

# The Role of Digital Government in the European Semester process 2019

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# The Role of Digital Government in the European Semester process 2019

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# Table of Contents

LIST OF ACRONYMS.....	4
EXECUTIVE SUMMARY .....	5
INTRODUCTION.....	7
<b>1. CONTEXT AND BACKGROUND .....</b>	<b>8</b>
<b>2. METHODOLOGY .....</b>	<b>12</b>
2.1 RESEARCH QUESTIONS AND SCOPE OF THE STUDY .....	12
2.2 OVERALL METHODOLOGICAL FRAMEWORK.....	13
<b>3. COUNTRY ANALYSIS.....</b>	<b>17</b>
3.1 AUSTRIA.....	18
3.2 BELGIUM .....	24
3.3 BULGARIA.....	29
3.4 CROATIA .....	36
3.5 CYPRUS .....	43
3.6 CZECH REPUBLIC.....	49
3.7 DENMARK.....	57
3.8 ESTONIA.....	61
3.9 FINLAND .....	66
3.10 FRANCE.....	71
3.11 GERMANY.....	76
3.12 GREECE .....	81
3.13 HUNGARY .....	86
3.14 IRELAND .....	92
3.15 ITALY.....	96
3.16 LATVIA .....	102
3.17 LITHUANIA .....	109
3.18 LUXEMBOURG.....	115
3.19 MALTA.....	120
3.20 NETHERLANDS.....	127
3.21 POLAND .....	131
3.22 PORTUGAL .....	137
3.23 ROMANIA.....	144
3.24 SLOVAKIA .....	151
3.25 SLOVENIA.....	157
3.26 SPAIN.....	164
3.27 SWEDEN.....	171
3.28 UNITED KINGDOM .....	175
<b>4. FINDINGS SYNTHESIS AND ANALYSIS.....</b>	<b>179</b>

4.1	SOCIO-ECONOMIC OUTLOOK .....	179
4.2	DIGITAL GOVERNMENT OUTLOOK .....	184
4.3	COUNTRY SPECIFIC RECOMMENDATIONS - KEY FINDINGS .....	192
4.4	NATIONAL REFORM PROGRAMMES – KEY FINDINGS.....	199
4.5	OPERATIONAL PROGRAMMES – KEY FINDINGS.....	206
<b>5.</b>	<b>CONCLUSIONS AND RECOMMENDATIONS .....</b>	<b>212</b>
	ANNEX 1. DEFINITIONS .....	219

## Table of Tables

<b>Table 1.</b>	<b>Socio-economic challenges of EU Member States according to the CSRs .....</b>	<b>180</b>
<b>Table 2.</b>	<b>2019 CSRs thematic overview .....</b>	<b>194</b>
<b>Table 3.</b>	<b>2019 NRPs thematic overview .....</b>	<b>200</b>
<b>Table 4.</b>	<b>OPs thematic overview .....</b>	<b>206</b>

## Table of Figures

<b>Figure 1.</b>	<b>The European Semester timeline .....</b>	<b>11</b>
<b>Figure 2.</b>	<b>Overall methodological framework .....</b>	<b>13</b>
<b>Figure 3.</b>	<b>Thematic classification of the socio-economic outlook.....</b>	<b>13</b>
<b>Figure 4.</b>	<b>Identified themes under TO2 and TO11 .....</b>	<b>15</b>
<b>Figure 5.</b>	<b>Member States within the scope of the study .....</b>	<b>17</b>
<b>Figure 6.</b>	<b>Digital government outlook: Political communications .....</b>	<b>184</b>
<b>Figure 7.</b>	<b>Digital government outlook: Legislation.....</b>	<b>186</b>
<b>Figure 8.</b>	<b>Digital government outlook: Governance.....</b>	<b>187</b>
<b>Figure 9.</b>	<b>Digital government outlook: Infrastructure .....</b>	<b>188</b>
<b>Figure 10.</b>	<b>Digital government outlook: Services for citizens and businesses.....</b>	<b>190</b>
<b>Figure 11.</b>	<b>Member States receiving a country-specific recommendation .....</b>	<b>192</b>
<b>Figure 12.</b>	<b>Top three themes identified in the CSRs under TO2 and TO11.....</b>	<b>198</b>
<b>Figure 13.</b>	<b>Top three themes identified in the NRPs under TO2 and TO11.....</b>	<b>205</b>
<b>Figure 14.</b>	<b>Top three themes identified in the OPs under TO2 and TO11 .....</b>	<b>211</b>

# List of Acronyms

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**AGS:** Annual Growth Survey

**AI:** Artificial Intelligence

**CAMSS:** Common Assessment Method for Standards and Specifications

**CEF:** Connecting Europe Facility

**CSR:** Country Specific Recommendation

**DG:** Directorate General

**eIDAS:** EU Regulation on electronic identification and trust services for electronic transactions in the internal market

**EIRA:** European Interoperability Reference Architecture and Cartography tool

**ESIF:** European Structural and Investment Funds

**ESM:** European Stability Mechanism

**GDP:** Gross Domestic Product

**GDPR:** General Data Protection Regulation

**ICT:** Information and Communication Technology

**IMAPS:** Interoperability Maturity Assessment of a Public Service

**MFF:** Multiannual Financial Framework

**NIFO:** National Interoperability Framework Observatory

**NRP:** National Reform Programme

**OP:** Operational Programme

**PPP:** Public Private Partnership

**PPS:** Purchasing Power Standard

**SDGs:** United Nations Sustainable Development Goals

**SMEs:** Small- and Medium-sized Enterprises

**TESTA:** Trans European Services for Telematics between Administrations

**TO:** Thematic Objective

# Executive Summary

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Modern and efficient public administrations are necessary to ensure fast and high-quality services for firms and citizens. This, in turn, may lead to more efficient public spending and increase the focus on measures reinforcing economic growth. In this context, the use of ICT and the deployment of digital public services are instrumental to achieve both efficiency gains and reduce costs.

Country Specific Recommendations (CSRs) and National Reform Programmes (NRPs) are essential instruments to set and implement the reform priorities of each Member State. EU financial instruments like the European Structural and Investments Funds (ESIF)<sup>1</sup> provide resources that can be used to address these priorities and increase the quality and efficiency of state administrations through the modernisation of their operations and procedures, as well as deployment of digital public services. ESIF builds around 11 thematic objectives, which describe the main funding priorities that Member States can address through these funds. In particular, for the purpose of this study, we focus on thematic objective 2 (TO2, Enhancing access to and use and quality of information and communication technologies) and 11 (TO11, Enhancing institutional capacity of public authorities and stakeholders and efficient public administration). Access and utilisation of these funds can be discerned in the Operational Programmes (OPs) of the Member States, which frame the funding opportunities in support of investments in jobs and growth and thus contribute to the EU political priorities, as well as the structural reforms recommended in the CSRs and then addressed in the NRPs.

The study aims to collect all data relevant to digital government<sup>2</sup> in the European Semester process, which is set up to monitor and coordinate the macroeconomic governance at the European level.

