar beets, it is notable that in Türkiye the yields have largely increased in 2020 and were even slightly higher than EU-27 average yields. For potatoes, in all IPARD countries, except for Türkiye, there is room for improvements in productivity, compared to the EU-27, as in most of the countries the yield is twice lower than in the EU-27.

7. CROSS-COUNTRY OVERVIEW OF THE RURAL-URBAN DISPARITIES IN THE IPARD COUNTRIES

7.1. Introduction

This section describes the main cross-country rural-urban disparity indicators in the IPARD countries. The list of indicators has been prepared based on a quick literature scan and initial data has been gathered from the international sources. The additional information (quantitative and qualitative) has been collected by national experts.

The similarities and differences across countries are highlighted. Hereby, it should be noted that the comparison among the WB countries and Türkiye is rather difficult, due to the large differences. Türkiye (85 million inhabitants) is the largest country among studied IPARD countries, and its total population is almost seven times more than the total of population of other IPARD countries (12 million inhabitants). In the studied Western Balkans countries, more than a third of the population lives in rural areas, compared to the 23% in Türkiye. Türkiye has a well-developed infrastructure, whilst the WB countries' infrastructure is underdeveloped.

For the cross-country analysis of the rural-urban disparities, the following indicators are assessed: population, education, employment, income, health, gender, migration and infrastructure and ICT.

7.2. Population

Out of five IPARD countries, Türkiye has the largest population, with 85 million inhabitants in 2021, while Montenegro is the least populated, with 620 000 inhabitants.

In Serbia and North Macedonia, over 56% of the population live in rural areas, in Albania, almost 38%, in Montenegro 32% and in Türkiye only 23%. Hence the differences between the rural-urban population division are noticeable between countries.

In all countries a gradual shift of the population from rural areas to urban areas between 2010 and 2021 is observed. This shift is less noticeable in Montenegro and North Macedonia compared to other three IPARD countries. Serbia's population has been gradually declining in both urban and rural areas over the recent years. In Türkiye, although in the last decade the population in urban Türkiye was increasing, the population in rural areas has been declining at a very slow rate (see Annex Country Factsheets, Sections 3.10.1; 4.10.1; 5.10.1; 6.10.1; and 7.10.1).

7.3. Education

Regarding education, findings show that access to primary education in the rural areas is more difficult and in extreme cases almost inaccessible. Reasons mentioned by the national experts are the lack of services, distance to school, lack of transport and high poverty. In Montenegro, schools in rural areas have been closing due to low population density. Hence, those families that stay face challenges on how to provide primary education for their children (sources: national experts).

In Albania, there is a relatively high literacy rate in rural areas, but despite this, there are some differences in education level between rural and urban areas, especially related to the completion rate of upper secondary education, where according to 2017 data in urban areas it was almost 13% higher than in rural areas. In rural areas, only 72% of the children or young adults completed upper secondary education.

In Montenegro, there are some differences in literacy rate among urban and rural population, where in urban areas it was 1.5%. Despite this fact in 2018 almost no difference was found in the percentage of persons in rural areas that completed upper secondary education, compared to those in urban which compared to 2011 level is an improvement.

In North Macedonia the gap between urban and rural population in completion rates between 2011-2019 seems to be narrowed, where the completion rate in upper secondary education in rural areas was only 60% in 2011 and it went up to 84%.

In Serbia, the literacy rate is slightly higher among urban population. The data shows that in 2019 the completion rate of upper secondary education in rural areas has increased since 2011 with 28%.

In Türkiye the adult literacy rate was 4.4% higher in the urban areas compared to rural in 2015. In 2014 there was a large difference (24%) in the percentage of people in rural areas completing upper secondary education, compared to those in urban areas.

Based on above we can conclude that there are some differences between the assessed countries, but in general, education is an indicator that shows large disparity between rural and urban areas. Educational attainment rates with regard to primary education do not show a large difference, but for the secondary education, and even more - for bachelor's degrees, there are noticeable disparities between rural and urban levels of education. Please see country factsheets for details (Annex Country Factsheets, Sections 3.10.2; 4.10.2; 5.10.2; 6.10.2; and 7.10.2).

7.4. Employment

In Albania and North Macedonia, there are no substantial differences in employment rates between rural and urban areas, with 2-3% less employment in rural areas.22 The unemployment rate in rural Albania seems to be higher than in urban areas, but according to FAO there is probably hidden unemployment of 25% (see Annex Country Factsheets, Section 3.10.3). This is because a part of the agricultural workforce labour is not being used. In Serbia, the unemployment rate has been decreasing since 2012, with minor difference in unemployment rates between rural (9%) and urban (7%) in 2020. The gap between rural and urban unemployment rates in Serbia has been gradually closing from 5% in 2010 to 2% in 2020 (see Annex Country Factsheets, Section 6.10).

For Türkiye, the last data published in regard to employment was in 2013, in that year urban areas accounted for 65% of total employment and rural areas for 35% (Source: ILO). Data on unemployment in Türkiye is only available until 2013, in rural areas the unemployment rate was 11,48% and in urban areas 6,15% (ILO) (see Annex Country Factsheets, Section 8.10). In Montenegro, the employment rate is generally low, less than 50%. The unemployment rate in 2020 was 18%. The unemployment rate in the rural areas was 15% and in urban areas 23% in 2020.

In the assessed Western Balkans countries, the disparity on rural-urban employment has been closing, with some differences between the countries. But in Türkiye there is a large disparity with respect to rural-urban employment.

7.5. Income

Data on wages and income as well as on poverty rates in rural areas is missing for most of the countries. A limited information is available for Türkiye and for Albania.

In Albania a high unemployment also translates into lower average income of the population in rural areas. In 2013, according to estimates from the World Bank the percentages of Albanians living in poverty were 15% in urban areas and 25-30% in rural areas. As more Albanians migrate out of rural areas into urban areas, poverty starts to become concentrated in more rural, mountainous areas (Serrano, 2018). More recent data on rural-urban disparities are unavailable. According to the Income and Living Conditions Survey (EU-SILC) from 2018, the rate of people at risk of poverty in Albania was 23.4%, at a threshold of 5.50 US$ per day.

[22] Please see country factsheet for additional information (Annex Country Factsheets)

In Türkiye, according to Oztornacı and Sengul (2019), the average multi-dimensional (income) poverty rates are approximately 40% in urban and 51% in rural areas, making rural poverty rate at least 11% higher than urban poverty rate.

For North Macedonia and Serbia there is no data available on poverty rates between rural and urban areas. On country level the poverty rates declined from 27% to 21.8% between 2010-2020 and from 25.9% in 2016 to 21.7% in 2020 respectively (Beker et al, 2018).

7.6. Health

In the WB countries findings show that in general remote rural areas have limited access to health care facilities. This is especially the case for female health facilities, which also has influence on gender equality and welfare. This is especially reported for Albania, where according to INSTAT (2018), women in rural areas have a higher proportion of reporting at least one problem in accessing health care (45%) than women in urban areas (26%) (see INSTAT, 2022[23]). According to World Health Organization (2017)[24] people living in the rural (north) area of Montenegro face barriers to health access. Greater distance to adequate health services is a challenge for the rural areas. In North Macedonia, according to the official statistics, 46% of medical doctors work in health institutions in Skopje and 37% in the largest nine towns. Therefore, rural areas, especially remote villages, are dependent on getting primary and specialised healthcare in urban centres. In Serbia, according to the NEs, population in urban areas generally has better access to healthcare than those in rural areas. Residents in rural areas usually have to come to urban areas for health care. If there are any services in rural communities then they are small dwellings that provide basic health care.

In Türkiye, there are no major differences in access to health care for rural and urban areas. Both rural and urban population can access to well-developed first step health services in their vicinity area and almost all district in all regions have a state hospital. The more comprehensive health infrastructures are available in almost all provinces.

7.7. Gender

With regard to the gender, equality there are some minor differences between the countries, but overall findings show that women have disadvantages in many areas, including in land ownership, labour market participation, position in employment, access to capital and access to the societal and economic environment out of the farm, and so on. Also, for example in Türkiye, women's' participation in the labour market in rural area is higher than urban areas, but this is in a form of unpaid family work.

Gender inequality plays a role on country level, but women in rural areas face more challenges, which is evident in health care access for women, quality education opportunities, employment possibility and ownership of land.

7.8. Migration

Emigration is a main driver for the continual rural depopulation. Many family farm members are migrating due to the reduced economic opportunities, limited social services, education opportunities, and social welfare.

Data on migration is missing for Albania and Serbia, however as indicated earlier, a gradual shift of the population in Albania from rural areas to urban areas can be noticed between 2010-2020. In the nineties, up to two third of the population was living in rural

[23] INSTAT (2022). Causes of Deaths, 2021. Institute of Statistics, Albania. http://www.instat.gov.al/en/themes/social-condition/health/#tab1WHO, 2017),

[24] WHO (2017). Governing for health equity and sustainable development in Montenegro. Current progress and opportunities for cross sectoral action on social determinants to improve equity in health. World Health Organisation. https://www.euro.who.int/__data/assets/pdf_file/0014/340205/montenegro-report.pdf

Albania, but this figure has strongly decreased at 38% (World Bank, 2022), while in Serbia the population in urban and rural areas has stayed quite stable in the last decade.

In Montenegro there are two obvious trends in population migration: the first is migration from the Northern to the Central and the Coastal region; and the second - migration from rural to urban areas. Both trends are the most expressed in the Northern region, where the total population has constantly been declining. The total population of the Northern region decreased between the two censuses by 8.7%. The migration process is continuing. These demographic trends are also adversely affecting agriculture, especially livestock sector (rearing of the cattle, sheep and goats), consequently production of meat and milk, as the major agricultural products in the Northern region.

In North Macedonia, according to the NEs most people working in agriculture are in the category 25 to 65 years of age, the average Macedonian farmer being at age around 58 years old, while very small number of employed are younger than 25 years, this indicates that young people migrate mostly to the urban areas, but also abroad. This situation might provide risk for the rural development and depopulation of the rural areas.

In Türkiye, since 1980s migration from rural areas to urban areas has been very high, in particular since mid-2000s. From rural areas to other countries migration has been very low or negligible. Reasons for low out of country migration are low education and qualification, lack of foreign language competency and also the cost of mobility.

Out of the five countries assessed, the WB countries show a general decrease in population, which is partly due to emigration, while Türkiye shows an increase in population.

7.9. Infrastructure and ICT

In Albania, Montenegro, North Macedonia and Serbia there are major rural-urban disparities in infrastructure and ICT facilities. This is not the case for Türkiye, which in has better road and water infrastructure. Also access to internet and mobile networks seems to be much better in Türkiye.

In the Western Balkans countries, the rural-urban disparities are high for infrastructure facilities, water supply, mobile networks and internet access. This is especially the case for the most remote rural areas.

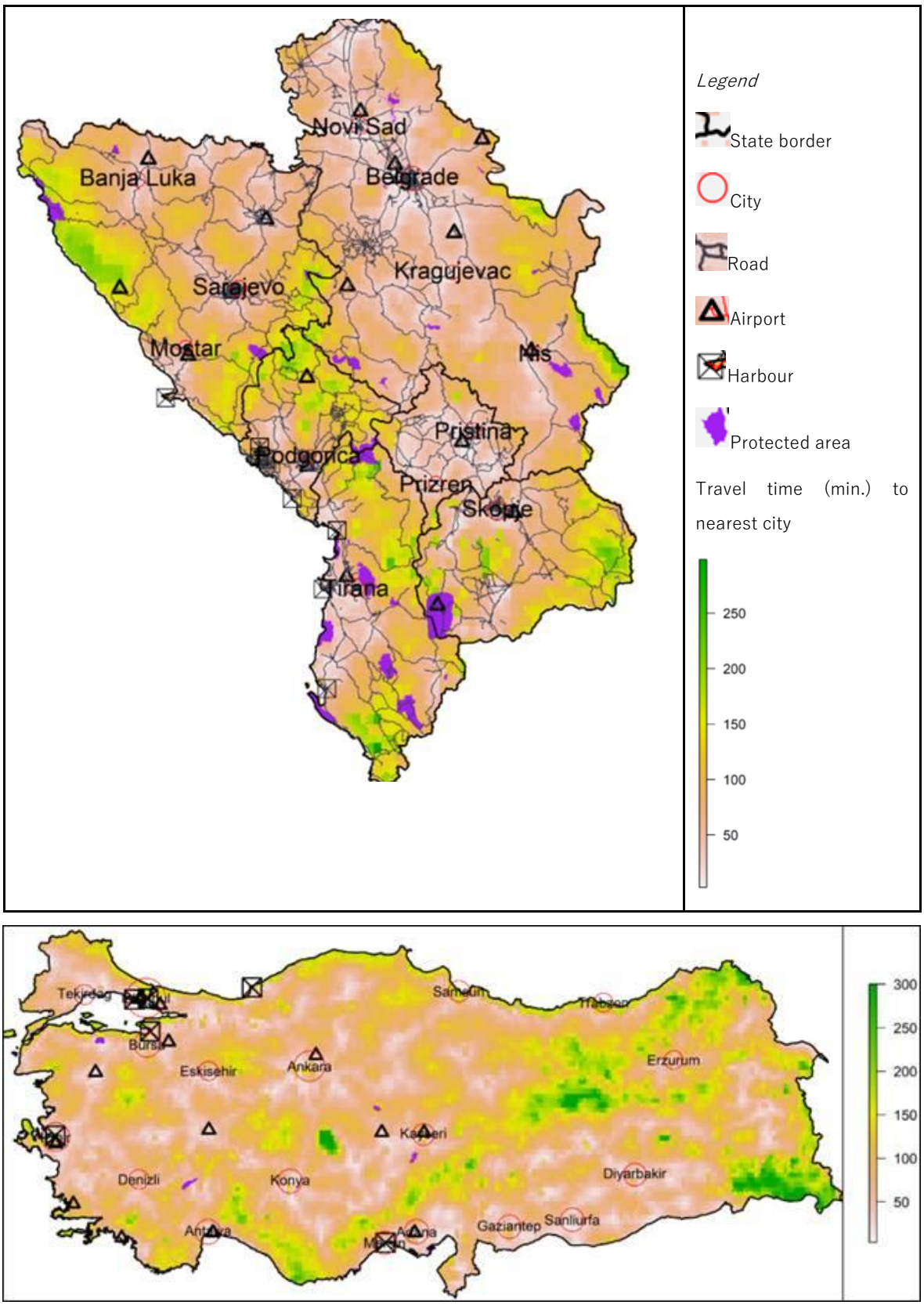

Figure 7-1 Map of estimated travel time in minutes (see text for explanation), in 2015, in Wester Balkans (above) and Türkiye (below). Sources: CGIARCSI (2015); Weiss et al. (2015); Meijer et al. (2018); Worldgrids (2015); Simplemaps (2021); OpenFlights (2015); MSI (2016); Protected planet (2022)

Wageningen Economic Research has constructed several maps to illustrate the distribution of people and production across assessed countries. These two maps show the estimated travel time and are based on information about main roads and slope of the area. It is calculated as the estimated travel time to larger cities and often used as an indicator of road infrastructure. These maps show that:

- Serbia and Kosovo have better infrastructure than the other Western Balkan countries. Partly this is caused by the less mountainous terrain.
- Infrastructure is less developed in border areas, between Herzegovina and Croatia and also between much of the Western Balkan countries. The same applies to the Eastern part of Türkiye bordering Georgia, Armenia, and Iran.

A lack of infrastructure negatively impacts competitiveness.

7.10. Conclusions

The cross-country analysis of the rural-urban disparities shows differences between the assessed countries. There are more similarities between the assessed Western Balkan countries than with Türkiye.

In general, the lack of access to high quality education, low income, employment possibilities and access to health services are the main reasons for rural migration. Overall, migration in the assessed Western Balkan countries takes place mainly outside the country, whilst in Türkiye this takes place inside the country. Türkiye's infrastructure and ICT facilities in rural areas are better developed than in the Western Balkan countries. The disparity between rural and urban infrastructure and ICT facilities is evident in all WB countries.

8. COMPARATIVE CROSS-COUNTRY ANALYSIS OF COMPETITIVENESS OF THE IPARD COUNTRIES, AND COMPARISON WITH THE EU

8.1. Introduction

In this chapter, the competitiveness of the IPARD countries is benchmarked with five surrounding countries and the EU. The neighbouring EU MS included in the comparison are Bulgaria, Croatia, Greece, Hungary and Romania. The competitiveness of the IPARD countries is assessed by applying the framework that is explained in Chapter 3, to the countries as a whole, to the agricultural sector as a whole, and to the five subsectors addressed in this study: dairy, eggs and honey, meat, fruit and vegetables, and cereals, potatoes and other arable crops.