In order to provide DG DIGIT with the necessary information to achieve this goal, the study builds around the following research questions:

- **RQ1** – How do the CSRs, NRPs and OPs tackle digital government in the context of TO2 and TO11?
- **RQ2** – Based on the CSRs, NRPs and OPs analysed, are there any common elements?
- **RQ3** – Based on the CSRs, NRPs and OPs analysed, what are the main challenges still faced by the Member States in the context of TO2 and TO11?
- **RQ4** – Based on the finding of our analysis, how can the Commission better support Member States in their public administration digitalisation efforts, also in term of synergies with other Commission initiatives?

To this end, the 2019 CSRs and NRPs, as well as the OPs for the programming period 2014-2020 of the 28 Member States will be analysed through the lenses of ESIF TO2 and TO11. Based on the findings, the study identifies potential actions and new activities for the European Commission, and in particular within the scope of the ISA<sup>2</sup> programme.

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<sup>1</sup> The European Structural and Investment Funds (ESIF) are composed of the European Regional Development Fund (ERDF), the European Social Fund (ESF), the Cohesion Fund (CF), the European Agricultural Fund for Rural Development (EAFRD) and the European Maritime and Fisheries Fund (EMFF).

<sup>2</sup> OECD (2019). *Digital Government*. Accessed on 10 December 2019.

The methodological approach adopted in the study envisages three main phases: (I) content analysis, (II) synthesis, (III) conclusions and recommendations. In the first phase, we analyse the 2019 CSRs and NRPs, as well as the OPs for the programming period 2014-2020, to investigate the role of digital government in the context of ESIF TO2 and TO11 within the framework of the 2019 European Semester process in order to provide an answer to RQ1. We also provide an analysis of the socio-economic outlook of the Member States (derived from the 2019 CSRs) and of their most recent developments in the digital government domain (derived from the 2019 Digital Government Factsheets) since they give the state of play in which the different recommendations and priorities are set.

After the content analysis, the study proceeds with the synthesis of the findings provided in the first phase. Additionally, we perform a comparative analysis of the countries to identify commonalities between the country documents and understand what challenges Member States continue to face in the field of digital government (RQ2 and RQ3).

Finally, based on how the European Semester documents address the topic of digital government in relation to TO2 and TO11 and as an answer to RQ4, conclusions and recommendations are provided. The proposed recommendations are addressed to the European Commission, with a particular focus on the ISA<sup>2</sup> programme. These also highlight possible business opportunities for DG DIGIT by investigating how ISA<sup>2</sup> solutions could help in addressing different challenges in the Member States. In this regard, five recommendations have been identified:

- Recommendation 1 stresses that the Interoperability Unit could provide trainings, expert advice and strategic information to support policy makers working on the development and/or implementation of digital strategies, action plans or frameworks to enhance digital government within their country.
- Recommendation 2 stresses that the Interoperability Unit could further support Member States in the enhancement of their civil servants' digital skills, for a better use of technology (e.g. IT tools, platforms, etc.) to achieve better public services delivery. Steps have already been taken in this regard, with the introduction of the Interoperability Academy for public servants, both as on-site training and as an eLearning platform set up by the ISA<sup>2</sup> programme. Moreover, further support could be given to national and subnational public administrations to support their actions aimed at increasing students' and adults' digital skills.
- Recommendation 3 underlines the need for the Interoperability Unit to collaborate more closely with policy DGs and their Agencies, creating synergies in all aspects related to digital government. Further attention should be given to the sectors identified as priorities by the Member States regarding digital government such as justice, tax, health, mobility and culture.
- Recommendation 4 calls on the European Commission to offer further support to Member States in ensuring a wider use of digital technologies across the economy and society, by raising awareness on the different funding and solutions available to businesses, and particularly to SMEs.
- Recommendation 5 advises the Interoperability Unit to collaborate with DG GROW in their efforts to support Member States who want to make a more efficient and effective use of eProcurement tools for both the public administration and businesses.



# Introduction

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Following the mandate from the European Commission Directorate-General for Informatics (DG DIGIT), Wavestone was requested to examine how and to what extent the **European Semester Process** addresses topics in the digital government field falling under the European Social and Investment Funds' (ESIF)<sup>3</sup> Thematic Objective 2 (TO2, Enhancing access to, and use and quality of, information and communication technologies) and 11 (TO11, Improving the efficiency of public administration). In order to accomplish this task, an in-depth analysis of the key documents from the European Semester is performed.

The European Semester is a cycle of economic and fiscal policy coordination which was established in 2010 in order to prevent discrepancies and contribute to ensure convergence and stability across the EU. Each year, the European Commission analyses in detail Member States' economic and structural reform programmes and provides them with a set of recommendations for the following 12-18 months. During this time frame, Member States have to align their budgetary and economic policies with the objectives and rules agreed at EU level, both in terms of the Europe 2020 Strategy and of the Stability and Growth Pact<sup>4</sup>.

Within this study, the European Semester documents referred to are the **2019 Country Specific Recommendations** (CSRs), the **2019 National Reform Programmes** (NRPs), as well as the **Operational Programmes** (OPs) for the programming period 2014–2020, which are financed through ESIF.

The study will cover all 28 EU Member States: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and the United Kingdom.

Building on the results of the in-depth content analysis, the study aims to identify links between the existing actions from the **ISA<sup>2</sup> programme**<sup>5</sup> and current challenges faced by the Member States, as well as propose new actions to better support them in their digitalisation efforts.

The report comprises the following main sections:

- **Section 1 Context and Background:** setting the political and economic context of the study.
- **Section 2 Methodology:** describing the methodology used to conduct the study.
- **Section 3 Country Analysis:** providing a detailed analysis of the European Semester documents related to each Member State.
- **Section 4 Findings synthesis and analysis:** providing the synthesis and analysis of the key findings of the study.
- **Section 5 Conclusions and Recommendations:** providing the main insights of the study, as well as our recommendations.

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<sup>3</sup> European Commission (n.d.). *European Structural and Investment Funds*. Accessed on 9 December 2019.

<sup>4</sup> European Council (2019). *How the European Semester works*. Accessed on 9 December 2019.

<sup>5</sup> European Commission (2019). *About ISA<sup>2</sup>*. Accessed on 9 December 2019.

# 1. Context and Background

One of today's most challenging goals for the European Union is the accomplishment of the digital transformation of public administration. In fact, the digitalisation and modernisation of public administration continue to be a priority among European Member States as it is crucial to respond to evolving citizens' needs and expectations of how public administrations should look like and the services they should deliver. On the eve of the new, first-ever Digital Europe Programme 2021-2027<sup>6</sup>, the digitalisation of public administration and the achievement of interoperability across Europe still arise as one of the five key-priorities to be achieved in the next seven years. As stressed by the European Commission in its 2019 communication on eGovernment, an effective and efficient digital governance can provide a wide variety of benefits to the Member States, including more efficiency and savings for governments and businesses, increased transparency, and greater participation of citizens in political life. In fact, ICTs are already widely used by government bodies as many public services are delivered by digital means such as eGovernment portals. However, these are not sufficient to meet the growing needs and higher demands of both citizens and businesses.