Most of the groups of indicators in our competitiveness framework are applicable for the country or agricultural sector level. For the subsector level, we study a number of additional indicators at product level and choose some variables that apply to the specific subsector.

8.2. Competitiveness at country level

In our analysis framework we discern six groups of indicators to analyse the competitiveness at country and sector level, from which five groups of indicators of competitiveness were applicable at country level. These groups of indicators are: 1. Resources and factor conditions, 2. Demand conditions, 3. Competition and firm dynamics, 4. Innovation and entrepreneurship, 5. Government. For each of the groups, data on a large number of indicators has been collected for the IPARD countries, and the EU MS, for the period 2010-2021 (see Section 2.1). As the main indicator of productivity at country level, we analyse GDP per capita. These measures combined the total productive capacity of the countries and are readily available for all the countries. The period of analysis of competitiveness is 2015-2021. In this period, GDP per capita (in current prices) was highest for Greece (about 16 000 to 17 000 euro), and lowest for Albania (between 3.5 and 5.5 thousand EUR) (see also Figure 3-16).

When the data on GDP per capita is compared with the scores on the World Economic Forum Global Competitiveness Index for 2019, we see a strong correlation. All of the ten countries studied score between 57 and 64 on a scale of 0-100 on the GCI 2019, with Albania and North Macedonia at the bottom, and Hungary at the top, with a score of 64. A difference between the relative GDP per capita and the relative GCI 2019 scores, is observed for Greece and Bulgaria, with Greece doing better on GDP per capita and lower on the GCI and Bulgaria - vice versa. Of course, the GCI measures much more than just GDP and the time periods of the analyses differ somewhat. Nevertheless, these data (and the literature) suggest that higher competitiveness is related to higher GDP per capita, as the theory predicts.

The selection of indicators of competitiveness in each of the indicators' group, was based on the literature study that was performed at the onset of the project. In addition, correlation coefficients (r) with GDP per capita were calculated for each of the indicators. Note that the correlation analysis does not establish any causal relationships between the factors and productivity. There is a lot of correlation between indicators from different indicators' groups as well. The correlation coefficients were, however, used to qualitatively test the plausibility of the measures and also for weighting the measures under each of the indicators' group. The final selection of indicators for the country level competitiveness analysis is given in Table 8-1.

In Table 8-1, the correlation coefficients are shown for the selected indicators, which are calculated on the basis of all available annual observations for the period 2010-2021, for all IPARD countries and EU member states. These correlation coefficients have also been used to weight the scores on various indicators to the scores for the groups of indicators. It is shown that some indicators are positively related to GDP per capita, whereas others are negatively related. All of the signs of the correlation coefficients can be explained from economic theory, e.g., higher employment is related to a higher GDP per capita ($r = 0.548^{**}$), while unemployment is associated in a negative way to GDP

per capita (r = -0.460**). Negative association was further found for inflation, interest rates, people at risk of poverty. For Gross Capital Formation (in % of GDP) there has been found a different relationship with GDP per capita for poorer countries (with GDP per capita below EUR 15 000 in the studied period), than for richer countries where GDP per capita is higher than EUR 15 000. The sign of the correlation is significantly negative for the first group and significantly positive for the latter. Gross capital formation in % of GDP is, with the exception of Ireland, where the indicator is also relatively high, generally higher for countries with lower relative GDP per capita, presumably partly due to the fact that some other elements of GDP, like government expenditures on health and social security, tend to be lower. For the purpose of our analysis, we have taken the positive association between gross capital formation and productivity as found in the richer countries as the relevant weighting factor.

Table 8-1 Correlation based weights of indicators' groups included in the country level competitiveness analysis

Indicators' group	Indicators	Correlation with GDP per capita, for IPARD and EU countries, in 2010-2021
Resources and factor conditions	Employment to population ratio, 15+, total (%)(national estimate) (World Bank)	0.548**
	Unemployment, total (% of total labour force)(national estimate) (World Bank)	-0.460**
	Mean nominal monthly earnings of employees, total (US$) (ILO)	0.909**
	Life expectancy at 60 (years) (Legatum)	0.643**
	Education level of adult population (Legatum)	0.315**
	Lending rate or short term loan rate (%) (IMF)	-0.481**
	Financial system depth (0-100) (GCI 9_A) (WEF)	0.786**
	Financial system stability (GCI 9_B) (WEF)	0.328**
	Logistics performance index: Quality of trade and transport-related infrastructure (1-5) (World Bank)	0.732**
	Individuals using the Internet (% of population) (World Bank)	0.675**
Demand conditions	Inflation, consumer prices (annual %) (World Bank)	-0.170**
	Statutory nominal gross monthly minimum wage (US$) (ILO)	0.903**
	Taxes on income, profits and capital gains (% of revenue) (World Bank)	0.572**
	People at risk of poverty or social exclusion (% of total population) (Eurostat)	-0.470**
Competition and firm dynamics	Domestic market competition (1-100) (GCI 7_A) (WEF)	0.750**
	Trade % of GDP (World Bank)	0.491**
	New business density (new registrations per 1,000 people ages 15-64) (World Bank)	0.252**

Indicators' group	Indicators	Correlation with GDP per capita, for IPARD and EU countries, in 2010-2021
Innovation and entrepreneurship	Cost of starting a business (% of GNI per capita) (GCI 11.01) (WEF)	0.262**
	Time to start a business (days) (GCI 11.02) (WEF)	0.187
	Insolvency recovery rate (cents to dollar) (GCI 11.03) (WEF)	0.536**
	Insolvency regulatory framework (0-16) (GCI 11.04) (WEF)	-0.390**
	Attitudes towards entrepreneurial risk (1-7) (GCI 11.05) (WEF)	0.562**
	Willingness to delegate authority (1-7) (GCI 11.06) (WEF)	0.769**
	Companies embracing disruptive ideas (1-7) (GCI 11.08) (WEF)	0.705**
	Diversity of workforce (1-7) (GCI 12.01) (WEF)	0.567**
	State of cluster development (1-7) (GCI 12.02) (WEF)	0.749**
	International co-inventions (per million pop) (GCI 12.03) (WEF)	0.846**
	Multistakeholder collaboration (1-7) (GCI 12.04) (WEF)	0.763**
	Scientific publications (h index) (GCI 12.05) (WEF)	0.426**
	Patent applications (per million pop) (GCI 12.06) (WEF)	0.795**
	R&D expenditures (% of GDP) (GCI 12.07) (WEF)	0.576**
	Research institutions prominence (index) (GCI 12.08) (WEF)	0.184
	Buyer sophistication (1-7) (GCI 12.09) (WEF)	0.808**
	Trademark applications (per million pop) (GCI 12.10) (WEF)	0.636**
	Gross capital formation (% of GDP) (World Bank)	0.187**, a)
	Foreign direct investment, net outflows (% of GDP) (World Bank)	0.180**
	Buyer sophistication (1-7) (GCI 12.09) (WEF)	
Government	General government final consumption expenditure (% of GDP) (World Bank)	0.301**
	Social protection expenditure (% of GDP) (Eurostat)	0.511**
	Institutional trust (score 0-100) (Legatum)	0.691**
	Corruption perception index (score 0 highly corrupt-100 very clean) (Transparency International)	0.796**

a. for countries with GDP per capita exceeding EUR 15 000, b. all WEF indicators in relative scores from 0-100 best.

Figure 8-1 summarizes the results of the competitiveness analysis at country level. The results are presented for each of the included groups of indicators. The distance between the countries is based on the normalized values. The normalised values (z-scores) are calculated as deviation between the average in the period 2015-2021 for the respective countries and the average for the EU in the period 2010-2021 and expressed in standard deviations for the whole dataset, comprising the period 2010-2021 for all IPARD and EU countries. The normalized z-values are a way of showing how far a particular observation is from the average, when units of measurement between indicators are different.

From the analysis we conclude that the IPARD countries are lagging behind the five neighbouring EU MS included in the analysis in terms of resources and factor conditions. For the other t groups, the situation is more varied. Overall, Albania and North Macedonia have the lowest scores on competition and firm dynamics, innovation and entrepreneurship, and government. The best performing IPARD countries are Türkiye and Montenegro, especially in terms of innovation and entrepreneurship, competition and firm dynamics, and government. Demand conditions are less favourable however in Türkiye and Montenegro. Serbia is in the middle of the IPARD countries, with the exception of resources and factor conditions, which are somewhat more favourable than in the other IPARD countries.

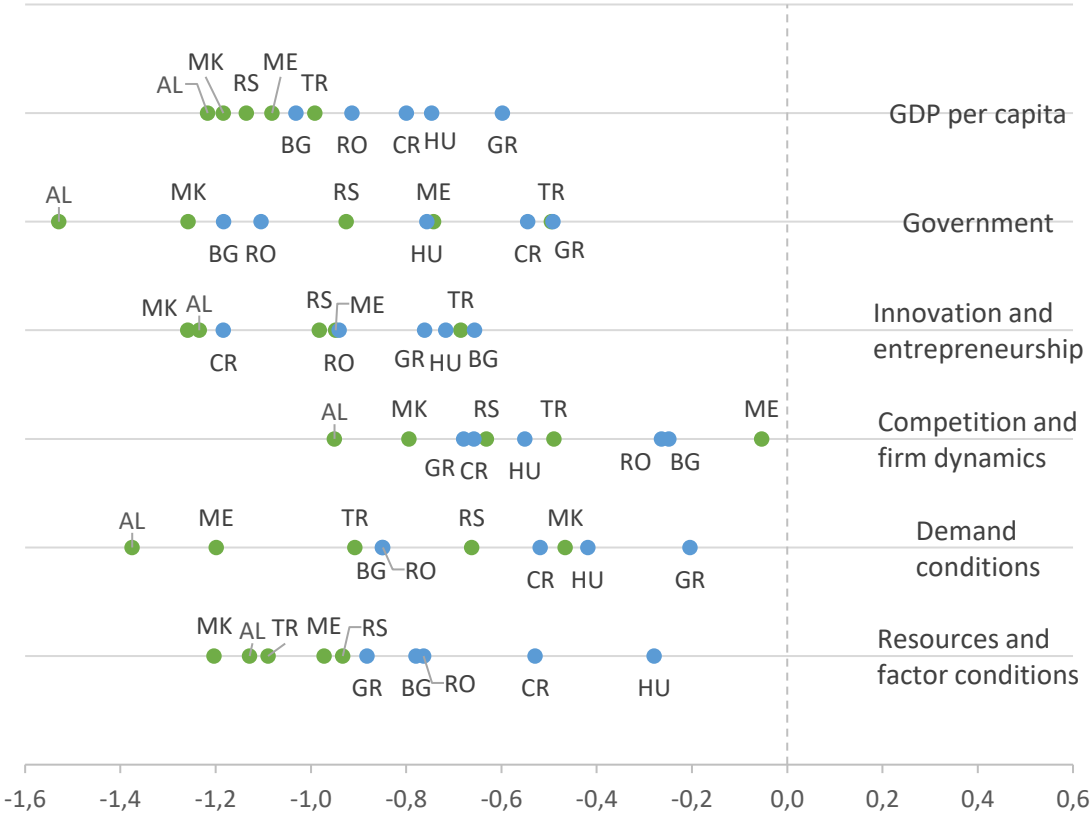

Figure 8-1 Competitiveness at country level, IPARD countries (green) and five neighbouring EU Member States (blue), relative to EU average (EU-average = 0.0), in 2015-2021.

In the group of indicators relating to resources and factor conditions, the lowest results are obtained for North Macedonia, Albania and Türkiye. The first two countries score relatively low on financial system (depth of the credit information) and logistics. Furthermore, in North Macedonia, a low score on this group of indicators is caused by high unemployment and low employment. In Türkiye, the high interest rates and relatively low education level of the population are the most prominent issues in this group of indicators.

Table 8-2 Scores on resources and factor conditions, in country level competitiveness, relative to EU average (z-scores)

	AL	ME	MK	RS	TR
Overall score	-1.13	-0.97	-1.20	-0.93	-1.09
Employment to population ratio, 15+, total (%) (national estimate) (World Bank)	-0.27	-0.97	-1.32	-0.79	-0.98
Unemployment, total (% of total labour force) (national estimate) (World Bank)	-0.88	-1.34	-2.00	-0.65	-0.48
Mean nominal monthly earnings of employees, total (US$) (ILO)	-1.21	-0.90	-1.05	-1.21	-1.02
Life expectancy at 60 (years) (Legatum)	-0.41	-1.43	-2.01	-1.40	-0.26
Education level of adult population (Legatum)	-1.23	0.29	0.00	0.26	-2.48
Lending rate or short-term loan rate (%) (IMF)	-1.77	-1.90	-1.68	-0.86	-5.20
Financial system depth (0-100) (GCI 9_A) (WEF)	-1.61	-0.27	-1.24	-1.22	-0.91
Financial system stability (GCI 9_B) (WEF)	-0.33	-0.36	-0.03	-0.45	0.25
Logistics performance index overall (score 1-5) (World Bank)	-2.04	-1.98	-1.90	-1.49	-0.47
Individuals using the Internet (% of population) (World Bank)	-0.90	-0.33	0.01	-0.33	-0.43

Table 8-3 Scores on demand conditions, in country level competitiveness, relative to EU average (z-scores)

	AL	ME	MK	RS	TR
Overall score	-1.38	-1.20	-0.47	-0.66	-0.91
Inflation, consumer prices (annual %) (World Bank)	-0.15	0.06	0.14	-0.57	-4.78
Statutory nominal gross monthly minimum wage (US$) (ILO)	-1.11	-0.88	-0.92	-0.92	-0.69
Taxes on income, profits and capital gains (% of revenue) (World Bank)	-0.26		-0.19	-0.34	0.02
People at risk of poverty or social exclusion (% of total population) (Eurostat)	-3.69	-2.27	-0.15	-0.60	-1.05

a. data on taxes are missing for Montenegro.

For demand conditions, we have looked at four indicators, which together describe buying power of the domestic population. The lowest score on this group of indicators

is found in Albania, with relatively high levels of people at risk of poverty or social exclusion, and lower minimum wages. Demand conditions in North Macedonia are more favourable, especially because of less people at risk of poverty and relatively low inflation in the study period.

Domestic competition has been measured on the basis of the Global Competitiveness Index score on the sub-pillar 7.1 on Product market competition. Market competition is positively related to competitiveness as it induces companies to produce more efficiently or innovate and create more value. Montenegro has the highest score on domestic market competition in comparison to the other IPARD countries. In addition, Montenegro is the most open economy of the IPARD countries (Trade as % of GDP), and also scores best on the new business density indicator.

Table 8-4 Scores on competition and firm dynamics, in country level competitiveness, relative to EU average (z-scores)

	AL	ME	MK	RS	TR
Overall score	-0.95	-0.05	-0.79	-0.63	-0.49
Domestic market competition (1-100) (GCI 7_A) (WEF)	-1.63	-0.62	-2.04	-1.37	-0.57
Trade % of GDP (World Bank)	-0.23	0.24	0.64	0.30	-0.45
New business density (new registrations per 1,000 people ages 15-64) (World Bank)	-0.33	1.08	0.13	-0.26	-0.35

The fifth group of indicators includes the most indicators, which can broadly be grouped in three subcategories: entrepreneurship, innovation, and investment. The first two subgroups have been based primarily on the indicators from the corresponding pillars in the World Economic Forum Global Competitiveness Report.

Overall, the results are in line with the other indicators' groups, where Albania and North Macedonia are somewhat lagging on innovation and entrepreneurship, when compared to Türkiye and the EU average. There are however some differences between the various indicators. North Macedonia, Albania, Montenegro and Serbia are generally performing relatively low on entrepreneurship, in terms of e.g., attitudes towards entrepreneurial risk and willingness to delegate authority. The cost of starting a business is relatively high in Albania and in Türkiye.

With respect to innovation, Türkiye is again the best performing IPARD country, with a relatively high score on cluster development, scientific research, R&D, and buyer sophistication.

When compared with the EU MS, the IPARD countries are below the EU average, but the same can be said of some of the EU MS included in the comparison, like Croatia and Romania.