This is reflected in the fact that, in the last years, there has been a shift from the concept of eGovernment to a broader vision calling for the development of *digital government*. According to the OECD, "digital government explores how governments can best use Information and Communication Technologies (ICTs) to embrace good government principles and achieve policy goals."<sup>7</sup> This is achieved through the "use of digital technologies as an integrated part of governments' modernisation strategies, to create public value. It relies on a digital government ecosystem comprised of civil servants, businesses, citizens' associations and individuals which supports the production of and access to data, services and content through interactions with the public organisations."<sup>8</sup> Therefore, besides being digital, public administrations need to be innovative when it comes to processes, governance, and skills. In order to do that, governments must harness the potential derived from the advanced use of ICT, geospatial data, cybersecurity and the emerging technologies, in particular Artificial Intelligence (AI) and blockchain, as stressed by the Digital Europe Programme. Thus, the European Union continues to invest in projects and programmes aimed at modernising and digitalising both businesses and public administrations at all levels. These include:

- **ISA<sup>2</sup> programme**,<sup>9</sup> adopted in 2015 and running from 1 January 2016 until 31 December 2020, builds strongly on its predecessor, ISA,<sup>10</sup> which provided a framework that allowed Member States to work together to create efficient and effective electronic cross-border public services, while also including new priorities such as a stronger focus on interaction with businesses and citizens.

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<sup>6</sup> COM/2018/434 final – 2018/0227 (COD), Proposal for a Regulation of the European Parliament and of the Council establishing the Digital Europe programme for the period 2021-2027.

<sup>7</sup> OECD (2019). *Digital Government*. Accessed on 10 December 2019.

<sup>8</sup> OECD/LEGAL/0406, Recommendation of the Council on Digital Government Strategies, 15.7.2014.

<sup>9</sup> Decision (EU) 2015/2240 of the European Parliament and of the Council of 25 November 2015 establishing a programme on interoperability solutions and common frameworks for European public administrations, businesses and citizens (ISA<sup>2</sup> programme) as a means for modernising the public sector.

<sup>10</sup> Decision No 922/2009/EC of the European Parliament and of the Council of 16 September 2009 on interoperability solutions for European public administrations (ISA).

- **Connecting Europe Facility (CEF) Telecom**<sup>11</sup> supports the deployment and use of key cross-border digital services such as electronic identification and procurement. The European Commission envisages to prolong this programme for the period 2021-2027.
- **European Structural and Investment Funds (ESIF)**<sup>12</sup> can support actions related to the development of ICT products and services<sup>13</sup> and those related to strengthen the institutional capacity and efficiency of public administrations<sup>14</sup>. Within the new Multiannual Financial Framework (MFF), the fund's priorities will be revamped to give more emphasis to areas such as digitalisation and eGovernment
- **Horizon 2020**<sup>15</sup>, which addressed questions related to eGovernment and the modernisation of the public administrations will continue and become Horizon Europe under the new Financial Framework.
- **Structural Reform Support Programme**<sup>16</sup> aims to strengthen the overall capacity of the Member States to prepare and implement growth-enhancing institutional, structural and administrative reforms in five main reform areas. eGovernment stands out as one of the priorities for the 'Governance and public administration' area.
- **Digital Europe Programme**<sup>17</sup> was introduced in the context of the 2021-2027 Multiannual Financial Framework.<sup>18</sup> The programme, with a €9.2 billion budget, will boost frontline investments in priority areas such as supercomputing, artificial intelligence, cybersecurity and advanced digital skills.

Given this context, the study's main goal is to assess how issues related to digital government are addressed in the European Semester process. In particular, it aims at recognising any relevant links between the ISA<sup>2</sup> programme's priorities and the content of the European Semester documents of the 28 Member States.

## The European Semester

Each year, under the framework of the Europe 2020 strategy, all Member States are subject to a system of economic monitoring and governance known as the European Semester.<sup>19</sup> The role of the European Commission in this process is to carry out an analysis of each Member State's budgetary plans, macroeconomic and structural reforms and monitor their efforts towards the Europe 2020 targets. As part of the process, in April, each government presents its annual NRP, outlining the country's policies and measures to achieve its growth targets but also the Europe 2020 targets.

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<sup>11</sup> Regulation (EU) No 1316/2013 of the European Parliament and of the Council of 11 December 2013 establishing the Connecting Europe Facility, amending Regulation (EU) No 913/2010 and repealing Regulations (EC) No 680/2007 and (EC) No 67/2010.

<sup>12</sup> Regulation (EU) No 1303/2013 of the European Parliament and of the Council of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and repealing Council Regulation (EC) No 1083/2006.

<sup>13</sup> 'Enhancing access to, and use and quality of information and communication technologies (ICT)', Thematic Objective 2 of ESIF.

<sup>14</sup> 'Enhancing institutional capacity of public authorities and stakeholders and efficient public administration', Thematic Objective 11 of ESIF.

<sup>15</sup> European Commission (n.d.) *Horizon 2020*. Accessed on 9 December 2019.

<sup>16</sup> Regulation (EU) 2017/825 of the European Parliament and of the Council of 17 May 2017 on the establishment of the Structural Reform Support Programme for the period 2017 to 2020 and amending Regulations (EU) No 1303/2013 and (EU) No 1305/2013.

<sup>17</sup> COM/2018/434 final – 2018/0227 (COD), Proposal for a Regulation of the European Parliament and of the Council establishing the Digital Europe programme for the period 2021-2027.

<sup>18</sup> COM/2018/322 final – 2018/0132 (APP), Proposal for a Council Regulation laying down the multiannual financial framework for the years for the years 2021 to 2027.

<sup>19</sup> European Commission (n.d.) *European Semester Timeline*. Accessed on 9 December 2019.

After receiving and reviewing each NRP, as well as taking into account other documents like AGS and the Country Reports, in May, the European Commission issues CSRs to each Member State, which are endorsed by the Council between June and July. The CSRs summarise the progress made by Member States over the last year and recommend the structural reforms that each Member State should carry out over the next 12-18 months. A more detailed description of the European Semester process is offered in **Box 1** below.

To sustain the implementation of Member States' NRPs, and thus fulfil the Europe 2020 strategy objectives, specific OPs are signed by Member States to receive funding for investment initiatives. Funding is allocated to OPs within the framework of European Structural and Investment Funds (ESIF), which support 11 investment priorities, also known as thematic objectives (TO). Two TOs in particular relate to digital government aspects: **TO2 – ‘Enhancing access to and use of and quality of ICT’**<sup>20</sup> and **TO11 – ‘Enhancing institutional capacity of public authorities, stakeholders and efficient public administration’**.<sup>21</sup> For this study, an in-depth content analysis of the European Semester documents will be conducted through the prism of these ESIF TOs.

### **Towards a new European Semester**

On 27 November 2019 the European Parliament approved the new European Commission headed by Ursula von der Leyen, which took office as of 1 December 2019. With the aim of promoting competitive sustainability to build an economy that works for people and the planet, the von der Leyen Commission launched on 17 December 2019 a new European Semester cycle<sup>22</sup>. One of the main novelties introduced by the new Commission is to integrate the United Nations Sustainable Development Goals (SDGs)<sup>23</sup> into the European Semester. An ambitious growth strategy, the European Green Deal<sup>24</sup>, will help Member States achieve these goals and will give them the tools to adapt to the digital and green transition. The deal will ensure that Europe becomes the first climate-neutral continent and is able to provide the world's most advanced welfare systems, while at the same time being a hub of innovation and entrepreneurship. It seems clear that the new European Semester will place a stronger focus on fairness, productivity and environmental sustainability, as reflected in the Annual Sustainable Growth Strategy<sup>25</sup>, presented as part of the European Semester Autumn Package<sup>26</sup>, which marks the beginning of the 2020 European Semester cycle of economic and social policy coordination. Finally, as outlined in President von der Leyen's Political Guidelines<sup>27</sup>, the European Parliament is expected to have a “louder voice” in economic governance. To this end, the Commission will engage in a constructive dialogue with the Parliament regarding the European Semester cycle.

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<sup>20</sup> Huckfield, L. (2012). *Thematic Objectives for EU Funds 2014 – 2020*. Accessed on 9 December 2019.

<sup>21</sup> As stipulated in Article 9 of the Common Provisions Regulation, each of the five ESIF (ERDF, ESF, CF, EAFRD and EMFF) support different thematic objectives in accordance to its mission, in order to contribute to the Union strategy for smart sustainable and inclusive growth.

<sup>22</sup> European Commission (n.d.) *European Semester Autumn Package: Creating an economy that works for people and the planet*. Accessed on 18 December 2019.

<sup>23</sup> United Nations (n.d.) *Sustainable Development Goals Knowledge Platform*. Accessed on 18 December 2019.

<sup>24</sup> COM(2019) 640 final, *Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions - the European Green Deal*, Brussels, 11.12.2019. Accessed on 18 December 2019.

<sup>25</sup> European Commission (n.d.) *2020 European Semester: Annual Sustainable Growth Strategy*. Accessed on 18 December 2019.

<sup>26</sup> European Commission (n.d.) *European Semester: The Autumn Package explained*. Accessed on 18 December 2019.

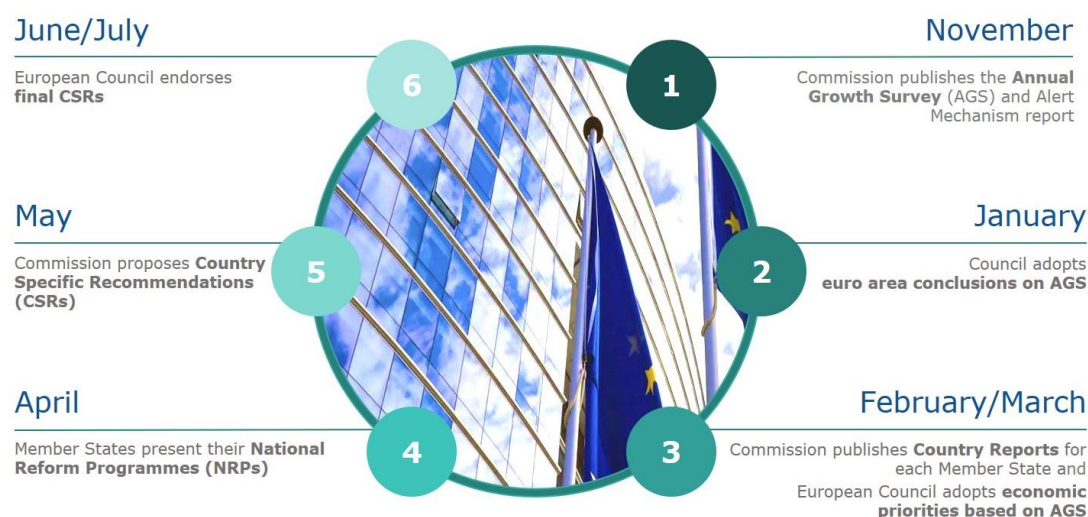
<sup>27</sup> Von der Leyen, U. (2019), *Political Guidelines for the Next European Commission 2019-2024 by candidate for President of the European Commission Ursula von der Leyen*. Accessed on 18 December 2019.

### Box 1 The European Semester

Introduced in 2010 as a way to prevent discrepancies and contribute to ensuring convergence and stability in the EU, the **European Semester** is a cycle of economic and fiscal policy coordination within the EU. The Semester, which focuses on the 6-month period from the beginning of the year, thus aims to help Member States align their budgetary and economic policies with the objectives and rules agreed at the EU level.

The European Semester has a clear timetable, according to which Member States receive EU-level advice and then submit their policy plans to be assessed at EU level. **Figure 1** below shows the main steps of the process.

Figure 1. The European Semester timeline



Source: The European Semester timeline summarised by Wavestone, Nov 2019. The figure presents the main process and the key documents of the European Semester, with key milestones. The Operational Programmes are not included in the timeline since they have been adopted by the Member States in 2014 and contain detailed projects until 2020.

Note: Further information available [here](#).

The preparatory phase of the European Semester starts in November with the publication of the **Annual Growth Survey (AGS)**, where the European Commission sets out the key economic and social priorities for the year to come, as well as the **Alert Mechanism report**, which assesses the macroeconomic development of the Member States. In case of risk of potential macroeconomic imbalances, the Commission can submit policy recommendations to the Member States. Following that, the Council sets out overall policy guidelines and adopts conclusions.

Subsequently, in February, the Commission publishes the **Country reports**, which identify any progress made by the Member States in addressing the previous year's EU recommendations. In March, the European Council endorses the policy priorities for the year based on the AGS and the Council conclusions.

Between March and April, Member States submit their policy plans, i.e. their **NRPs**, along with the Stability and Convergence programmes. Finally, in May, the Commission evaluates national policy plans and presents each country with a set of draft **CSRs**, which are then formally adopted by the Council of the EU and finally endorsed by the European Council. The recommendations focus on what can realistically be achieved over the next 12-18 months.

During the remaining 6 months of the year, sometimes called 'the national semester', the Member States take into account the recommendations when drawing up national budgets for the following year, which shall be submitted to the Commission by mid-October.

## 2. Methodology

This chapter aims to present the methodological approach taken to conduct the study. Section 2.1 provides an overview of the scope of the study and the research questions that it aims to answer. Sections 2.2 provides a description of the overall methodological framework employed to answer the research questions through a three-step approach.