Table 8-5 Scores on innovation and entrepreneurship, in country level competitiveness, relative to EU average (z-scores)

	AL	ME	MK	RS	TR
Overall score	**-1.23**	**-0.95**	**-1.26**	**-0.98**	**-0.69**
Entrepreneurship:					
Cost of starting a business (% of GNI per capita) (GCI 11.01) (WEF)	-1.86	0.51	0.76	0.01	-2.25
Time to start a business (days) (GCI 11.02) (WEF)	0.75	0.05	0.21	0.65	0.54
Insolvency recovery rate (cents to dollar) (GCI 11.03) (WEF)	-0.89	-0.58	-0.66	-1.31	-2.13
Insolvency regulatory framework (0-16) (GCI 11.04) (WEF)	-0.96	-0.58	-1.41	-0.73	1.37
Attitudes towards entrepreneurial risk (1-7) (GCI 11.05) (WEF)	-0.70	-0.73	-1.78	-0.94	0.63
Willingness to delegate authority (1-7) (GCI 11.06) (WEF)	-0.89	-1.16	-1.28	-0.94	-0.79
Companies embracing disruptive ideas (1-7) (GCI 11.08) (WEF)	-1.42	-0.62	-1.53	-0.95	-0.92
Innovation:					
Diversity of workforce (1-7) (GCI 12.01) (WEF)	0.39	0.31	-0.60	0.28	-1.05
State of cluster development (1-7) (GCI 12.02) (WEF)	-1.60	-1.01	-1.24	-1.00	-0.57
International co-inventions (per million pop) (GCI 12.03) (WEF)	-1.59	-1.44	-1.61	-1.04	-1.47
Multistakeholder collaboration (1-7) (GCI 12.04) (WEF)	-0.51	-0.50	-1.45	-0.83	-0.77
Scientific publications (h index) (GCI 12.05) (WEF)	-2.28	-2.60	-1.62	-0.96	0.00
Patent applications (per million pop) (GCI 12.06) (WEF)	-2.06	-1.49	-1.95	-1.41	-1.33
R&D expenditures (% of GDP) (GCI 12.07) (WEF)	-1.61	-1.36	-1.28	-0.80	-0.67
Research and development (0-100) (GCI 12_B) (WEF)	-1.87	-1.63	-1.65	-1.15	-0.60
Buyer sophistication (1-7) (GCI 12.09) (WEF)	-0.80	-0.56	-1.40	-1.76	-0.18
Trademark applications (per million pop) (GCI 12.10) (WEF)	-2.86	-2.25	-1.76	-2.12	-1.14
Investments:					
Gross capital formation (% of GDP) (World Bank)	0.63	1.45	2.30	0.03	1.70
Foreign direct investment, net outflows (% of GDP) (World Bank)	-0.11	-0.12	-0.10	-0.10	-0.10

Finally, the scores on the group of indicators related to the government are given in detail in Table 8-6. Social protection expenditure is positively associated with GDP and

generally associated with the share of the government in GDP in general. Albania and Türkiye have a smaller share of government expenditures in GDP. A positive factor in Türkiye is a relatively high score on institutional trust. At the same time, corruption is relatively high in Albania, and North Macedonia and to a lesser degree also in Serbia and Montenegro.

Table 8-6 Scores on government, in country level competitiveness, relative to EU average (z-scores)

	AL	ME	MK	RS	TR
Overall score	-1.53	-0.74	-1.26	-0.93	-0.50
General government final consumption expenditure (% of GDP) (World Bank)	-2.79	-0.49	-1.63	-1.32	-1.91
Social protection expenditure (% of GDP) (Eurostat)	-2.17	-0.87	-1.38	-0.53	-1.68
Institutional trust (score 0-100) (Legatum)	-0.35	-0.33	-0.59	-0.43	2.08
Corruption perception index (score 0 highly corrupt-100 very clean) (Transparency International)	-1.66	-1.12	-1.62	-1.47	-1.43

8.3. Competitiveness at agricultural sector level

In Table 8-7, the correlation coefficients are given between the indicators used in the agricultural sector analysis and the value added per worker. The latter is taken as a measure of productivity in the agricultural sector as a whole. For the sectoral analysis, the same five groups of indicators are studied as for the country level analysis, with the additional group of indicators of Related and Supporting industries added. The individual indicators used in each group were partly the same, when no specific agricultural indicators could be found, or when no difference between the groups of indicators at country level and sector level might be assumed. In addition, in all the t groups of indicators, one or more agricultural indicators have been added. Some indicators which were found not to have a relation to the agricultural value added per worker have been omitted from the analysis.

Table 8-7 Groups of indicators included in the agricultural sector-level competitiveness analysis

Determinant group	Indicators	Correlation with value added per worker in agriculture, forestry and fisheries, for IPARD and EU countries, in 2010-2021
Resources and factor conditions	Employment to population ratio, 15+, total (%) (national estimate) (World Bank)	0.528**
	Unemployment, total (% of total labour force) (national estimate) (World Bank)	-0.394**
	Mean nominal monthly earnings of employees, total (US$) (ILO)	0.737**
	Life expectancy at 60 (years) (Legatum)	0.655**
	Education level of adult population (Legatum)	0.353**

Determinant group	Indicators	Correlation with value added per worker in agriculture, forestry and fisheries, for IPARD and EU countries, in 2010-2021
	Educational attainment rate, completed upper secondary education or higher, population 25+ years, rural, both sexes (%) (Unesco)	0.188*
	Educational attainment, tertiary 5-8, rural (% of 25-64 age) (Eurostat)	0.553**
	Lending rate or short term loan rate (%) (IMF)	-0.499**
	Financial system depth (0-100) (GCI 9_A) (WEF)	0.865**
	Financial system stability (GCI 9_B) (WEF)	.402**
	Logistics performance index: Quality of trade and transport-related infrastructure (1-5) (World Bank)	0.749**
	Individuals using the Internet (% of population) (World Bank)	0.670**
Demand conditions	Inflation, consumer prices (annual %) (World Bank)	-0.200**
	Share of food in total household's expenditures (%) (Eurostat)	-0.671**
	Taxes on income, profits and capital gains (% of revenue) (World Bank)	0.441**
	People at risk of poverty or social exclusion (% of total population) (Eurostat)	-0.509**
Competition and firm dynamics	Domestic market competition (1-100) (GCI 7_A) (WEF)	0.708**
	Trade % of GDP (World Bank)	0.184**
	New business density (new registrations per 1,000 people ages 15-64) (World Bank)	0.170**
	RTA 0 Agricultural products (RCA - RMA) (FAO)	-0.117*
	Yield, Wheat (hg per hectare) (FAO)	0.532**
	Yield, Tomatoes (hg per hectare) (FAO)	0.707**
	Yield, Milk, whole fresh cow (hg per animal) (FAO)	0.690**
Innovation and entrepreneurship	Cost of starting a business (% of GNI per capita) (GCI 11.01) (WEF)	0.193
	Time to start a business (days) (GCI 11.02) (WEF)	0.277**
	Insolvency recovery rate (cents to dollar) (GCI 11.03) (WEF)	0.655**
	Insolvency regulatory framework (0-16) (GCI 11.04) (WEF)	-0.192

Determinant group	Indicators	Correlation with value added per worker in agriculture, forestry and fisheries, for IPARD and EU countries, in 2010-2021
	Attitudes towards entrepreneurial risk (1-7) (GCI 11.05) (WEF)	0.605**
	Willingness to delegate authority (1-7) (GCI 11.06) (WEF)	0.758**
	Companies embracing disruptive ideas (1-7) (GCI 11.08) (WEF)	0.699**
	Diversity of workforce (1-7) (GCI 12.01) (WEF)	0.383**
	State of cluster development (1-7) (GCI 12.02) (WEF)	0.781**
	International co-inventions (per million pop) (GCI 12.03) (WEF)	0.809**
	Multistakeholder collaboration (1-7) (GCI 12.04) (WEF)	0.761**
	Scimago agronomy and crop science 18-21 (Rank) (Scimago)	-0.280**
	Scimago animal science and zoology 18-21 (Rank) (Scimago)	-0.374**
	Scimago food science 18-21 (Rank) (Scimago)	-0.314**
	Scimago horticulture 18-21 (Rank) (Scimago)	-0.197**
	Scimago plant science 18-21 (Rank) (Scimago)	-0.357**
	Patent applications (per million pop) (GCI 12.06) (WEF)	0.818**
	R&D expenditures (% of GDP) (GCI 12.07) (WEF)	0.709**
	Research institutions prominence (index) (GCI 12.08) (WEF)	0.426**
	Buyer sophistication (1-7) (GCI 12.09) (WEF)	0.739**
	Trademark applications (per million pop) (GCI 12.10) (WEF)	0.586**
Related and supporting industries	Services, value added (% of GDP) (World Bank)	0.561**
	Logistics performance index overall (score 1-5) (World Bank)	0.696**
Government	Central Government Expenditure Agriculture, forestry, fisheries (% of VA Agriculture, forestry, fisheries) (FAO, World Bank)	0.044

Determinant group	Indicators	Correlation with value added per worker in agriculture, forestry and fisheries, for IPARD and EU countries, in 2010-2021
	General Government Expenditure Agriculture, forestry, fisheries (% of VA Agriculture, forestry, fisheries) (FAO, World Bank)	0.080
	Credit to Agriculture, forestry and fisheries in % of Total credit in US$ (%) (FAO)	0.421**
	Institutional trust (score 0-100) (Legatum)	0.626**
	Corruption perception index (score 0 highly corrupt-100 very clean) (Transparency International)	0.722**

The resulting weighted scores on the various groups of indicators, in terms of the normalized values relative to the EU average, are given in Figure 8-2. Like for GDP per capita, agricultural value added per worker (in constant 2015 US$, from World Bank) is generally lower in the IPARD countries than the EU average. In contrast to GDP per capita, however, in the IPARD countries, the scores are closer to the surrounding EU MS. Especially Montenegro is quite close to the average and higher than four of the five EU MS in the comparison. Value added per worker was, on average in the 2015-2021 period, the lowest in Romania.

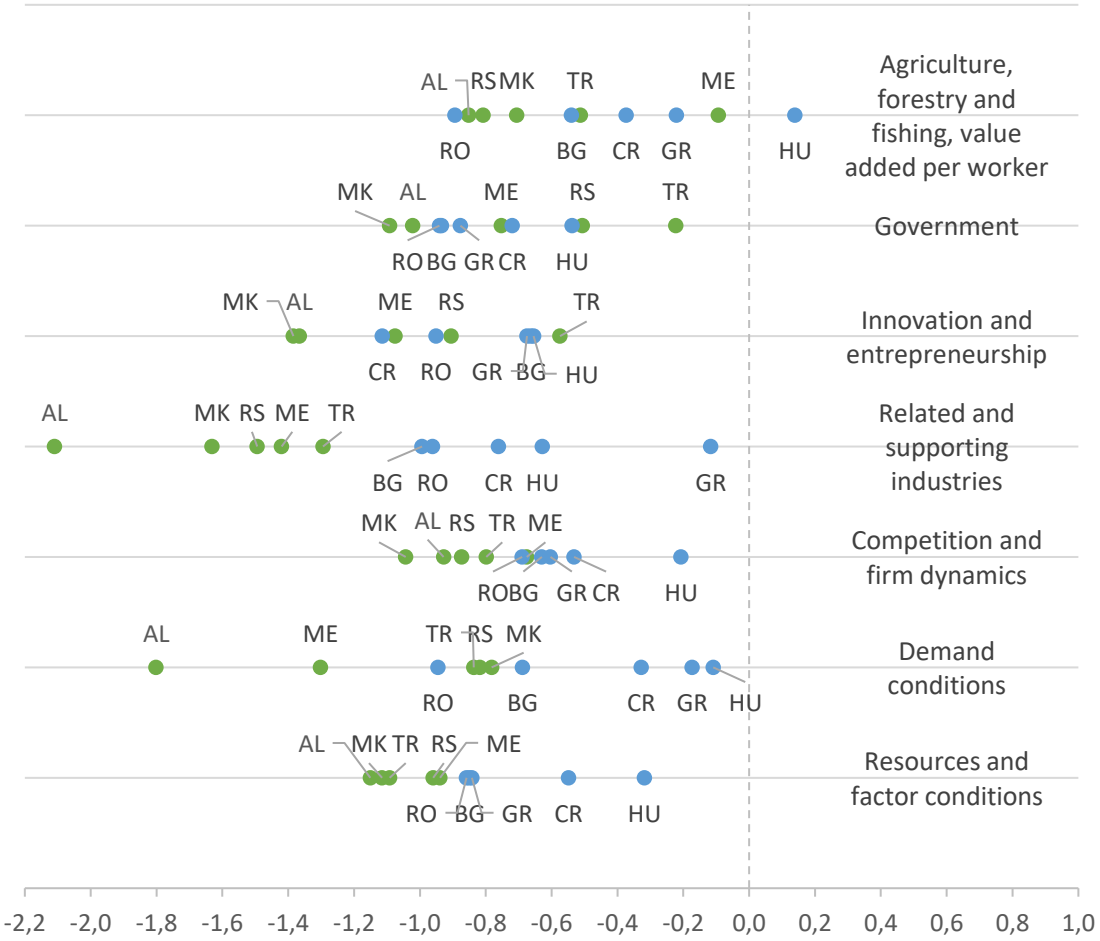

Figure 8-2 Competitiveness at agricultural sector level, IPARD countries (green) and five neighbouring EU Member States (blue), relative to EU average (EU average = 0.0), in 2015-2021.

In the tables below, the indicators are described in more detail. For the indicators' group Resources and Factor conditions, most of the included indicators are similar to the country level analysis. We have however included some data on rural educational attainment level from Eurostat. This data is not available for all countries. Weights were adjusted to accommodate for this asymmetry. In general, the IPARD countries are behind the EU MS included in the comparison and below the EU average. Unemployment is higher, especially in North Macedonia. The IPARD countries in the Western Balkans are also lagging in terms of logistical capacity and financial system. For Türkiye, the logistical performance index is much better, but the currently high interest rates, low education levels and relatively low employment levels cause the overall score of this indicators' group to be relatively low.

Table 8-8 Scores on resources and factor conditions, in agricultural sector level competitiveness, relative to EU average (z-scores)

	AL	ME	MK	RS	TR
Overall score	-1.12	-1.20	-1.21	-0.95	-1.20
Employment to population ratio, 15+, total (%) (national estimate) (World Bank)	-0.27	-0.97	-1.32	-0.79	-0.98

	AL	ME	MK	RS	TR
Unemployment, total (% of total labour force) (national estimate) (World Bank)	0.88	1.34	2.00	0.65	0.48
Mean nominal monthly earnings of employees, total (US$) (ILO)	-1.36	-1.21	-1.29	-1.37	-1.27
Life expectancy at 60 (years) (Legatum)	-0.41	-1.43	-2.01	-1.40	-0.26
Education level of adult population (Legatum)	-1.23	0.29	0.00	0.26	-2.48
Educational attainment rate, completed upper secondary education or higher, population 25+ years, rural, both sexes (%) (Unesco)			-0.62		-2.14
Educational attainment, tertiary 5-8, rural (% of 25-64 age) (Eurostat)			-1.06	-1.35	
Lending rate or short-term loan rate (%) (IMF)	1.77	1.90	1.68	0.86	5.20
Financial system depth (0-100) (GCI 9_A) (WEF)	-1.61	-0.27	-1.24	-1.22	-0.91
Financial system stability (GCI 9_B) (WEF)	-0.33	-0.36	-0.03	-0.45	0.25
Logistics performance index: Quality of trade and transport-related infrastructure (1-5) (World Bank)	-2.18	-1.88	-1.53	-1.50	-0.15
Individuals using the Internet (% of population) (World Bank)	-0.90	-0.33	0.01	-0.33	-0.43

For the indicators' group Demand Conditions, we have added the share of food in total household's expenditures, with a negative sign. In more advanced economies with higher GDP per capita, people generally tend to spend less of their income on food.

Table 8-9 Scores on demand conditions, in agricultural sector level competitiveness, relative to EU average (z-scores)

	AL	ME	MK	RS	TR
Overall score	-1.80	-1.30	-0.78	-0.82	-0.84
Inflation, consumer prices (annual %) (World Bank)	0.15	-0.06	-0.14	0.57	4.78
Share of food in total household's expenditures (%) (Eurostat)	1.88	0.98	1.92	1.37	0.06
Taxes on income, profits and capital gains (% of revenue) (World Bank)	-0.26		-0.19	-0.34	0.02
People at risk of poverty or social exclusion (% of total population) (Eurostat)	3.69	2.27	0.15	0.60	1.05

For the indicators' group Competition and Firm dynamics, the changes are somewhat larger, as compared to the overall competitiveness at country level. This is due to the addition of factors related to the net trade advantage of agricultural products, as measured by the revealed comparative advantage, minus the revealed import advantage. A higher net trade advantage is an indication of competitiveness of the local producers.