### 2.1 Research questions and scope of the study

---

The purpose of this study is twofold: on the one hand, it aims to identify the role of digital government in the context of ESIF TO2 and TO11 within the framework of the 2019 European Semester process. On the other, it intends to identify links between the existing actions of the ISA<sup>2</sup> programme and the current needs of the Member States, as well as to propose further initiatives within the scope of the ISA<sup>2</sup> programme.<sup>28</sup>

The study intends to better understand how digital government reforms related to ESIF TO2 and TO11 are addressed in Member States' CSRs, NRPs and OPs, while at the same time identify the main challenges the different countries are still facing to better support them through the ISA<sup>2</sup> programme of DG DIGIT. In order to provide DG DIGIT with the necessary information to achieve this goal, the study builds around the following research questions:

- **RQ1** – How do the CSRs, NRPs and OPs tackle digital government in the context of TO2 and TO11?
- **RQ2** – Based on the CSRs, NRPs and OPs analysed, are there any common elements?
- **RQ3** – Based on the CSRs, NRPs and OPs analysed, what are the main challenges still faced by the Member States in the context of TO2 and TO11?
- **RQ4** – Based on the findings of our analysis, how can the Commission better support Member States in their public administration digitalisation efforts, also in terms of synergies with other Commission initiatives?

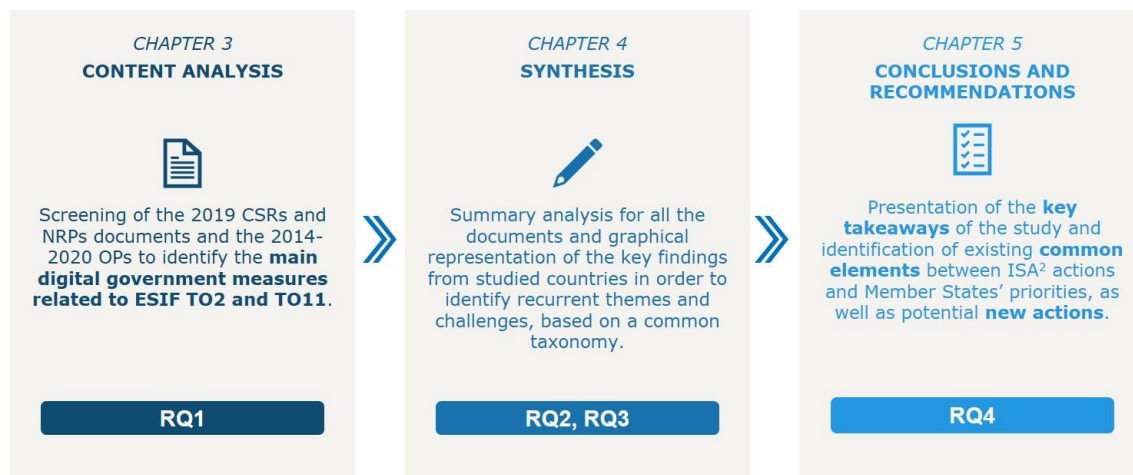
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<sup>28</sup> European Commission (n.d.) *About ISA<sup>2</sup>*. Accessed on 9 December 2019.

## 2.2 Overall methodological framework

The methodological approach taken to conduct this study was designed to provide answers to the research questions in a structured way. It comprises three phases, shown in **Figure 2**.

**Figure 2. Overall methodological framework**



Source: The overall methodological framework of the study summarised by Wavestone, Nov 2019.

### 2.2.1 Phase 1: Content Analysis

The sources that underpin the research done in this study in chapter 3 contain the following documents:

**(I) CSRs** - CSRs issued by the European Commission in 2019 were first used to shape the **socio-economic outlook** for the countries. To categorise the socio-economic outlook, the information was bundled according to the themes listed in **Figure 3**.

**Figure 3. Thematic classification of the socio-economic outlook**

Research and Innovation		Fiscal Framework	
Business environment		Healthcare	
Labour Market		Justice	
Housing market		Mobility	
Administrative and regulatory barriers		Pension system	
Education		Public spending	
Tax system		Social inclusion	



Moreover, the CSRs are further analysed to give a comprehensive analysis of all the **recommendations** related to TO2 and TO11 contained in them. While analysing the CSRs, relevant themes other than *recommendations* were identified in the document's recitals section (classified as *recitals*) since they represent actual challenges present in the Member State that are likely to be solved with the help of ICT tools. More general possibilities for the application of ICT tools identified by the team who performed the study throughout the whole document were also included as *opportunities* in the digital government domain.

**(II) eGovernment Factsheets** - To describe the digital government outlook for all the Member States, the study relied on the 2019 Digital Government factsheets. An overview of the relevant strategies, legal frameworks, organisational changes, infrastructures, services and other highlights of Member States is provided.

**(III) NRPs** – Every year, NRPs are presented by the Member States to the Commission to indicate the concrete plans of the country to comply with the yearly CSRs. Within these programmes, we collected and categorised all the information related to **digital government reforms** related to TO2 and TO11.

**(IV) OPs** - The OPs are detailed plans in which the Member States set out how funds from the ESIF will be spent during the programming period 2014-2020, tackling various thematic objectives. While OPs can be oriented towards regional, multi-regional, national and transnational ambitions, the scope of this study is limited to the analysis of the national OPs covering TO2 and TO11. The overview of the OPs is organised in the same way as the NRPs, thus looking at **funding priorities** in the scope of TO2 and TO11.

All relevant aspects related to digital government contained in the CSRs, NRPs and OPs are clustered according to the themes presented in **Box 2**. The definitions of the themes used for the purpose of this study are listed in **Annex 1. Definitions**. These themes are built upon the European Semester analysis performed in the previous year.<sup>29</sup>

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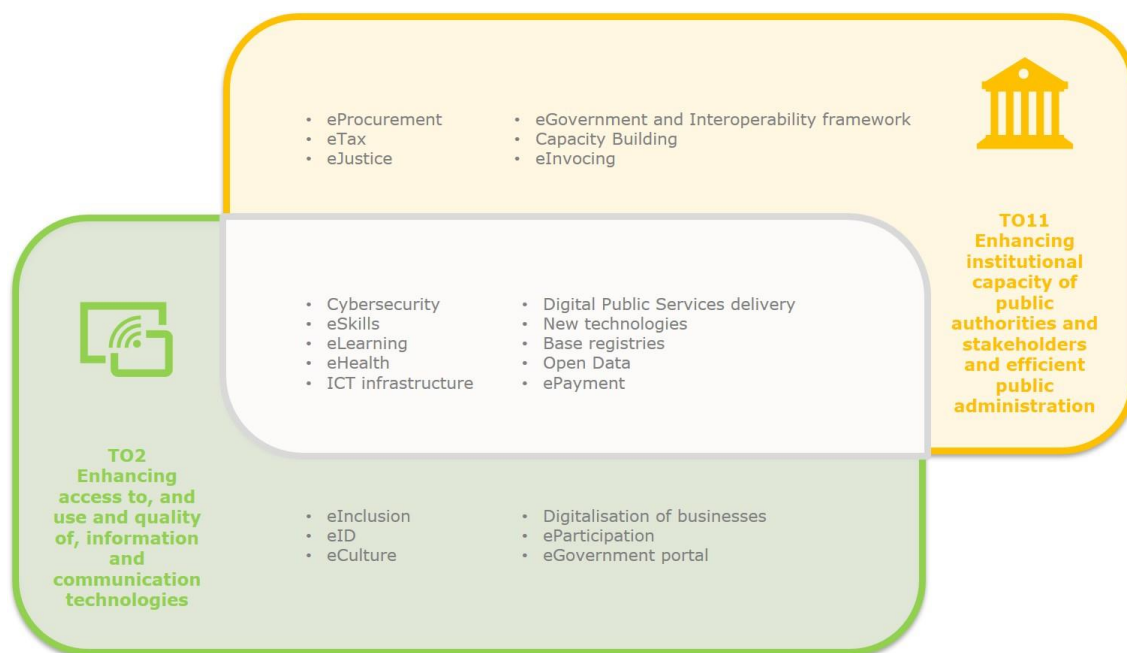
<sup>29</sup> European Commission (2018). *The role of eGovernment and interoperability in the European Semester process*. Accessed on 9 December 2019.



## Box 2 ESIF Thematic Objective 2 and 11

For the purpose of this study, recommendations, reforms and funding priorities related to ESIF TO2 (Enhancing access to, and use and quality of, information and communication technologies) and TO11 (Improving the efficiency of public administration) are considered. The decision to consider the two TOs at the same time stems from the fact that many of the interventions identified in the analysed documents require digitalisation (seen as falling under TO2) as a precondition. On the other hand, however, the technological and infrastructural interventions planned under TO2 often need some actions that originate under TO11, which aim at ensuring the organisational change necessary at the administration and government level. While analysing the countries' CSRs, NRPs and OPs we categorised them according to a taxonomy which divides themes falling under TO2, TO11 or both, as shown in **Figure 4** below.

Figure 4. Identified themes under TO2 and TO11



Source: The overall methodological framework of the study summarised by Wavestone, Nov 2019.

According to the interpretation of the two TOs adopted in this study, themes classified under TO2 are initiatives coming from the government that aim to enhance the access, use and quality of ICT tools and that will mainly benefit citizens and businesses. Themes falling under TO11, on the other hand, aim to improve the efficiency of the public administration through the digitalisation of some of its processes or the development of the necessary IT infrastructure, which in turn would make public administrations more efficient, with probable spill-over effects on both citizens and businesses. Given the deep interconnection between the two TOs, we also identified themes that reflect both aspects and that can benefit both public administrations and citizens and businesses depending on the situation.

### 2.2.2 Phase 2: Synthesis

The study aims to present a comprehensive analysis of the current digital government state of play in the European Semester process. The main purpose of this second phase which is contained in chapter 4 is to assess how the 2019 CSRs and NRPs, along with selected OPs for the programming period 2014-2020 address the topic of digital government in areas related to TO2 and TO11. This is achieved through a qualitative in-depth content analysis of the above-mentioned documents.

After a brief overview of the socioeconomic outlook of the EU Member States, as well as a collective picture of the main digital government developments throughout the EU, chapter 4 provides an analysis of the information collected in chapter 3 regarding the countries' CSRs, NRPs and OPs. For the CSRs,

the recommendations, recitals and opportunities previously identified are now categorised according to broader clusters of themes and classified either as belonging to TO2 or TO11. Similarly, relevant reforms identified in the different countries' NRPs and OPs are also grouped according to broader clusters of themes and classified as belonging to either TO2 or TO11.

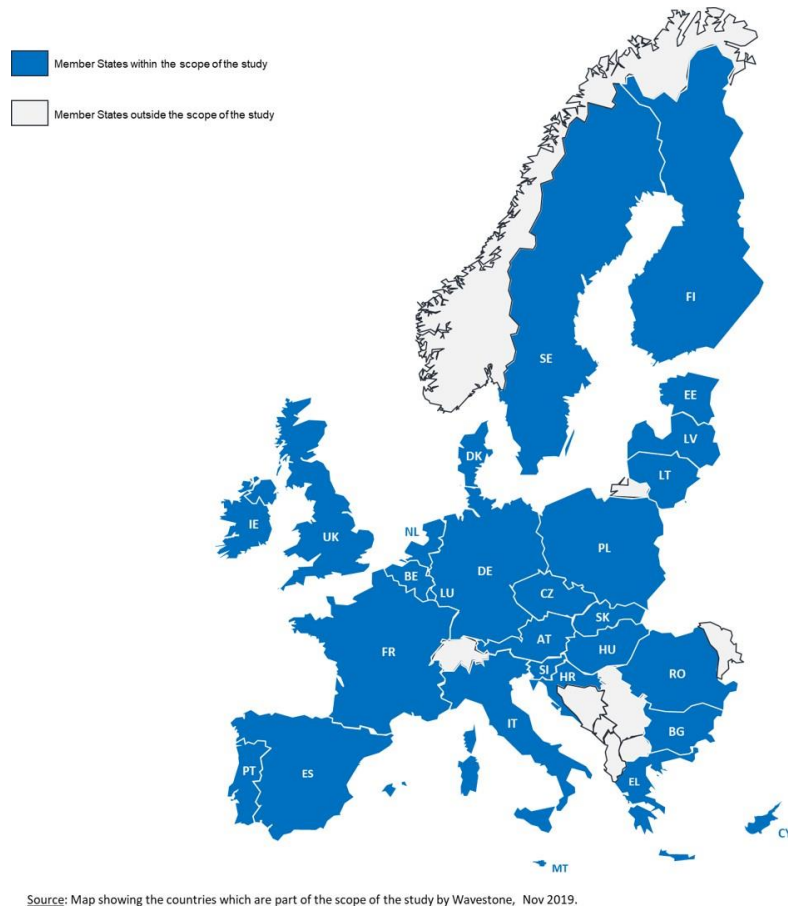
### *2.2.3 Phase 3: Conclusions and Recommendations*

Building upon the results of the in-depth content analysis, conclusions and recommendations for the Commission will be provided. Recommendations will be addressed to the Commission focusing on how to better support Member States in their public administration digitalisation efforts, also in terms of synergies with different Commission initiatives.

### 3. Country Analysis

This chapter aims to answer RQ1, which addresses how CSRs, NRPs and OPs tackle digital government in the context of TO2 and TO11. It presents the key findings of the in-depth content analysis of the 2019 CSRs and NRPs, as well as the OPs for the period 2014-2020 for the 28 countries under the scope of this study, as shown in **Figure 5**.