The physical yields of three products, wheat, tomatoes and milk, were also included as measures of local company performance and competition. These yields are positively

related to value added per worker. Overall, of the IPARD countries, Montenegro was found to have the most favourable conditions for agricultural competitiveness in terms of competition and firm dynamics, while this factor was least favourable in North Macedonia. Montenegro was still below the EU average, but quite comparable to Romania and Bulgaria. In particular, new business density is high in Montenegro, which we see as a sign of a dynamic economy.

Table 8-10 Scores on competition and firm dynamics, in agricultural sector level competitiveness, relative to EU average (z-scores)

	AL	ME	MK	RS	TR
Overall score	-0.93	-0.68	-1.04	-0.87	-0.80
Domestic market competition (1-100) (GCI 7_A) (WEF)	-1.63	-0.62	-2.04	-1.37	-0.57
Trade % of GDP (World Bank)	-0.23	0.24	0.64	0.30	-0.45
New business density (new registrations per 1,000 people ages 15-64) (World Bank)	-0.33	1.08	0.13	-0.26	-0.35
RTA 0 Agricultural products (RCA - RMA) (FAO)	-1.44	-1.88	-0.22	2.28	0.71
Yield, Wheat (hg per hectare) (FAO)	-0.73	-1.21	-1.09	-0.38	-1.34
Yield, Tomatoes (hg per hectare) (FAO)	-0.13	-0.20	-0.23	-0.32	0.12
Yield, Milk, whole fresh cow (hg per animal) (FAO)	-1.91	-1.91	-1.77	-1.54	-1.78

For innovation, a number of specific indicators on scientific performance in the field of agriculture were included from Scimago. Other specific agricultural indicators of innovation and entrepreneurship were not available in a consistent manner for the different countries. The citation data of Scimago is a rank with lower values indicating better performance. Much in line with the overall performance on innovation, the Western Balkans IPARD countries are also underperforming on the Scimago citation indicators. Türkiye on the other hand is doing better than the EU average on this indicator. The same is the case for Serbia on horticulture and plant sciences.

Table 8-11 Scores on innovation and entrepreneurship, in agricultural sector level competitiveness, relative to EU average (z-scores)

	AL	ME	MK	RS	TR
Overall score	-1.37	-1.07	-1.38	-0.91	-0.57
Entrepreneurship:					
Cost of starting a business (% of GNI per capita) (GCI 11.01) (WEF)	-1.86	0.51	0.76	0.01	-2.25
Time to start a business (days) (GCI 11.02) (WEF)	0.75	0.05	0.21	0.65	0.54
Insolvency recovery rate (cents to dollar) (GCI 11.03) (WEF)	-0.89	-0.58	-0.66	-1.31	-2.13
Insolvency regulatory framework (0-16) (GCI 11.04) (WEF)	0.96	0.58	1.41	0.73	-1.37
Attitudes towards entrepreneurial risk (1-7) (GCI 11.05) (WEF)	-0.70	-0.73	-1.78	-0.94	0.63
Willingness to delegate authority (1-7) (GCI 11.06) (WEF)	-0.89	-1.16	-1.28	-0.94	-0.79

	AL	ME	MK	RS	TR
Companies embracing disruptive ideas (1-7) (GCI 11.08) (WEF)	-1.42	-0.62	-1.53	-0.95	-0.92
Innovation:					
Diversity of workforce (1-7) (GCI 12.01) (WEF)	0.39	0.31	-0.60	0.28	-1.05
State of cluster development (1-7) (GCI 12.02) (WEF)	-1.60	-1.01	-1.24	-1.00	-0.57
International co-inventions (per m pop) (GCI 12.03) (WEF)	-1.59	-1.44	-1.61	-1.04	-1.47
Multistakeholder collaboration (1-7) (GCI 12.04) (WEF)	-0.51	-0.50	-1.45	-0.83	-0.77
Scimago agronomy and crop science 18-21 (Rank) (Scimago)	1.96	1.77	1.80	0.11	-0.88
Scimago animal science and zoology 18-21 (Rank) (Scimago)	2.21	1.46	1.83	0.40	-0.83
Scimago food science 18-21 (Rank) (Scimago)	2.05	2.08	1.57	0.07	-0.84
Scimago horticulture 18-21 (Rank) (Scimago)	1.34	1.68	1.40	-0.31	-0.97
Scimago plant science 18-21 (Rank) (Scimago)	2.18	1.56	1.59	-0.01	-0.69
Patent applications (per m pop) (GCI 12.06) (WEF)	-2.06	-1.49	-1.95	-1.41	-1.33
R&D expenditures (% of GDP) (GCI 12.07) (WEF)	-1.61	-1.36	-1.28	-0.80	-0.67
Research and development (0-100) (GCI 12_B) (WEF)	-1.87	-1.63	-1.65	-1.15	-0.60
Buyer sophistication (1-7) (GCI 12.09) (WEF)	-0.80	-0.56	-1.40	-1.76	-0.18
Trademark applications (per m pop) (GCI 12.10) (WEF)	-2.86	-2.25	-1.76	-2.12	-1.14

With respect to related and supporting industries, we did not obtain consistent sector-specific data. Some of the indicators, which we have collected, like the production of fertilizers (from FAO), did not show any correlation with the value added per worker in agriculture. Hence, we are reverting to more general indicators; the value added of the services sector in % of GDP, and the overall logistics performance index. These indicators do exhibit positive and significant correlation with agricultural productivity.

A larger services sector is associated with a higher level of supporting industries in services. A second indicator in this group is the overall logistics performance indicator. Logistics are very important for the agricultural products. The results show that Türkiye is closest to the EU average, mainly due to the relatively high logistics performance. Albania has the lowest overall score on this indicators' group. Overall, the performance of the IPARD countries is relatively low compared to the EU for the Related and Supporting industries, when compared to the other indicators' groups.

Table 8-12 Scores on related and supporting industries, in agricultural sector level competitiveness, relative to EU average (z-scores)

	AL	ME	MK	RS	TR
Overall score	-2.11	-1.42	-1.63	-1.49	-1.29
Services, value added (% of GDP) (World Bank)	-2.19	-0.72	-1.30	-1.50	-2.32
Logistics performance index overall (score 1-5) (World Bank)	-2.04	-1.98	-1.90	-1.49	-0.47

The final group of indicators is related to the performance of government. The data on government spending on agriculture, forestry and fisheries were obtained from FAO. A division can be made between central government and general government (including the central government). Both indicators have been expressed in percent of value added of the sector. We included both in the analysis, because some countries choose to finance agricultural support through the central government, while others choose to organise support at a provincial or local level. North Macedonia and Türkiye are closest to the EU average in terms of government spending on agriculture, forestry and fisheries.

Credit to Agriculture, forestry and fisheries in per cent of total credit, measures the private and public flows of credit to the sector. Data were not available for all countries; hence this factor is not included in the scores for Montenegro and North Macedonia. Overall government support of the sector seems to be most favourable in Türkiye and least in North Macedonia and Albania.

Table 8-13 Scores on government, in agricultural sector level competitiveness, relative to EU average (z-scores)

	AL	ME	MK	RS	TR
Overall score	-1.02	-0.75	-1.09	-0.51	-0.22
Central Government Expenditure Agriculture, forestry, fisheries (% of VA Agriculture, forestry, fisheries) (FAO, World Bank)	-0.82	-0.81		-0.36	-0.36
General Government Expenditure Agriculture, forestry, fisheries (% of VA Agriculture, forestry, fisheries) (FAO, World Bank)	-0.90		-0.30	-0.46	-0.44
Credit to Agriculture, forestry and fisheries in % of Total credit in US$ (%) (FAO)	-0.96			0.99	-1.52
Institutional trust (score 0-100) (Legatum)	-0.35	-0.33	-0.59	-0.43	2.08
Corruption perception index (score 0 highly corrupt-100 very clean) (Transparency International)	-1.66	-1.12	-1.62	-1.47	-1.43

In general, the signs and strength of most of the correlations between the competitiveness indicators and the productivity measures (GDP per capita at country level, and Value added per worker in agriculture, fisheries and forestry at sector level) are quite similar. There are however a few notable exceptions. First, looking only at the factors that are significantly correlated to both GDP per capita and Value added per worker in agriculture, the General government final consumption expenditure, and health expenditure are more positively correlated to agricultural productivity than to the overall productivity. This might indicate the importance of health care and government support in rural areas for the development of agricultural productivity. Second, credit to agriculture in percent of total credit, is also more positively correlated to agricultural productivity than to overall productivity. Third, the same is the case for many of the indicators related to science and R&D. A higher R&D expenditure in % of GDP is more positively related to agricultural productivity than to the overall productivity. Higher rankings on both overall citation indicators and specific agriculture- citation scores of Scimago, are more positively related to agricultural productivity, pointing to the importance of science for agricultural productivity and development.

At the other end of the comparison there are also a number of indicators that seem to be more related to GDP than to agricultural productivity. Many of these indicators are not included in our competitiveness analysis as they relate to the balancing constraints and in particular market prices. Higher market prices of agricultural products and higher prices in general are more positively correlated to the overall GDP than to agricultural productivity. Still, higher agricultural prices are also significantly and positively

correlated to higher value added per worker (as expected). Further, openness to trade (trade in % of GDP) is less strongly correlated with agricultural productivity than with the overall GDP per capita. This is probably due to the fact that agriculture is just a relatively small part of GDP in many of the EU countries.

8.4. Competitiveness of agricultural subsectors

To assess and compare competitiveness at the subsector level, the yields and the revealed comparative advantages are analysed. The yields of various products within the five subsectors dairy, eggs and honey, meat, fruit and vegetables, and cereals and other crops - are given in the table below (see Table 8-14). When compared to the EU average and the five included EU MS, the IPARD countries generally have lower yields.

However, there are some notable exceptions. In Albania, yields are higher than or equal to the EU average for apples, grapes, cherries and watermelons. Montenegro has relatively high yields of meat (weight per animal), watermelons and cabbages. In North Macedonia, a productivity advantage is seen in sheep meat, grapes and raspberries. Serbia has a relatively high yield of sheep meat (in kg carcass weight per animal) as well, and grapes. Finally, in Türkiye, apples, cherries, grapes and watermelons have a higher yield than the EU average, and the same applies to cabbages, and especially tomatoes.

Table 8-14 Yields for various product groups, in kg per animal or tonne per hectare, average of 2019-2020

	Milk, whole fresh cow	Eggs, hen, in shell	Meat, cattle	Meat, chicken	Meat, pig	Meat, sheep	Fruit Primary	Apples	Grapes	Cherries	Cherries, sour	Raspberries	Watermelons	Vegetables Primary	Cabbages and other brassicas	Chillies and peppers, green	Cucumbers and gherkins	Tomatoes	Onions, dry	Cereals, Total	Wheat	Maize	Potatoes	Sugar beet	Pulses, Total
	Kg/an	No/an	Kg/an	Kg/an	Kg/an	Kg/an																			
AL	3,010	173	117	11	49	13	22	24	19	9	5		45	29	35	29	47	45	21	5	4	7	26	35	1
ME	2,965	211	261	12	101	21	10	7	7	3		3	42	15	34	24		34	18	3	3	4	17		3
MK	3,543	146	204	8	95	23	9	9	12	1	4	6	24	16	29	21	51	28	17	4	4	4	15	30	2
RS	3,646	200	218	11	55	22	9	19	8	4	7	5	28	10	24	12	10	15	9	6	5	7	22	53	2
TR	3,162	163	294	20		22	17	24	10	8	9		45	35	31	32	52	101	33	3	3	9	36	63	1
BG	3,636	237	153	17	67	12	7	11	6	5	4	3	20	20	24	19	43	33	11	5	5	6	20		2
HR	5,013	87	252	15	75	12	7	14	6	1	3	4	30	21	23	18	52	76	25	7	6	9	19	68	2
EL	7,807	180	236	17	65	11	16	25	8	5	4		44	32	25	47	79	56	35	4	3	10	29	50	1
HU	8,495	168	262	19	95	18	9	16	7	3	5	2	37	19	22	55	46	81	31	7	5	8	26	59	2
RO	3,223	135	156	17	92	10	9	10	5	12	12	2	25	16	22	12	17	19	11	4	4	5	15	37	2
EU	7,428	239	293	17	93	14	12	24	8	4	6	6	41	32	30	49	69	71	37	6	6	8	33	71	2
AT	7,243	276	338	13	99	23	12	38	7	25	38	7	45	36	49	94	125	293	43	7	6	11	34	75	2
BE	8,125	220	320	15	98	22	31	36		9	7	15		33	33	260	426	488	37	9	9	8	41	86	4
CY	7,157	270	314	20	75	17	10	5	3	2			34	33	39	29	49	58	32	3	3		21		2
CZ	8,942	328	307	13	92	23	7	15	5	2	4	3		25	35	42	41	50	28	6	6	9	28	62	2
DK	10,001	336	271	16	91	21	11	24		5	5	6		24	31		302	392	32	7	8	7	43	79	4
EE	9,860	225	249	19	81	20	1	3				2		27			66	51	5	4	5		25		3
FI	9,292	344	326	17	92	21	4	12				4		25	33	111	248	431	25	4	4		30	43	2
FR	7,229	335	317	15	94	19	10	34	8	4	4	8	19	22	24	30	83	119	41	7	7	8	41	74	3
DE	8,352	267	329	17	95	23	14	30	11	7	8	7		33	55	136	105	271	42	7	8	9	41	73	3
IE	5,831		336	15	89	22	28	28				16		50	27		179	372	36	8	9		39		5

	Milk, whole fresh cow	Eggs, hen, in shell	Meat, cattle	Meat, chicken	Meat, pig	Meat, sheep	Fruit Primary	Apples	Grapes	Cherries	Cherries, sour	Raspberries	Watermelons	Vegetables Primary	Cabbages and other brassicas	Chillies and peppers, green	Cucumbers and gherkins	Tomatoes	Onions, dry	Cereals, Total	Wheat	Maize	Potatoes	Sugar beet	Pulses, Total
	Kg/an	No/an	Kg/an	Kg/an	Kg/an	Kg/an																			
IT	6,727	181	279	19	123	11	16	43	12	3		7	48	32	19	25	29	60	35	5	4	11	29	63	2
LV	7,168	261	198	17	83	17	2	3				1		28	33		79		22	4	5		22		3
LT	6,406	192	263	18	82	14	2	4		1	1	1		19	26		19	19	15	4	5	7	17	69	3
LU	8,014	318	366		85	21	9	8	9					24	69				25	6	6	5	26		3
MT	6,846	246	278	17	85	25	26		7														14		
NL	9,205		204	17	99	23	36	39	10	15	17	16		59	40	279	694	496	47	8	9	8	42	83	
PL	6,833	233	302	19	94	17	12	22	4	5	6	5		33	42	46	49	76	25	4	5	6	28	58	2
PT	8,500	369	249	15	67	12	8	23	5	2	2	19	33	50	27	43	66	95	37	5	3	10	23		1
SK	7,352	234	288	15	94	15	7	16	6	4	1	1	46	18	30	23	62	56	34	6	5	8	23	59	2
SI	6,268	227	308	17	97	14	9	27	7	6	7	6	31	19	30	22	18	41	23	7	6	10	27	65	2
ES	9,280	283	278	20	88	12	12	20	7	4	3	21	57	40	23	67	101	83	54	4	4	12	33	90	1
SE	9,041	338	320	15	94	20	11	18	2		4	3		26	31		182	402	45	6	7	7	36	71	3

Source: FAO. a) data for sheep meat carcass weight in Montenegro were obtained from MONSTAT.

The revealed comparative advantage (RCA) measures a country's share in the export of specific product in the total export of that country versus the world's share of export of that product in total world export: (Xci / Xct) / (Xwi / Xwt), where X = export, c = country c, i = product i, t = total, w = world. A higher RCA indicates a higher competitiveness in trade of the particular product (Balassa, 1965, 1989). A value larger than 1 indicates a relative advantage.

In the table below (see Table 8-15), the RCAs of a number of selected product groups is presented. The data relate to 2019-2020 averages. Albania is exporting a relatively large amount of vegetables, resulting in a RCA of 6.2 for vegetables as a whole. This is in concordance with the relatively high yields. The same applies to North Macedonia, although to a lesser extent. For Montenegro, the largest RCA can be found in the meat category. For Serbia, honey, fruit and cereals are competitive. And finally, in Türkiye, the RCA is most positive for eggs, but also quite large for fruit and vegetables and cereals. For tomatoes, Türkiye has an RCA of 3.4.