**Figure 5. Member States within the scope of the study**



A comprehensive analysis of each country's recommendations, reform priorities and operational actions in the field of digital government extracted from the above-mentioned documents is therefore given below. As mentioned, the chapter is organised per country and each country subsection consists of the following:

1. **Socioeconomic Outlook** of the country derived from the 2019 CSRs.
2. **Digital Government Outlook**, analysing data originating from the 2019 eGovernment factsheets.
3. **Country Specific Recommendations**, analysing recommendations related to TO2 and TO11 contained in the 2019 CSR.
4. **National Reform Programmes**, analysis reforms related to TO2 and TO11 contained in the NRPs.
5. **Operational Programmes**, analysing the funding priorities related to TO2 and TO11 contained in the national OPs.

## 3.1 Austria

### 3.1.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Austria's CSR of 2019.<sup>30</sup>

Austria is not identified by the latest AGS as a country in need of an in-depth review, which confirms its strength in public finances. Indeed, the macro-economic environment appears stable: In its 2019 Stability Programme, the government expects an improvement in the headline balance from a surplus of 0.1% of GDP in 2018 to 0.3% of GDP in 2019, and progressively reduce to a balanced budget position in 2023. According to the programme, the medium-term budgetary objective continues to be overachieved. Moreover, the government debt-to-GDP ratio is expected to gradually decrease from 73.8% in 2018 to 59.8% of GDP in 2023.

Nevertheless, Austria faces medium fiscal sustainability risks in the long term due to the foreseen expenditure increase in long-term care, national healthcare, and pensions. When compared to the rest of the EU, expenditure on pensions is expected to peak in 2036 at a level of 1.2 percentage points of GDP above the 2016 reference point. Previous reforms were considered and implemented to tackle this issue, as the gradually harmonisation of the statutory retirement age for men and women but closing the existing gap with the effective retirement age remains a challenge.

Moreover, expenditure in the field of public healthcare is expected to continue increasing and reach a level of 0.9 percentage points above the EU average by 2070. Some countermeasures have been taken to address the sustainability issue such as: the introduction of expenditure ceilings through the Financial Equalisation Law of 2017, a reform on the strengthening of primary care and reducing the reliance on the hospital sector. The CSR of Austria stresses the benefits in terms of quality and cost-efficiency that could also come from the use of more effective public procurement and a wider use of eHealth solutions.

The fiscal framework in Austria remains complex in terms of competencies and still suffers from misalignments between the revenue-raising powers and spending responsibilities of local and federal governments, despite several reform efforts. Concerning the tax system, the burden on labour remains high. Even if recent reforms have helped lower the labour tax wedge, there remains scope for shifting the tax mix and tackle fairness issues.

The labour market of Austria is generally improving. However, specific groups, especially women and people with a migrant background, are still facing challenges. For women, these translate into a high share of part-time work and a persistently high gender pay gap, which are often due to the performance of unpaid tasks, such as taking care of children or relatives. Consequently, this further reflects in a large pension gap. For people with a migrant background, investment is required to address unequal education outcomes. Austria performs above average in the EU with regards to the digital skills of its citizens but is falling behind the top performing countries.



<sup>30</sup> COM (2019) 520 final, Council Recommendation on the 2018 National Reform Programme of Austria and delivering a Council opinion on the 2019 Stability Programme of Austria, Brussels, 5.6.2019. Accessed on 17 September 2019.

Finally, regarding the spread of new technologies, Austria would need more competition in the service sector. Given that the Austrian economy is heavily reliant on micro, small and medium enterprises, their successful digitalisation is crucial. To address this issue, Austria shall also promote the scaling-up of particularly innovative companies in the market and lower the administrative burden on businesses.

### 3.1.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in Austria since 2018. The information originates from the Digital Government Factsheet of Austria.<sup>31</sup>

#### Political Communications

Building on the results of the Digital Roadmap Austria, a new and even more ambitious Digitalisation Strategy for the country is currently developed under the auspices of the Ministry of Digital and Economic Affairs. The aim is to position Austria as digital leader in Europe. The details of the strategy, including its timetable, priorities, and piloting, are defined under the strategic framework of Digital Roadmap Austria, in close cooperation with the Chief Digital Officer (CDO) Taskforce and the recently launched digitalisation agency.

#### Legislation

The new Federal Procurement Act was adopted on 20 August 2018 (Bundesvergabegesetz, BVergG 2018) and substitutes the Federal Procurement Act, which entered into force on 1 February 2006, replacing the Federal Procurement Act 2002 and repealing the eProcurement Regulation 2004. The new Federal Procurement Act 2018 finally transposed all the EU public procurement directives, including their provisions on eProcurement, into national law.

#### Governance

The federal government has emphasised the importance of digital transformation for industry, society and public administration and has given it high priority in the government programme. The Digitalisation Agency of the Federal Government was founded on 30 May 2018 and represents another important step to ensuring the success of Austria's digital transformation. The Agency especially focuses on the support of SMEs, implements targeted projects, and provides expertise and know how in the fields of innovation, digitalisation and networking.

#### Infrastructure

The established one-stop eGovernment platform help.gv.at has been expanded with further useful e-services (e.g. baby point, relocation, etc.) for citizens and relaunched under the new name oesterreich.gv.at. A dedicated app named Digitales Amt (Digital Office) became available on 19 March 2019.

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<sup>31</sup> Digital Government Factsheet of Austria 2019. Accessed on 2 October 2019.

## Services

The oesterreich.gv.at App was launched in order to provide a single, mobile and easy-to-use access for citizens to the most important administrative services.

### 3.1.3 Country Specific Recommendations

The CSR for Austria<sup>32</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals, and opportunities.<sup>33</sup>

#### Thematic Objective 2

##### *Recommendations*

Recommendation 3 encourages to focus investment-related economic policy on research and development, innovation, digitalisation, and sustainability taking into consideration regional disparities. The country, therefore, shall support productivity growth by stimulating digitalisation of businesses and company growth and by reducing regulatory barriers in the service sector.

##### *Recitals*

In recital 13, Austria is called on to address disparities on education outcomes due to socio-economic or migrant background. As the country does not reach the level of EU's "Innovation Leaders" yet, the efforts should be focused on tackling the growing lack of skilled IT workers in the economy, particularly the insufficient supply of graduates with specialised computing skills.

##### *Opportunities*

According to recommendation 1, the country is still requested to make its public services more efficient. This can be achieved through a more widespread use of digital technologies, especially in the healthcare sector, given that Austria is facing potential future difficulties in ensuring sustainability of health and long-term care.

According to recommendation 2, Austria needs to raise its levels of basic skills for disadvantaged groups, including people with a migrant background. To tackle this issue, the government could promote eLearning solutions which would help these communities into accessing education through ICTs.

#### Thematic Objective 11

There are no recommendations, recitals or opportunities linked to TO11 in the CSR for Austria.

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<sup>32</sup> COM (2019) 520 final, Council Recommendation on the 2019 National Reform Programme of Austria and delivering a Council opinion on the 2019 Stability Programme of Austria, Brussels, 5.6.2019. Accessed on 17 September 2019.