Table 8-15 Revealed comparative advantage for various product groups, average of 2019-2020

	Agricultural products	Dairy Products	Milk, whole fresh cow	Butter, cow milk	Eggs, hen, in shell	Honey, natural	Meat and meat preparations	Bovine Meat	Meat, chicken	Pigmeat	Meat, sheep	Fruit	Apples	Grapes	Cherries	Cherries, sour	Watermelons	Vegetables	Cabbages and other brassicas	Chillies and peppers	Cucumbers and gherkins	Tomatoes	Cereals	Cereals and preparations	Wheat	Maize	Potatoes	Sugar beet	Pulses
AL	0.7	0.0			1.3	0.0	0.0			0.0		0.7	0.9	0.1	0.0		16.3	6.2	13.7	13.5	24.5	21.6	0.0	0.2		0.0	0.5	5.9	0.3
ME	1.4	0.0	0.5	0.0	0.4	0.0	3.9	0.9	0.2	10.5		1.3	0.0	1.8			7.0	1.6	0.3	0.1	0.0	0.0	0.1	0.1	0.0	0.1	1.0		0.2
MK	1.1	0.2	0.4	0.0		0.2	0.4	0.0	0.1	0.7	3.9	1.3	8.3	3.9	2.2	4.2	2.6	3.9	27.1	7.3	4.8	2.9	0.2	0.9	0.1	0.3	0.6		0.0
RS	2.5	1.0	3.7	0.5	0.5	5.4	0.6	0.4	0.5	1.1	0.0	5.4	15.4	0.1	1.7	99.3	0.7	1.8	0.6	1.3	3.9	0.4	5.9	4.3	1.9	15.7	0.6	0.0	0.0
TR	1.4	0.5	0.2	0.2	8.2	1.2	0.5	0.0	2.7	0.1	0.1	3.2	1.4	1.7	5.7	0.1	0.9	1.9	0.2	2.4	1.6	3.4	1.2	1.8	0.1	0.4	0.7	0.0	5.1
BG	2.0	0.9	0.7	0.2	6.6	10.6	0.7	0.0	1.5	0.5	0.4	0.8	0.1	0.0	0.7	8.3	0.7	1.1	0.3	0.8	2.7	0.8	6.8	5.0	11.0	7.5	0.1	0.9	1.2
HR	1.8	1.0	2.9	0.7	1.3	0.9	1.4	1.1	0.5	1.8	0.1	0.5	1.3	0.0	0.3	9.2	0.9	1.0	0.7	0.3	2.2	0.8	2.7	2.7	2.3	5.6	0.7	0.0	0.1
EL	2.4	5.1	0.7	0.4	0.5	4.2	0.5	0.1	0.8	0.4	2.4	6.2	2.8	5.5	8.1	8.4	16.4	5.3	0.2	2.4	5.5	0.6	0.7	1.3	1.0	0.1	2.2	0.0	0.2
HU	1.0	0.7	3.0	0.1	1.5	6.0	1.3	0.1	1.4	1.7	0.1	0.4	0.2	0.1	0.2	16.3	0.9	1.1	0.4	0.7	0.3	0.1	2.1	1.4	1.9	3.8	0.1	13.5	0.6
RO	1.3	0.5	1.3	0.0	1.3	5.4	0.7	0.1	1.5	0.6	1.1	0.1	0.0	0.0	0.1	0.1	0.1	0.4	0.1	0.0	1.0	0.0	5.6	3.6	6.6	9.0	0.2	0.0	0.3
EU	1.2	2.0	2.3	1.9	1.9	1.1	1.4	0.8	1.1	2.1	0.5	1.0	1.1	0.9	0.3	1.5	1.4	1.4	1.0	1.6	1.7	1.4	0.7	1.1	1.0	0.5	1.9	3.2	0.3
AT	1.0	1.9	5.6	0.3	0.4	0.7	1.3	1.0	0.8	2.0	0.0	0.7	0.9	0.2	1.8	0.8	0.3	0.4	0.3	0.9	0.4	0.2	0.5	0.9	0.5	0.7	0.3	3.3	0.0
BE	1.3	2.0	2.7	3.0	2.0	1.4	1.2	0.6	1.5	1.6	0.6	1.1	0.6	0.1	0.2	0.5	0.1	1.6	0.6	0.5	0.7	1.4	0.3	1.1	0.2	0.1	2.0	3.5	0.3
CY	1.8	19.7		0.0	0.1	0.1	0.2	0.0	0.1	0.5	0.0	2.1		0.0	0.0		0.0	0.2	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	56.3		0.0
CZ	0.5	1.0	6.1	0.2	1.2	0.2	0.3	0.1	0.1	0.4	0.0	0.2	0.2	0.1	0.0	2.2	0.1	0.2	0.2	0.2	0.2	0.1	0.5	0.7	1.0	0.1	0.2	0.7	0.1
DK	1.9	5.3	4.1	5.8	0.9	1.3	5.0	1.1	0.9	12.4	0.1	0.4	0.2	0.2	0.1	0.0	0.1	0.3	0.1	0.1	0.0	0.1	0.5	1.5	0.6	0.1	2.1	4.4	0.4
EE	1.0	3.2	16.8	0.7	0.3	0.3	0.8	0.3	0.7	1.4	0.1	0.4	0.0	0.0	0.2	2.4	0.1	0.3	0.1	0.0	0.5	0.1	2.2	1.9	3.6	0.0	0.3	0.5	2.3
FI	0.4	1.5	0.1	5.0	0.9	0.0	0.3	0.2	0.1	0.6	0.0	0.1	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.1	0.0	0.3		0.0
FR	1.6	2.9	2.1	1.9	0.8	0.5	0.9	0.7	0.7	1.2	0.2	0.6	2.1	0.1	0.1	0.1	0.6	0.9	0.2	0.4	0.2	1.5	2.2	2.2	3.6	1.5	5.4	0.1	0.5
DE	0.7	1.5	1.9	0.9	1.0	0.8	0.9	0.3	0.3	1.8	0.1	0.3	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.1	0.1	0.1	0.3	0.7	0.5	0.1	1.1	5.5	0.1
IE	1.0	4.3	0.8	15.3	0.5	0.3	2.9	4.7	0.5	2.1	5.2	0.1	0.1	0.0	0.0		0.0	0.2	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.1	0.1	0.0	0.0
IT	1.2	1.7	0.2	0.3	0.2	0.4	0.7	0.4	0.3	1.4	0.1	1.2	4.3	3.0	0.2	2.8	2.2	1.9	1.9	0.2	0.1	0.5	0.3	1.2	0.0	0.1	0.4	0.0	0.1

	Agricultural products	Dairy Products	Milk, whole fresh cow	Butter, cow milk	Eggs, hen, in shell	Honey, natural	Meat and meat preparations	Bovine Meat	Meat, chicken	Pigmeat	Meat, sheep	Fruit	Apples	Grapes	Cherries	Cherries, sour	Watermelons	Vegetables	Cabbages and other brassicas	Chillies and peppers	Cucumbers and gherkins	Tomatoes	Cereals	Cereals and preparations	Wheat	Maize	Potatoes	Sugar beet	Pulses
LV	2.6	4.0	25.1	0.5	9.0	0.5	0.9	0.7	1.5	0.8	0.2	1.1	0.6	0.8	0.6	0.2	1.0	0.9	0.9	0.6	1.1	1.2	6.7	4.8	15.5	0.3	1.0	68.1	5.0
LT	2.1	4.0	4.9	1.7	2.4	1.7	1.1	1.2	2.3	0.5	0.0	1.0	0.3	0.3	0.3	0.4	0.9	1.1	0.3	0.7	0.5	0.7	4.5	3.5	10.2	0.7	0.5	0.1	4.4
LU	1.2	6.5	23.9	1.0	0.3	0.1	0.4	0.4	0.1	0.4	0.1	0.3	0.1	0.1	0.1	0.0	0.1	0.3	0.2	0.1	0.2	0.2	0.6	0.8	0.2	0.2	1.2		0.0
MT	0.5	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0						0.0					0.0	0.8			1.0		0.0
NL	1.8	2.8	1.2	3.5	5.4	0.3	1.9	1.5	2.9	2.0	1.0	1.9	1.0	2.7	0.2	0.3	1.3	2.9	2.8	5.0	5.0	5.4	0.2	0.9	0.0	0.2	5.1	0.2	0.2
PL	1.6	2.0	4.4	2.0	5.3	1.7	3.0	2.5	5.2	2.0	0.0	1.1	3.3	0.0	0.0	4.5	0.1	1.4	1.1	0.4	0.4	0.5	0.8	1.6	1.1	0.5	0.2	2.6	0.3
PT	1.4	1.1	2.7	2.0	2.8	1.7	0.6	0.3	0.3	1.1	0.2	1.9	1.7	0.2	0.1	0.0	0.6	2.5	3.7	0.2	0.1	1.9	0.3	0.8	0.0	0.3	1.5	0.0	0.6
SK	0.5	0.7	2.4	0.2	1.2	0.2	0.3	0.0	0.6	0.6	0.1	0.2	0.3	0.1	0.0		0.1	0.2	0.1	0.1	0.1	0.3	0.7	0.7	1.2	0.7	0.3	22.7	0.1
SI	0.7	1.0	9.8	0.0	0.6	0.5	0.8	0.4	1.0	0.7	0.0	0.8	0.6	1.7	0.0	4.0	0.2	0.5	0.2	1.1	0.9	0.2	0.7	0.6	0.2	1.7	1.9	38.5	0.0
ES	2.1	1.0	1.0	0.3	3.0	2.7	3.5	0.9	0.7	8.5	1.6	4.8	0.9	2.6	1.2	5.2	14.4	6.5	3.3	13.0	14.5	6.4	0.3	0.8	0.2	0.1	1.7	0.5	0.3
SE	0.5	0.5	0.1	0.2	0.7	0.1	0.2	0.1	0.2	0.3	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.2	0.1	0.0	0.0	0.0	0.3	0.6	0.5	0.0	0.1	0.0	0.1

Source: UN Comtrade and FAO.

9. CONCLUSIONS AND RECOMMENDATIONS

This study presents the results of the comparative analysis of the competitiveness of the agri-food sector in five IPARD countries: Albania, Montenegro, North Macedonia, Serbia and Türkiye. The IPARD countries were compared with each other, as well as with five neighbouring EU counties (Bulgaria, Croatia, Greece, Hungary and Romania). Furthermore, a comparison with the EU-27 average (or total) was used for benchmarking purposes. This comparative analysis of sectoral and macro-economic competitiveness aims to provide more knowledge on the state of development of the agricultural sectors in the IPARD countries and to provide information about data quality and availability for evidence-based policymaking.

This section provides an overview of the main conclusions and recommendations.

9.1. Conclusions

9.1.1. Conclusions from the macro-economic developments

- In general, it can be concluded that the IPARD countries are still a long way from the EU average in terms of macro-economic developments. The EU average GDP per capita is four times higher than in Türkiye and six times higher than in Albania. Also, in terms of employment (as % of total population) and unemployment (in % of labour force) and earnings there are considerable gaps between the IPARD countries and the EU average. There are, however, signs of improvement, as the gap between the IPARD countries and the EU has been narrowing in the past 12 years.
- Education, health, logistics, R&D, entrepreneurship, and corruption are other macroeconomic factors that have been studied. The IPARD countries generally score below the EU average on most of the indicators.
- The COVID-19 pandemic has had a large effect on economic activities of the IPARD countries. It had a negative impact on the GDP growth in 2020, especially in Montenegro. But also, other IPARD countries have seen negative growth rates of GDP in current local currencies. The exception is Türkiye. However, Türkiye is going through a special sort of economic crisis, with inflation rates at staggering hights. GDP in current US dollars has declined in Türkiye, also reflected in decreasing GDP per capita. Furthermore, in almost all countries, a reduction of exports has been seen because of disruptions in agri-food supply chains. Furthermore, unemployment has increased in 2020, although in 2021 a slight decrease has been noticed.
- At the same time, it its noticeable that gross fixed capital formation has been around or above the EU average for all IPARD countries in 2021 (for North Macedonia 2021 is not available), which may have contributed to economic growth.
- In terms of the overall trade performance all IPARD countries are net importers of goods, which is comparable to the neighbouring EU countries. In recent years, all countries faced growing imports and exports, with only Türkiye having less net imports than in 2021. In terms of overall logistic performance, Türkiye has the highest performance index and is closest to the EU average, while all other studied countries have rather similar overall logistic performance rates, well below the EU average.

9.1.2. Conclusions from the country-level competitiveness

The analytical framework used to analyse the competitiveness at country level distinguished five groups of indicators of competitiveness, consisting of many indicators. These groups of indicators were: 1. Resources and Factor conditions, 2. Demand conditions, 3. Competition and Firm dynamics, 4. Innovation and Entrepreneurship, 5. Government.

- From the analysis we conclude that the IPARD countries underperform the five neighbouring EU MS in terms of Resources and Factor conditions. For the other

indicator groups, the situation is more diverse. Overall, Albania and North Macedonia have the lowest scores on Competition and Firm dynamics, innovation and Entrepreneurship, and Government. The best performing IPARD countries on these groups of indicators are Türkiye and Montenegro. Demand conditions are less favourable in Türkiye and Montenegro. Serbia is in the middle of the IPARD countries, except for the resources and factor conditions, which are somewhat more favourable than in the other IPARD countries.

- With regard to Innovation and Entrepreneurship, Albania and North Macedonia are somewhat underperforming, compared to Türkiye and the EU average. There are however some differences between the various indicators. North Macedonia, Albania, Montenegro and Serbia are generally performing relatively low on entrepreneurship, in terms of e.g., attitudes towards entrepreneurial risk and willingness to delegate authority. The cost of starting a business is relatively high in Albania and Türkiye.
- With respect to innovation, Türkiye is again the best performing IPARD country, with a relatively high score on cluster development, scientific research, R&D, and buyer sophistication.
- Related to indicators' group Government, Albania and Türkiye have a smaller share of government expenditures in GDP. A positive factor in Türkiye is a relatively high score on institutional trust. At the same time, corruption is relatively high in Albania and North Macedonia and to a lesser degree also in Serbia and Montenegro.
- When compared with the EU MS, the IPARD countries are below the EU average, but the same can be said of some of the EU MS included in the comparison, such as Croatia and Romania.

9.1.3. Conclusions from agricultural sector developments

- The developments in the agricultural sector of IPARD countries show that this sector is very important to the economy of all IPARD countries. The share of GVA of agriculture in GDP of all IPARD counties varies between 5.6% -17.7%, compared to the EU average of 1.6% and can offer a potential for competitive advantage to all IPARD countries.
- Farmers in IPARD countries are generally holders of small, fragmented farms, aged, and characterised by low level of cooperative/collective organisation and representation. The small farm size is one of the weaknesses of the agricultural sector in IPARD countries as small farms are usually characterised by a low level of technology and equipment, low quality of buildings and storage facilities, low marketing bargaining power and high production costs, which in their turn lead to inefficiencies in production.
- In terms of agricultural trade performance, Serbia, with a share of one fifth of agricultural products in the total export, is leading among IPARD countries and is a net exporter. The other IPARD countries are net importers of agricultural products, although in 2021 Türkiye had a positive agricultural trade balance. Especially Albania and Montenegro are importing more agricultural products than they are exporting.
- In terms of export potential, Albania has set the largest steps in the last decade (about 400% increase between 2010-2020), followed by Serbia and Türkiye (by 209% and 133% respectively, between 2010 and 2021). North Macedonia and Montenegro are showing a steady export increase but at a slower pace. Remarkably, despite the large increase in exports of agricultural goods from Albania, the export to the EU MS has largely decreased between 2010 and 2020, giving more space to export to IPARD countries and to the rest of the world. The opposite trend was seen for North Macedonia and Serbia where the exports to the EU MS remained stable and exports to the other IPARD countries have been decreasing.

9.1.4. Conclusions from agricultural sector-level competitiveness

The analytical framework, used to analyse the competitiveness at agricultural sector level, distinguished, in addition to the five groups of indicators of competitiveness already mentioned above, a group on 'Related and Supporting industries'. However, consistent sector-specific data for the analysis was lacking for this group. Hence, more general indicators, such as the value added of the services sector in % of GDP, and the overall logistics performance index were used, both of which showed a positive and significant correlation with the agricultural productivity.

- Overall, the performance of the IPARD countries is relatively low compared to the EU for the Related and Supporting industries. Additionally, the scores of the IPARD countries on this factor (related and supporting industries) are relatively low in comparison to their scores on the other indicators' groups.
- In terms of agricultural value added per worker, Resources and Factor Conditions and Competition and Firm dynamics, Montenegro has the best performance, followed by Türkiye. Albania has the lowest performance on agricultural value added per worker and is lagging behind on all other groups of indicators.

In general, findings from country-level competitiveness and sector-level competitiveness show many similarities. There are however a few notable exceptions.

- The general government final consumption expenditure, and health expenditures are more positively correlated with agricultural productivity than with the overall productivity, indicating the importance of health care and government support in rural areas for the development of agricultural productivity.
- A higher R&D expenditure in % of GDP is more positively related to agricultural productivity than to the overall productivity, indicating that agricultural sector would benefit more from R&D expenditures, compared to the other sectors.
- Higher rankings on both overall citation indicators and specific agricultural citation scores of Scimago, are more positively related with agricultural productivity, pointing to the importance of science for agricultural productivity and development.
- Openness to trade (trade in % of GDP) is less strongly correlated with the agricultural productivity than with the overall GDP. This is probably because agriculture is just a relatively small part of GDP in many of the EU countries.

9.1.5. Conclusions from agricultural sub-sector developments

For the assessment of the competitiveness of agricultural sub-sectors, the yields and the revealed comparative advantage indicator have been analysed. The analysis shows:

- Cow milk yields are particularly low in all IPARD countries. Despite the obvious increase in the productivity of cow milk in recent years in all IPARD countries, yields are only half of the EU-27 average, leaving much room for improvements.
- Compared to EU MS averages, goat and sheep meat yields are rather high in Serbia, North Macedonia, and Montenegro and can offer a competitive advantage for these countries. Similarly, the yields for goat milk per animal are high in Serbia, outweighing the EU averages, while North Macedonia is relatively close to the EU averages.
- High fruit and vegetable yields in most of IPARD countries are also promising for enhancing the competitiveness of the agricultural sector. Here Albania has a leading position among IPARD countries, where for all fruits and cabbages and other brassicas, it has higher productivity compared to all IPARD countries (except for Türkiye for citruses and apples) as well as to the EU-27. This is not the case for Montenegro and North Macedonia, where the lowest productivity for all fruits within IPARD countries and compared to the EU-27 is observed (except for watermelon in Montenegro). In Serbia, in 2020 compared to 2010 the productivity of apples (almost twice), watermelons and tomatoes (1.5 times) has remarkably increased, although it remains relatively low in comparison to the EU average (except for sour cherries and grapes). An overall productivity growth in

recent years is seen for all fruits and vegetables in Türkiye with the highest productivity for citruses, apples and tomatoes compared to all IPARD counties as well as to the EU-27 average.
- In terms of yields for cereals, Albania and Serbia have the highest productivity equal to or higher than the EU average, while North Macedonia and Türkiye have somewhat lower productivity. For potatoes, in all IPARD countries, except for Türkiye, the yield is twice as low as in the EU-27, thus there is room for further improvement.

Revealed Comparative Advantage (RCA) was calculated for several selected agricultural products as a main measure of agricultural trade performance. The results show that IPARD countries have some specific specializations that give rise to the trade opportunities:

- in Albania: the largest RCA is in vegetables such as cucumbers, tomatoes and chillies and peppers, and in eggs;
- in Montenegro: the largest RCA is in meat, followed by products such as grapes, milk, and cereals;
- in North Macedonia: the largest RCA is in vegetables, then in fruits such as apples and cherries and grapes, and sheep meat;
- in Serbia: Fruit, such as apples and sour cherries, honey, milk, and cereals are competitive;
- in Türkiye: RCA was most positive for eggs, but also quite large for fruit and vegetables and cereals.

Although the increasing yields and high volumes of agricultural outputs have contributed to the growing exports of agricultural products, some further improvements can be made. The main problems with exports reported by NEs are related to product quality and not complying with the quality standards, post-harvest losses and lack of cold chains. Besides, in some of the countries, sanitary requirements are carried out in the old fashion, not according to the EU principles, which puts producers at risk as fresh products might stay at the border and then be rejected for export.

From our analysis of agricultural prices and revenues developments we conclude:

- The recent strong devaluation of the Turkish lira against the Euro caused sharp agriculture price increases in Türkiye in recent years for total agriculture, as well as for some products (e.g., cow milk, honey, fruit, vegetables, cereals, oilcrops and pulses), whereas other IPARD countries have faced only moderate increases in prices or, in some situations, even slight decreases.
- The price increases for some agricultural products registered in the selected EU countries, (i.e., Romania, Hungary, Bulgaria, Croatia and Greece) are comparable to price increases registered in Serbia and North Macedonia. Moreover, countries such as Romania and Hungary faced sharper price increases for a number of products, compared to some IPARD countries.
- No conclusions can be drawn for Montenegro on agricultural prices due to the absence of data.
- With regards to the costs and revenues, a full comparison between the IPARD countries is difficult to make due to differences in background data from each country, such as (i) the data availability, (ii) the data structure and aggregation, (iii) the definitions of indicators, (iv) the calculation method, (iv) the characteristics of farms where background data were collected, e.g. sizes and production methods. Thus, no firm conclusions could be drawn about similarities and differences in costs and revenues, although some patterns are visible.

9.1.6. Conclusions from rural-urban disparities

Analysis of urban rural disparities revealed that:

- Education shows a large disparity between rural and urban areas. There are some differences between the assessed countries, although findings show that access to primary education in the rural areas compared to urban areas is more difficult or education is even inaccessible. Reasons mentioned are the lack of services, distance to school, lack of transport and high poverty. Also, in distant rural areas due to the decreasing number of schoolchildren in primary schools, schools are closing. Hence, those families that stay face challenges of how to provide primary education for their children – that is the main reason why young generation migrates.
- Gender (equality) analysis shows that with some minor differences between the countries, overall women have disadvantages in many areas, including: land ownership, labour market participation, position in employment, access to capital, access to the societal and economic environment out of the farm, and so on. Also, for example in Türkiye, women's participation in the labour market in rural areas is higher than in urban areas, but this is in the form of unpaid family work.
- Migration and brain drain are the main drivers for the continuing rural depopulation. Many family farm members are migrating due to the reduced economic opportunities, limited social services, education opportunities, and social welfare. In the Western Balkans countries, migration takes place also outside the country, while in Türkiye, the migration is high, but only from rural to urban areas within the country. This might be due to low education and qualification, lack of foreign language competency and cost of mobility.
- A poorly developed infrastructure and long travel time negatively impact the competitiveness of IPARD countries. Infrastructure is less developed in border areas as well as between much of the WB countries. The same applies to the Eastern part of Türkiye bordering Georgia, Armenia, and Iran. Serbia has better infrastructure than the other Western Balkans countries. Partly this is caused by the less mountainous terrain. Especially Albania has undeveloped rural infrastructure, in particularly in the mountain areas, which is unfavourable for local rural development.

9.2. Recommendations

- Invest in quality of trade and transport infrastructure
  - Points that need to be addressed include both soft infrastructure, such as the legal environment, implementation of the EU standards and the capacity of food inspection services, and hard infrastructure, such as roads and waterways and the post-harvest losses related to the lack of cold chains (e.g. cold storage capacity, sorting and transportation). These can be done by increasing the budget for all types of infrastructure. Additionally, financial support for cooperatives and investment in advisory services are seen as major route to further improvements. Hereby the adopted IPARD measures (in particularly Measure 6[25]) are of special importance for the beneficiary countries and can support further improvements in this area. Furthermore, private investment (e.g., in cold storage facilities) could be stimulated by attractive loans provided by agricultural banks, e.g., backed by government guarantees and/or credit subsidies.
- Unemployment - create incentives for youth in rural areas
  - Keeping young people in rural areas is a major challenge if wages are low and unemployment is high. Limited employment opportunities and low wages are also the reasons causing migration and brain drain, particularly in the case of young people who might be able to find better-paid jobs in other EU MS. Creating opportunities for young people in rural areas is therefore seen

[25] https://agriculture.ec.europa.eu/news/european-commission-will-support-agriculture-and-rural-development-pre-accession-countries-over-2022-03-23_en

as a major point of attention, which stimulates youth entrepreneurship by creating some financial incentives for start-ups, such as concessionary loans or zero-interest loans, or providing entrepreneurship education and training on how to start business in rural areas is recommended.

- Increase yields by applying technological innovation, schooling and cultivating not used lands, while keeping a good balance between efficiency improvements and sustainability issues by implementing Smart Specialisation Strategy
  - This can be done through education and schooling, through state support in technological innovation, R&D incubators and demonstration projects for farmers, by organizing education trips to neighbouring EU MS for transfer of knowledge, by promoting best practices and knowledge exchange. Advisory services should play a key role in this.
  - However, this recommendation is debatable as, on the one hand, increasing yields can contribute to enhancement of competitiveness whereas, on the other hand, at this moment the adverse trends and policies can be seen in the EU-27, where due to growing challenges of climate change and sustainability, the intensive agriculture with maximized outputs is no longer stimulated. Here, a good balance should be sought among improvements in yields and sustainability issues, with production methods that combine sustainable and efficient production principles (e.g., circular agriculture or e.g. applying principles of sustainable farming using e.g. seeds that need less chemical inputs and/or water). In this regard, the further development and implementation of the Smart Specialisation Strategy (S3) by Western Balkan countries and Türkiye is of essence, as S3 strategy encompasses a broad view of supporting technological and social innovation and will build on the resources available to countries and on their specific socio-economic challenges in order to identify unique opportunities for development and growth.
- Enhancing the existing export potential by investing in quality and quality standards
  - In all assessed countries there are one or more agricultural subsectors that can offer a competitive advantage (RCA). Especially fruits and vegetables offer a high potential for exports for most of the IPARD countries. Therefore, investing in product quality (e.g., cold chains, more efficient sanitary checks at the borders) and development and implementation of the quality standards is of high importance, as this will allow to enhance the market share for the exports (e.g., to the EU or worldwide).
- Developing internal markets for the basic products to enhance food security and rural development
  - Although the products that offer a competitive advantage to the countries (i.e., have a high RCA) are of high importance in enhancing the competitiveness of the countries, those basic products which do not offer a competitive advantage for trading across borders, such as milk, also need attention and further development, as these basic products are essential for internal/domestic markets and ensure food security and rural development.
- Invest in education, especially in rural areas
  - Decreasing the disparities between rural and urban areas in education and providing access to basic educational services by improving road infrastructure and other basic infrastructure (e.g., in mountains, where roads cannot be used in some parts of the year, thus restricting access) is of major importance. Furthermore, improvements in education in rural areas can be achieved by not only investing in infrastructure, but also in additional training facilities, and for teacher training provision in vocational schools and training centres. Development of various non-formal education programmes in the field of agriculture and food technologies aiming at increasing the educational level of adult population, with vocational skills in rural areas, can contribute

to decreasing unemployment and raising awareness in knowledge-based innovation. Furthermore, harmonization of vocational education and trainings with the needs of the labour market is advisable.

- Invest in digital capacity
  - The future is digital, while farmers in IPARD countries are generally not very well connected to the digital infrastructure. Training in the use of digital networks and investment in digital capacity have been found as important to increase the competitiveness.
- Improve agricultural data collection through FADN
  - The competitiveness and the performance of the countries are assessed on the basis of the quality and the availability of the data. Thus, in the absence of data, it is hard to draw clear conclusions about the state of the country. The comparison with the EU MS is also difficult due to differences in definitions of specific indicators. Harmonization of the data and collection through FADN is therefore recommended.
- Invest in R&D
  - The findings show that investments in R&D and science have a strong correlation with (labour) productivity in general, and especially with the agricultural value added per worker. Investing in R&D can improve agricultural productivity and improve overall and agricultural sector competitiveness.

10. DATA GAPS

In this chapter, the data gaps are discussed that have emerged in the course of the research. Data were collected for: a) the main macro-economic indicators, b) the agricultural sector indicators (structural indicators), c) agricultural market prices and inputs costs, d) agricultural output and yields, e) urban-rural disparities. From a broad survey of available databases, a number of variables has been chosen to use to operationalize the indicators in each of the above-listed data categories. The data was then collected from international databases and supplemented whenever possible from national data sources (see Section 2.2). Because the aim of this research is to perform a comparative analysis of the macro-economic and agricultural developments and to benchmark the competitiveness of the IPARD countries with each other and with the EU, a necessary condition for the data collection is that data are available and comparable for all or at least the majority of IPARD and EU countries.

Data availability may be lacking on three different levels:

- There is no data available at all for a certain indicator (no data),
- Data is available but it is not comparable between countries (inconsistent variable definitions),
- Data is available for some countries but lacking for others (limited geographical coverage),
- Data is available for some years but not for the most recent periods (limited time coverage).

In Table 10-1 a summary overview of our findings is given. First, the agricultural sector data (including market prices, input cost, output and yields) are discussed, then the macro-economic and socio-economic data, the rural-urban disparities, and the data underlying the competitiveness analysis. Finally, the international trade data is discussed separately.

Table 10-1 Summary overview of data availability and gaps

Indicators	Data availability	Sources
Agricultural sector		
- Farm structure data	Recent census data about numbers of farms is not available for Albania (last year 2015), Montenegro (2016), North Macedonia (2016), Serbia (2018). For Türkiye (2019) data on the number of agricultural holdings is available from a Farmer Registration System. Areas and numbers of animals are available	National statistics
- Production value	Generally available, up to 2020. No data for Montenegro.	FAO and national statistics
- Production quantity and yields	Generally available, up to 2020	FAO and national statistics
- Prices	Market prices of agricultural products, generally available, up to 2020. No data for Montenegro. Price level indices of agricultural (aggregate) products available from Eurostat	FAO and national statistics Eurostat
- Input costs	Electricity prices available, but not for Albania. Other input costs generally not available, except muriate of potash and urea for Türkiye and Serbia. Serbia has also data on other input costs.	FAO and national statistics

Indicators	Data availability	Sources
Socio and macro-economic statistics		
- Population	Generally, data available, up to 2021.	FAO, World Bank
- Migration	Generally, data available for immigration up to 2021, except for Serbia. Türkiye and Albania have data gaps 2010-2015. Data gaps for emigration Albania (2010-2015), Türkiye (2010-2015 and 2020-2021) Montenegro only 2020 available. No data for Serbia.	Eurostat
- Employment	From World Bank data available on employment to population ration and unemployment. From Eurostat data available for employment and unemployment, except for Albania. ILO: Mean nominal hourly labour cost only available for Serbia. ILO: Mean nominal monthly earnings of employees, in agricultural, generally available but missing for Montenegro. Mean nominal monthly earnings of employees, total, generally available with data gaps for Albania and Montenegro.	Eurostat, ILO, World Bank
- Health	Current health expenditures generally data available up to 2019. Life expectancy up to 2020.	Legatum, World Bank
- Education	Legatum data on the educational level of adult population is available for all countries. From UNESCO and the data on the educational attainment rate contains a lot of data gaps for all countries. Eurostat contains only data on North-Macedonia and Serbia. World Bank data on literacy rate for Türkiye is available, but misses for other countries with only data from 2010-2012 respectively.	Eurostat, Legatum, UNESCO
- Infrastructure and ICT	Data on individuals using the internet and with mobile cellular subscriptions is generally available. Logistic performance index has data gaps for all countries, every second year is available between 2010-2018	World Bank
- Income distribution	Gini index is generally available for all countries up to 2019, although there are data gaps for Albania and Montenegro. Gini coefficient in equivalised disposable income from Eurostat shows the same trend. People at risk of poverty or social exclusion shows data gaps, only Serbia and North-Macedonia is data 2010-2020 available.	Eurostat, World Bank
- Social protection	Data on social protection expenditure is generally available, except for Montenegro and North Macedonia.	Eurostat
- National accounts	Generally available up to 2021. For data on taxes and compensation or employees, no data for Montenegro.	Eurostat, IMF, World Bank
- Government finances	For General government final consumption expenditure data available for all countries. Government Expenditure Agriculture is only available for Albania and partially for Montenegro.	Eurostat, FAO, IMF, World Bank

Indicators	Data availability	Sources
	In general, there are a lot of data gaps for Montenegro and Serbia.	
- Exchange rates	Data available for all countries up to 2021.	Eurostat
- Interest rates	Data available for all countries up to 2021.	IMF, World Bank
- Balance of payment and trade	Data available for all countries up to 2020.	FAO, World Bank
Rural-Urban disparities		
- Population and migration	World Bank on rural population (persons) data available for all countries. FAO on rural population (1000 persons) data gaps for Albania, Montenegro and Serbia.	FAO, World Bank
- Education	The data on the educational attainment rate contains a lot of data gaps for all countries.	UNESCO
- Employment	Generally, data available for employment in agriculture. Many data gaps for unemployment in rural areas for Albania, Montenegro and Türkiye.	ILO, World Bank
- Income	No data on income in rural areas. People at risk of poverty or social exclusion shows data gaps, only Serbia and North-Macedonia data 2010-2020 available.	Eurostat
- Health	No data	
- Gender	No data	
- Infrastructure and ICT	Infrastructure data available No consistent data on ICT	CGIARCSI (2015); Weiss et al. (2015); Meijer et al. (2018); Worldgrids (2015); Simplemaps (2021); OpenFlights (2015); MSI (2016); Protected planet (2022)
Competitiveness at country level		
- Productivity	Data used on GDP per capita, Labour productivity output per worker available Total factor productivity no consistent data, limited coverage	ILO, World Bank
- Prices and costs	Data used on Price level indices and inflation, Electricity prices, and Labour costs.	Eurostat, ILO, World Bank

Indicators	Data availability	Sources
	Data available, except Labour costs (mean nominal hourly labour costs per employee by economic activity) data for AL, ME, HU. No data available on land prices: limited geographical coverage and time coverage. No consistent data for IPARD countries.	
- Resources and factor conditions	Data used on employment, unemployment, monthly earnings, life expectancy, education level of adult population, lending rate, financial system, logistics performance and individuals using internet. Data available. Limited consistent data available on education: fragmented and many different definitions. Data used only from Legatum composite indicator of Education level of adult population.	Eurostat, ILO, IMF, Legatum, World Bank
- Demand conditions	Data used on Inflation, minimum wages, taxes on income, and people at risk of poverty. Data available, except taxes on income for ME.	Eurostat, ILO, World Bank
- Competition and firm dynamics	Data used on Domestic market competition (WEF), Trade in % of GDP, and New business density. Data available	WEF, World Bank
- Innovation and entrepreneurship; entrepreneurship	Data used on costs of starting business, time to start a business, insolvency recovery rate, attitudes towards entrepreneurial risk, willingness to delegate, and companies embracing disruptive ideas. Data about innovation and entrepreneurship is fragmented in many ways, but World Economic Forum has made consistent series of many indicators relating to innovation and entrepreneurship. Data of WEF available till 2018, Limited time coverage for some indicators.	WEF, World Bank
- Innovation and entrepreneurship; innovation	Data used on Diversity of workforce, State of cluster development, International co-inventions (per million pop), Multistakeholder collaboration, Scientific publications (h index), Patent applications (per million pop), R&D expenditures (% of GDP), Research and development (0-100), Buyer sophistication, Trademark applications, Gross capital formation (% of GDP), Foreign direct investment, net outflows (% of GDP). Data of WEF available till 2018, Limited time coverage for some indicators.	WEF, World Bank
- Government	Data used on General government final consumption expenditure (% of GDP), Social protection expenditure (% of GDP), Institutional trust, Corruption perception index. Limited Eurostat data available on social protection expenditure for AL, ME, MK. Limited recent data. Supplemented with national statistic.	Eurostat, Legatum, World Bank, National statistics
Competitiveness at sector level		
- Productivity	Data used on value added per worker in Agriculture, forestry and fisheries (constant 2015 US$)	World Bank

Indicators	Data availability	Sources
- Prices and costs	Price level indices available for agricultural products Annual market prices available	Eurostat, FAO
	Data used on electricity prices and land prices. Electricity prices available except AL. Input costs of e.g., feed, fertilizers, crop protection, and land prices, have very limited availability, inconsistent definitions, limited geographical coverage.	Eurostat, national statistics
- Resources and factor conditions	Same data used as for country level, on employment, unemployment, monthly earnings, life expectancy, education level of adult population, lending rate, financial system, logistics performance and individuals using internet. Data available. Limited consistent data available on education: fragmented and many different definitions. Data used from Legatum composite indicator of Education level of adult population. But added some additional data about educational attainment rate of rural areas; but data is fragmented with limited geographical and time coverage.	Eurostat, ILO, IMF, Legatum, World Bank
- Demand conditions	Data used on Inflation, share of food in household expenditures, taxes on income, and people at risk of poverty. Data available, except taxes on income for ME.	Eurostat, ILO, World Bank
- Competition and firm dynamics	Data used on Domestic market competition, Trade in % of GDP, new business density, and additionally, RTA of agricultural products, and Yields of wheat, tomatoes, and milk. Data available.	WEF, World Bank
- Innovation and entrepreneurship	Same as for country level. With exception of Scientific publications replaced with specific citation scores for agricultural research fields. Data available.	Scimago, WEF, World Bank
- Related and supporting industries	Data used on Services in % of GDP and Logistics performance index. No consistent agricultural specific data available. RCA or RTA for some agriculture related goods might be calculated but initial explorations do not indicate any relationship with agricultural productivity.	World Bank
- Government	Data used on Government expenditure on agriculture, forestry and fisheries (in % of value added of the sector), Credit to agriculture, Institutional trust, Corruption perception index. Government expenditures and Credit to agriculture have data gaps, especially in ME, MK.	FAO, World Bank, Legatum, Transparency International
International trade and derived statistics	Data are available from Eurostat, UN Comtrade and FAO, and national statistics Some differences in definition of agricultural products between countries exist.	FAO, Eurostat, UN Comtrade

A large dataset was compiled with information on socio-economic and agricultural indicators. Data was collected from international databases, such as Eurostat, FAO, World Bank and ILO and from national statistics offices. International datasets are generally lagging behind national sources in terms of time coverage, as it takes time to collect data from national bureaus of statistics. This is particularly true for global datasets, such as most World Bank and FAO data series. But for the sake of consistency and comparability the use of international statistics is recommended. This is because the national definitions may sometimes differ from harmonised international definitions of indicators.

10.1. Agricultural data

With regard to the agricultural data, the data gaps are related to the farm structure. For Albania, the latest data on the total number of agricultural holdings was from 2015, while no details about the type of firms was available. In Montenegro and North Macedonia census information was available for 2016, but only at the overall sector level and not for specific subsectors. For Serbia, more elaborated 2018 data are available and for Türkiye, 2019 data on the number of agricultural holdings is available from a Farmer Registration System.

From FAO, production quantities, area, numbers of animals and yields are generally available for all IPARD countries. Production values and market prices, however, are lacking for Montenegro.

For the agricultural sector there is no data on land prices, prices of most inputs, costs of production and investments. With regard to input costs, electricity prices are generally available, but not for Albania. Other input costs generally are not available, except for muriate of potash and urea for Türkiye and Serbia. Other input costs are only available for Serbia.

10.2. Socio- and macroeconomic data

Data on population is available for all countries up to 2021. From Eurostat, immigration data is available, except for Serbia. There are data gaps for Türkiye and Albania for the years 2010-2015. Emigration data shows multiple gaps for all countries, except for the North Macedonia.

World Bank data is available on employment to population ration and unemployment for all countries. From Eurostat, data is available for employment and unemployment, except for Albania. Mean nominal hourly labour cost is generally missing. Mean nominal monthly earnings of employees in agriculture, is generally available, but is missing for Montenegro. Mean nominal monthly earnings of employees in all sectors is generally available with data gaps for Albania and Montenegro.

Legatum data on the educational level of adult population is available for all countries. From UNESCO and the data on the educational attainment rate contains a lot of data gaps for all countries.

For health, and infrastructure and ICT data is generally available. Also, data on social protection expenditure is generally available, except for Montenegro and North Macedonia. The latter is however supplemented with national statistics, because Eurostat data was missing for Albania, Montenegro, and North Macedonia.

The Logistics performance index is available for all countries. It is being constructed bi-annually by the World Bank.

With regard to the income distribution, the Gini index is a well-known measure of equality of income distribution. The data on the Gini index is available for all countries up to 2019 (at the time of writing this report), although there are data gaps for Albania and Montenegro. People at risk of poverty or social exclusion shows data gaps, only for Serbia and North-Macedonia data for 2010-2020 is available.

National accounts data is available up to 2021, from Eurostat and the World Bank. But there is no data on taxes, and compensation of employees for Montenegro. In general, there are a lot of data gaps for Montenegro and Serbia concerning government finances.

10.3. Rural-urban disparities data

World Bank data on rural population (persons) is available for all countries. FAO data on rural population (1 000 persons) exhibit data gaps for Albania, Montenegro and Serbia.

A distinction between rural and urban employment is only available for Serbia and North Macedonia. There are many data gaps for unemployment in rural areas as compared to urban areas for Albania, Montenegro and Türkiye.

Data on the educational attainment rate in rural areas also contains a lot of gaps for all countries.

With regard to health, gender and income in rural areas, there is no statistical data available. The same is the case for indicators about innovation and entrepreneurship.

10.4. Trade data

Trade data is generally available; however, Albania and North Macedonia did not have complete trade statistics reported for 2021 to UN Comtrade at the time of construction of the database for this report. Additionally, some data is not complete at the 4- and 6-digit level, meaning that sums of subheadings of the trade data do not always add up to the chapter level. This is due to confidentiality of data, but also due to statistical difficulties in the countries. For instance, for Albania in 2020 the subheadings of dairy, eggs and honey (HS chapter 4) and of vegetables and certain roots and tubers (HS chapter 7) show large gaps.

10.5. Competitiveness data

For the competitiveness analysis, a selection of data has been made from all of the sources that have been described above. We have tried to find relevant data for each of the indicators' groups in the competitiveness model. This data needs to be available for all countries. In some cases, we used composite indicators constructed in other competitiveness studies, such as the Global Competitiveness Index of WEF. This has been done for many of the indicators on innovation and entrepreneurship, and competition and firm dynamics. The reason is that consistent indicators in these fields are generally not available from other sources and these composite indicators are generally well-founded in theory and able to describe the often very much qualitative nature of the indicators. The overall data availability is moderate to good. However, in specific areas, data gaps exist that could not be filled.

From the data collection effort, a number of conclusions are drawn:

- With regard to groups of indicators at the overall country level, for the IPARD countries (and also for part of the EU countries) there is no consistent data on:
  - Total factor productivity
  - Capital productivity
  - Innovation (firms that innovate, patents or any comparable measure)
  - Entrepreneurship in agriculture
  - Mean nominal monthly earnings in agriculture in Albania, Montenegro
  - Educational indicators, like educational attainment rates, completion rates and enrolment rates, are very fragmented and mostly incomparable. The Legatum Institute composite measure of the Education level of the adult population is however a satisfactory indicator that can be used to compare the countries.
- For determining competitiveness at sector level, the same information is missing as at country level, but in addition:

- Numbers of firms and size
- Investments in agriculture
- Costs of production. Some comparable data was collected on input prices, but not for all countries
- Prices of agricultural land: no data was found for the IPARD countries.

Table 10-2 provides an overview of available data for IPARD countries, for selected indicators and sources in the period of 2010-2021.

Table 10-2 Availability of data for IPARD countries, for selected indicators and sources, counts of datapoints available in the period 2010-2021, number of observations from a maximum of 12

		Albania	Monte negro	North Macedonia	Serbia	Türkiye
Agricultural sector	Agricultural land (% of land area) (World Bank)	10	11	11	12	12
	Agricultural land (1 000 ha) (FAO)	11	11	11	12	12
	Agriculture share in number of firms (%) (Eurostat)	11		11		
	Agriculture, forestry and fisheries, value added (current US$) (World Bank)	12	12	12	12	12
	Agriculture, forestry and fisheries, value added per worker (constant 2015 US$) (World Bank)	10	10	10	12	10
	Arable land (1 000 ha) (FAO)	11	11	11	12	12
	Employment in agriculture (% of total employment) (modelled ILO estimate) (World Bank)	10	10	11	12	12
	Land under permanent crops (1 000 ha) (FAO)	11	11	11	11	12
	Land under permanent meadows and pastures (1000 ha) (FAO)	11	11	11	12	12
	Land under protective cover (1 000 ha) (FAO)	8				
	Number of firms agriculture (Eurostat)	11	1	11		
	Production Quantities (tonnes) (FAO)	11	11	11	11	11
	Production value crops (1 000 SLC and 1 000 USD) (FAO)	11		11	11	11
	Production value livestock (1 000 SLC and 1 000 USD) (FAO)	11		11	11	11

		Albania	Monte negro	North Macedonia	Serbia	Türkiye
	Production value, Agricultural products (1 000 SLC and 1 000 USD) (FAO)	11		11	11	12
	Rural land area (sq km) (World Bank)	1		1	7	1
	Total country area (1 000 ha) (FAO)	12	11	11	12	11
	Total land area (1 000 ha) (FAO)	11	11	11	11	12
	Trade balance Agricultural products (1 000 US$) (FAO)	11	11	11	11	11
	Urban land area (sq km) (World Bank)	1		1	7	1
	Yield, (hg per hectare, or hg per animal) (FAO)	11	11	11	12	12
Agricultural sector, input prices	Electricity prices for non-household consumers 20 MWh < Consumption < 500 MWh EUR per kWh (Eurostat)		10	9	9	12
	Prices Ammonium nitrate (26% N) (in sacks) (per 100 kg of nutritive substance) (Eurostat)				10	12
	Prices Diesel oil (per 100 litres) (Eurostat)				7	
	Prices Feedingstuffs barley (per 100 kg) (Eurostat)				10	
	Prices Feedingstuffs fodder wheat (per 100 kg) (Eurostat)				10	
	Prices Feedingstuffs maize (per 100 kg) (Eurostat)				10	
	Prices Muriate of potash (per 100 kg of nutritive substance) (Eurostat)				10	12
	Prices Urea (per 100 kg of nutritive substance) (Eurostat)				10	12
Agricultural sector, international trade	Total exports of goods (1 000 US$) (FAO)	11	11	11	11	11
	Total imports of goods (1 000 US$) (FAO)	11	11	11	11	11
Agricultural sector, prices	Market prices of agricultural products, (US$/tonne) (FAO)	11		11	12	12

		Albania	Monte negro	North Macedonia	Serbia	Türkiye
Balance of payments and trade	Export market share agricultural products (%) (FAO)	11	11	11	11	11
	Export market share, total merchandize trade (%) (FAO)	11	11	11	11	11
	Foreign direct investment, net inflows (% of GDP) (World Bank)	11	11	11	11	11
	Foreign direct investment, net outflows (% of GDP) (World Bank)	11	11	11	11	11
	Trade balance (1 000 US$) (FAO)	11	11	11	11	11
	Trade balance (million US$) / GDP (million US$) (FAO, World Bank)	11	11	11	11	11
Education	Adult literacy rate, population 15+ years, both sexes (%) (Unesco)	3	2	1	3	12
	Adult literacy rate, population 15+ years, rural, both sexes (%) (Unesco)	2	1		3	6
	Adult literacy rate, population 15+ years, urban, both sexes (%) (Unesco)	2	1		3	6
	Completion rate, upper secondary education, both sexes (%) (Unesco)	1	2	3	5	2
	Completion rate, upper secondary education, rural, both sexes (%) (Unesco)	1	2	3	5	2
	Completion rate, upper secondary education, urban, both sexes (%) (Unesco)	1	2	3	5	2
	Education level of adult population (Legatum)	12	12	12	12	12
	Educational attainment rate, completed Bachelor's or equivalent education or higher, population 25+ years, both sexes (%) (Unesco)	2		10	7	
	Educational attainment rate, completed Bachelor's or equivalent education or higher, population 25+ years, rural, both sexes (%) (Unesco)	2		3		
	Educational attainment rate, completed Bachelor's or equivalent education or higher, population 25+ years, urban, both sexes (%) (Unesco)	2		4	1	

		Albania	Monte negro	North Maced onia	Serbia	Türkiye
	Educational attainment rate, completed short-cycle tertiary education or higher, population 25+ years, both sexes (%) (Unesco)	2	1	4	8	12
	Educational attainment rate, completed short-cycle tertiary education or higher, population 25+ years, rural, both sexes (%) (Unesco)	2	1	4		6
	Educational attainment rate, completed short-cycle tertiary education or higher, population 25+ years, urban, both sexes (%) (Unesco)	2	1	4		6
	Educational attainment rate, completed upper secondary education or higher, population 25+ years, both sexes (%) (Unesco)	2	1	10	8	12
	Educational attainment rate, completed upper secondary education or higher, population 25+ years, rural, both sexes (%) (Unesco)	2	1	3		6
	Educational attainment rate, completed upper secondary education or higher, population 25+ years, urban, both sexes (%) (Unesco)	2	1	4	1	6
	Educational attainment, tertiary 5-8, rural (% of 25-64 age) (Eurostat)			3	8	
	Educational attainment, upper secondary and post-secondary non-tertiary education (levels 3 and 4), rural (% of 25-64 age) (Eurostat)			3	8	
	Literacy rate, adult total (% of people ages 15 and above) (World Bank)	3	2	1	3	11
	Proportion of 15- to 24-year-olds enrolled in vocational education, both sexes (%) (Unesco)	9	5	1	11	10
Employment	Employment rate, Y20-64 (%) (Eurostat)		10	11	12	11
	Employment to population ratio, 15+, total (%)(national estimate) (World Bank)	12	11	12	12	12
	Mean nominal hourly labour cost per employee by economic activity, total (US$) (ILO)			2	12	2

		Albania	Monte negro	North Macedonia	Serbia	Türkiye
	Mean nominal monthly earnings of employees, agriculture (US$) (ILO)	8		11	12	12
	Mean nominal monthly earnings of employees, total (US$) (ILO)	8	8	11	11	10
	Statutory nominal gross monthly minimum wage (US$) (ILO)	11	8	8	12	12
	Unemployment (thousands)(rural) (ILO)	1	1	11	11	4
	Unemployment (thousands)(urban) (ILO)	1	1	11	11	4
	Unemployment rate (%) (rural) (ILO)	1	1	11	11	4
	Unemployment rate (%) (urban) (ILO)	3	1	11	11	4
	Unemployment rate, Y20-64 (%) (Eurostat)		10	11	12	11
	Unemployment, total (% of total labour force) (national estimate) (World Bank)	10	11	12	12	12
Exchange rates	Euro exchange rate (LCU/EUR) (Eurostat)	12	12	12	12	12
Government finances	Central government debt, total (% of GDP) (World Bank)	6				7
	Central Government Expenditure Agriculture, forestry, fisheries (% of GDP) (FAO, World Bank)	11	6		8	11
	Central Government Expenditure Agriculture, forestry, fisheries (% of VA Agriculture, forestry, fisheries) (FAO, World Bank)	11	6		8	11
	Credit to agriculture forestry and fisheries (million US$) (FAO)	11			11	11
	Credit to Agriculture, forestry and fisheries in % of Total credit in US$ (%) (FAO)	11			11	11
	Credit total (million US$) (FAO)	11			11	11
	General Government Debt (Percent of GDP) (IMF)	11	11	11	11	11
	General Government Expenditure Agriculture, forestry, fisheries (% of GDP) (FAO, World Bank)	11		2	8	11

		Albania	Monte negro	North Maced onia	Serbia	Türkiye
	General Government Expenditure Agriculture, forestry, fisheries (% of VA Agriculture, forestry, fisheries) (FAO, World Bank)	11		2	8	11
	General government final consumption expenditure (% of GDP) (World Bank)	12	12	12	12	12
	General government final consumption expenditure (current US$) (World Bank)	12	12	12	12	12
	Government Expenditure Agriculture (Central Government) (million US$) (FAO)	11	6			
	Government Expenditure Agriculture, forestry, fisheries (Central Government) (% of total expenditure) (FAO)	11	6		7	11
	Government Expenditure Agriculture, forestry, fisheries (Central Government) (million US$) (FAO)	11	6		8	11
	Government Expenditure Agriculture, forestry, fisheries (General Government) (% of total expenditure) (FAO)	11		2	8	11
	Government Expenditure Agriculture, forestry, fisheries (General Government) (million US$) (FAO)	11		2	8	11
	Pensions (% of GDP) (Eurostat)	8	3	3	10	9
	Total debt service (% of exports of goods, services and primary income) (World Bank)	11	11	11	11	11
Health	Current health expenditure (% of GDP) (World Bank)	9	9	10	10	11
	Life expectancy at 60 (years) (Legatum)	12	12	12	12	12
	Life expectancy at birth total (World Bank)	12	11	11	11	11
Income distribution	Gini coefficient in equivalised disposable income (Eurostat)	7	7	10	8	10
	Gini index (World Bank estimate) (World Bank)	7	7	10	8	12
	People at risk of poverty or social exclusion (% of total population) (Eurostat)	4	6	11	9	6

		Albania	Monte negro	North Maced onia	Serbia	Türkiye
Infrastructure and ICT	Individuals using the Internet (% of population) (World Bank)	11	11	11	11	12
	Logistics performance index overall (score 1-5) (World Bank)	4	5	5	5	5
	Logistics performance index: Quality of trade and transport-related infrastructure (1-5) (World Bank)	4	5	5	5	5
	Mobile cellular subscriptions (per 100 people) (World Bank)	11	11	11	11	11
Interest rates	Deposit interest rate (%) (World Bank)	12	12	12	12	12
	Lending interest rate (%) (World Bank)	12	12	12	12	12
	Lending rate or short-term loan rate (%) (IMF)	12	12	12	12	12
	Real interest rate (%) (World Bank)	12	12	12	12	12
Migration	Emigration (Number) (Eurostat)	5	1	11		4
	Immigration (Number) (Eurostat)	7	11	11		4
National accounts	Compensation of employees (% of expense) (World Bank)	10		11	11	11
	GDP (constant LCU) (World Bank)	12	12	12	12	12
	GDP at market prices, current prices (US$) (World Bank)	12	12	12	12	12
	GDP growth (annual %) (World Bank)	12	12	12	12	12
	GDP per capita (current US$) (World Bank)	12	12	12	12	12
	Gross capital formation (% of GDP) (World Bank)	12	12	12	12	12
	Gross debt position (% of GDP) (IMF)	12	12	12	12	12
	Gross fixed capital formation (% of GDP) (World Bank)	12	12	10	12	12
	Gross fixed capital formation (current US$) (World Bank)	12	12	10	12	12
	Gross value added at basic prices (current US$) (World Bank)	12	12	12	12	12
	Share of food in total household's expenditures (%) (Eurostat)	10	6	11	12	10

		Albania	Monte negro	North Macedonia	Serbia	Türkiye
	Taxes on goods and services (% of revenue) (World Bank)	10		11	11	11
	Taxes on income, profits and capital gains (% of revenue) (World Bank)	10		11	11	11
	Taxes on international trade (% of revenue) (World Bank)	10		11	11	11
Population	Population density (people per sq km of land) (World Bank)	12	12	12	12	12
	Population, total (persons) (World Bank)	12	12	12	12	12
	Rural population (1 000 persons) (FAO)	9	9	11	9	12
	Rural population (persons) (World Bank)	12	12	12	12	12
	Total population (1 000 persons) (FAO)	12	9	11	9	12
	Urban population (1 000 persons) (FAO)	9	9	11	9	12
	Urban population (persons) (World Bank)	12	12	12	12	12
Prices	Consumer price index (2010 is 100) (World Bank)	12	12	12	12	12
Social protection	Social protection expenditure (% of GDP) (Eurostat)	8	3	3	10	11
	Social protection expenditure (euro per inhabitant) (Eurostat)	8	3	3	10	11
Competitiveness	Administrative requirements (1-100) (GCI 11_A) (WEF)	3	3	2	3	3
	Agriculture, forestry and fisheries, VA (% of GDP) (World Bank)	12	12	12	12	12
	Air transport, freight (million ton-km)/GDP million US$ (World Bank)	7	9		11	11
	Attitudes towards entrepreneurial risk (1-7) (GCI 11.05) (WEF)	3	3	2	3	3
	Buyer sophistication (1-7) (GCI 12.09) (WEF)	3	3	2	3	3
	Commercialization (0-100) (GCI 12_C) (WEF)	3	3	2	3	3

		Albania	Monte negro	North Maced onia	Serbia	Türkiye
	Companies embracing disruptive ideas (1-7) (GCI 11.08) (WEF)	3	3	2	3	3
	Corruption perception index (score 0 highly corrupt-100 very clean) (Transparency International)	10	10	10	10	10
	Cost of starting a business (% of GNI per capita) (GCI 11.01) (WEF)	3	3	3	3	3
	Diversity of workforce (1-7) (GCI 12.01) (WEF)	3	3	2	3	2
	Domestic market competition (1-100) (GCI 7_A) (WEF)	3	3	2	3	3
	Entrepreneurial culture (0-100) (GCI 11_B) (WEF)	3	3	2	3	3
	External balance on goods and services (% of GDP) (World Bank)	12	12	12	12	12
	Financial system depth (0-100) (GCI 9_A) (WEF)	3	3	2	3	3
	Financial system stability (GCI 9_B) (WEF)	3	3	2	3	3
	Firms that spend on R&D (% of firms) (World Bank)	2	2	2	12	2
	Getting credit (score 0-20) (World Bank)	7	7	7	7	7
	Global Competitiveness Index (0-100) (GCI4) (WEF)	3	3	2	3	3
	Growth of innovative companies (1-7) (GCI 11.07) (WEF)	3	3	2	3	3
	Inflation, consumer prices (annual %) (World Bank)	12	12	12	12	12
	Innovation capability (0-100) (GCI 12) (WEF)	3	3	2	3	3
	Insolvency recovery rate (cents to dollar) (GCI 11.03) (WEF)	3	3	3	3	3
	Insolvency regulatory framework (0-16) (GCI 11.04) (WEF)	3	3	3	3	3
	Institutional trust (score 0-100) (Legatum)	12	12	12	12	12

		Albania	Montenegro	North Macedonia	Serbia	Türkiye
	Interaction and diversity (0-100) (GCI 12_A) (WEF)	3	3	2	3	3
	International co-inventions (per million pop) (GCI 12.03) (WEF)	3	3	3	3	3
	Labour productivity Output per worker (GDP constant 2017 international $ at PPP) (ILO)	12	12	12	12	12
	Merchandise exports (current US$) (World Bank)	12	12	12	12	12
	Merchandise imports (current US$) (World Bank)	12	12	12	12	12
	Multistakeholder collaboration (1-7) (GCI 12.04) (WEF)	3	3	2	3	3
	New business density (new registrations per 1,000 people ages 15-64) (World Bank)	11	11	11	11	7
	New businesses registered (number) (World Bank)	11	11	11	11	7
	Number of firms total (Eurostat)	11		11	12	
	Patent applications (per million pop) (GCI 12.06) (WEF)	3	3	3	3	3
	Price level index (PLI) (EU27 2020) (Actual individual consumption) (Eurostat)	11	11	11	11	11
	Price level index (PLI) (EU27 2020) (Food) (Eurostat)	11	11	11	11	11
	Price level index (PLI)(EU27 2020) (Fruit vegetables potatoes) (Eurostat)	11	11	11	11	11
	Price level index (PLI) (EU27 2020) (Meat) (Eurostat)	11	11	11	11	11
	Price level index (PLI) (EU27 2020) (Milk cheese eggs) (Eurostat)	11	11	11	11	11
	Purchasing power parity (PPP)(EU27_2020) (GDP) (Eurostat)	11	11	11	11	11
	R&D expenditures (% of GDP) (World Bank)		8	11	11	11
	R&D expenditures (% of GDP) (GCI 12.07) (WEF)	3	3	3	3	3

		Albania	Monte negro	North Maced onia	Serbia	Türkiye
	R&D in Agriculture, forestry, fisheries (Central Government) (million US$) (FAO)	11	6		11	11
	Real Effective Exchange Rate (REER EU27 2020 CPI) (Eurostat)				12	12
	Research and development (0-100) (GCI 12_B) (WEF)	3	3	2	3	3
	Research institutions prominence (index) (GCI 12.08) (WEF)	3	3	3	3	3
	Researchers in R&D (per million people) (World Bank)		8	11	11	11
	Scientific publications (h index) (GCI 12.05) (WEF)	3	3	3	3	3
	Scimago agronomy and crop science 18-21 (Rank) (Scimago)	12	12	12	12	12
	Scimago animal science and zoology 18-21 (Rank) (Scimago)	12	12	12	12	12
	Scimago food science 18-21 (Rank) (Scimago)	12	12	12	12	12
	Scimago horticulture 18-21 (Rank) (Scimago)	12	12	12	12	12
	Scimago plant science 18-21 (Rank) (Scimago)	12	12	12	12	12
	Services, value added (% of GDP) (World Bank)	12	12	12	12	12
	State of cluster development (1-7) (GCI 12.02) (WEF)	3	3	2	3	3
	Time to start a business (days) (GCI 11.02) (WEF)	3	3	3	3	3
	Trade % of GDP (World Bank)	12	12	12	12	12
	Trade openness (1-100) (GCI 7_B) (WEF)	3	3	2	3	3
	Trademark applications (per million pop) (GCI 12.10) (WEF)	3	3	3	3	3
	Willingness to delegate authority (1-7) (GCI 11.06) (WEF)	3	3	2	3	3

REFERENCES

Aiginger, Karl, Susanne Bärenthaler-Sieber, and Johanna Vogel. 2013. Competitiveness under New Perspectives. WWW for Europe Working Paper No. 44 (WIFO).

Balassa, B. (1965), 'Trade liberalization and "revealed" comparative advantage', The Manchester School of Economic and Social Studies 33: 92–123.

Balassa, B. (1989), "Revealed" comparative advantage revisited', in: B. Balassa (ed.), Comparative Advantage, Trade Policy and Economic Development, New York University Press, New York, pp. 63–79.'s I

Bhawsar, P., and U. Chattopadhyay. 2015. 'Competitiveness: Review, Reflections and Directions', Global Business Review, 16: 665-79.

Buckley, P. J., C. L. Pass, and K. Prescott. 1988. 'Measures of international competitiveness: A critical survey', Journal of Marketing Management, 4: 175-200.

Castro-Gonzáles, Segundo, Jesús C. Peña-Vinces, and Jorge Guillen. 2016. 'The competitiveness of Latin-American economies: Consolidation of the double diamond theory', Economic Systems, 40: 373-86.

Chang Moon, H., and Newman S. Peery. 1995. 'Competitiveness of product, firm, industry, and nation in a global business', Competitiveness Review: An International Business Journal, 5: 37-43.

Davies, H., and P. Ellis. 2000. 'Porter's competitive advantage of nations: Time for the final judgement?', Journal of Management Studies, 37: 1188-213.

Hanafi, M., D. Wibisono, K. Mangkusubroto, M. Siallagan, and M. J. K. Badriyah. 2017. 'Modelling competitive advantage of nation: a literature review', Competitiveness Review, 27: 335-65.

Krugman, P. R. 1996. 'Making sense of the competitiveness debate', Oxford Review of Economic Policy, 12: 17-25.

Oztornacı and Sengul (2019). Multidimensional Rural Poverty in Türkiye [in Turkish]. Turkish Journal of Agricultural Economics. Volume: 25 Issue: 2 Page: 201-206. https://dergipark.org.tr/tr/download/article-file/925813

Peneder, Michael. 2017. 'Competitiveness and industrial policy: from rationalities of failure towards the ability to evolve', Cambridge Journal of Economics, 41: 829-58.

Porter, Michael E. 1990. The competitive advantage of nations (Free Press: New York).

Skreli, E. & Imami, D. (2019). WATERMELON AND MELON SECTOR STUDY. Albania Agribusiness Support Facility (AASF). Institute of Economics Studies and Knowledge Transfer, Agricultural University of Tirana, Tirana, 2019.

Sölvell, Ö. 2015. 'The Competitive Advantage of Nations 25 years – opening up new perspectives on competitiveness', Competitiveness Review, 25: 471-81.

Van Berkum, Siemen, Jo Wijnands, and A. D. Verhoog. 2016. 'Competitiveness of agri-food chains in EU's Eastern Neighbours. Quantifying Porter's diamond'.

ZEW, and WIFO. 2018. "Background documents for the European Semester; Measuring Competitiveness." In DG Internal Market, Industry, Entrepreneurship and SMEs, FWC "Studies in the Area of European Competitiveness", edited by European Commission.

GETTING IN TOUCH WITH THE EU

In person

All over the European Union there are hundreds of Europe Direct information centres. You can find the address of the centre nearest you at: https://europa.eu/european-union/contact_en

On the phone or by email

Europe Direct is a service that answers your questions about the European Union. You can contact this service: – by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls), – at the following standard number: +32 22999696, or – by email via: https://europa.eu/european-union/contact_en

FINDING INFORMATION ABOUT THE EU

Online

Information about the European Union in all the official languages of the EU is available on the Europa website at: https://europa.eu/european-union/index_en

EU publications

You can download or order free and priced EU publications from: https://publications.europa.eu/en/publications. Multiple copies of free publications may be obtained by contacting Europe Direct or your local information centre (see https://europa.eu/european-union/contact_en).

EU law and related documents

For access to legal information from the EU, including all EU law since 1952 in all the official language versions, go to EUR-Lex at: http://eur-lex.europa.eu

Open data from the EU

The EU Open Data Portal (http://data.europa.eu/euodp/en) provides access to datasets from the EU. Data can be downloaded and reused for free, for both commercial and non-commercial purposes.

KF-09-23-314-EN-N

Publications Office
of the European Union

doi: 10.2762/357839
Isbn978-92-68-05376-8