<sup>33</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Austria to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Austria. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

### 3.1.4 National Reform Programme

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Austria's NRP.<sup>34</sup>

#### Thematic Objective 2

- **Implementation of eHealth solutions in the healthcare system:** Austria plans to implement several reforms to improve its healthcare system. The government plans to set up an innovation and target control fund within the National Health Insurance Scheme, the organisation into which the regional institutions are to be merged. This will ensure that regional needs with respect to eHealth are considered. The NRP states that EUR 1 billion in savings is forecasted to be achieved by 2023, which would be then invest in improved eHealth services. Additionally, the Electronic Health Record (ELGA) is expected to be completed nationwide achieving cost-cutting effects and improving the service delivery for patients. Furthermore, by September 2019, it is expected that the rollout of eMedication as an ELGA-application among office-based doctors and pharmacies is completed. Finally, the new electronic vaccination certificate is to be piloted in some regions in the coming year.
- **Measures to promote digitalisation among businesses:** The mission of the Austrian Digitalisation Agency, established in 2018, is to provide competent expert advice to SMEs, helping them to recognise the relevance of digitalisation and the opportunities it holds for their own businesses. Promising instruments in this context include the programme to set up national Digital Innovation Hubs and the special KMU.Digital support programme. This the funding programme offers different services, ranging from consulting and qualifications for entrepreneurs and employees, to information and knowledge transfer.
- **Measures to tackle labour market shortages:** Austria launched an action plan already in spring 2018 to modify the training regulations for apprenticeships in order to reflect the new qualification requirements in terms of digitalisation. The apprenticeship package comprises now six new job profiles among which chemical process engineering, e-commerce, glass engineering and media expert.
- **Agreements to boost STEM subjects in tertiary education:** In order to improve accessibility and social mobility various measures were agreed with the Universities. Initiatives aimed at making engineering programmes more attractive and easily available increased. For instance, access to information technology as a specialised field and STEM subjects was boosted by providing additional places. Moreover, calls for application for 80 additional professorships have been issued, with a stronger focus on data science, artificial intelligence, computational medicine and innovation. It is also envisaged to address fields of technology like industry 4.0, information technology, automation, cybersecurity and eGovernment.

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<sup>34</sup> Austria National Reform Programme 2019. Accessed on 21 October 2019.

## Thematic Objective 11

- **Structural reforms on fiscal policy:** The National Financial Framework for 2018-2021 and 2019-2022 includes an investment focus on science, research and development, innovation and digitalisation.
- **Strategic plan for digitalisation:** A strategic action plan for digitalisation will be drawn up by year-end 2019. A dedicated Digitalisation Agency (DIA) was set up in 2018 to effectively bring together all the various efforts undertaken in this field. It connects the various stakeholders, act as an interface between business, society and public administration and will develop concrete measures together with stakeholders. A flagship project in the public sector is the Digital Public Administration (Digitales Amt), the purpose of which is, in a first step, to lay the basis for cross-entity electronic administrative processes.
- **New research and innovation strategy:** A new strategy is currently being developed to set out the key parameters for research, technology and innovation policy for the coming decade. The new performance-based funding agreements with the universities for the period 2019-2021 will put a spotlight on knowledge and technology transfer as well as on innovation output.

### 3.1.5 Operational Programmes

For the funding period 2014-2020, one national OP of Austria is specifically dealing with TO2 and TO11. The OP 'Investments in Growth and Employment' for the use of the ERDF fund,<sup>35</sup> focuses on three main areas: research, development and innovation; competitiveness of SMEs; and transition towards a low carbon economy.

## Thematic Objective 2

- **Development of Vienna as Smart City:** The main objectives of the framework strategy towards Vienna becoming a smart city is three-fold. First, it has to invest in the right resources such as efficient use of energy that is renewable, as well as resource-efficient public mobility. Second, research and innovation infrastructure are to be expanded. Third, life quality has to be conserved and even further developed through green spaces for example.
- **Improvement of SMEs' competitiveness:** Financial instruments are made available to all SMEs as they push the growth of the economy. Innovative companies and start-ups, those investing in modern technology and science are invited to participate in public-private partnerships towards further digitalisation.

## Thematic Objective 11

- **Investment in smart specialisation:** Research expertise is important to invest in in order for Austria to further grow. Life Sciences, mobility, service innovation and information technology are all part of the national strategy towards specialisation. Institutions and the private sector should cooperate in order to overcome the infrastructure bottleneck. The country aims to

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<sup>35</sup> Investments in Growth and Employment Austria 2014-2020 – Operational Programme for the use of the ERDF funds. Accessed on 9 December 2019.



introduce new programmes to raise competences. Research and technology infrastructure are thus necessary to facilitate access to and performing research, which will be established through various Knowledge and Technology Parks throughout the country.

- **Promotion of public procurement:** The field of innovation also takes into account the promotion of electronic public procurement. The interface between product and service innovations and public administration are planned through various pilot projects.

## 3.2 Belgium

### 3.2.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Belgium's CSR of 2019.<sup>36</sup>

Belgium remains in the preventive arm of the Stability and Growth Pact and thus subject to the debt rule. In 2019, the government plans a slight but gradual improvement of its headline balance to reach 0.0% by 2022. However, the medium-term objective, calculated at a balanced budgetary position in structural terms, is not set to be reached over the period covered by the 2019 Programme. Lastly, the general government debt-to-GDP ratio, after a slow decrease, is expected to reach 94% by 2022.

Belgium's total expenditure as a share of GDP remains one of the highest in the Union. This high level of public expenditure indicates there is the possibility of putting in place a more spending-based fiscal adjustment. Belgium should particularly focus on creating space for more public investments. The medium- and long-term sustainability of Belgium's public finances continues to be at risk due to the combination of a high debt-to-GDP ratio and the projected rise in ageing costs, especially those linked to pensions.

Belgium recently put in place a "tax shift" and implemented a reform on corporate income taxation. The "tax shift" helped to reduce the labour tax wedge, although it is still significantly high for all wage earners, except for the low wage earners. In addition, taxation has been alleviated for start-ups and small companies, but remains complex for financial investments.

Recent economic growth in Belgium has resulted in jobs growth and thus a reduction of the unemployment rate. However, the transitions from unemployment to employment remain low in the country, hence making it unlikely for the country to reach its Europe 2020 employment target of 73.2%. In addition, regional disparities persist, and labour market participation continues to be low for the low-skilled, those with a migrant background, older workers, and those with disabilities.

Belgium suffered from a decline in educational performance and significant disparities in the system persist. The gap in educational outcomes due to socio-economic and migration background is particularly high, therefore reforms need to be implemented with a stronger focus on increasing the efficiency and effectiveness of the system throughout the country.

Belgium has a low productivity growth in several sectors, such as, information and communication technologies, construction, and health. This is particularly due to skills mismatches and low job mobility. Considering this, Wallonia and Flanders came up with an agreement to improve inter-regional labour mobility. The overall level of digital skills is good, but not improving. In addition, research and development is concentrated in only a few industries and there is thus a lack of innovation in other sectors, which weighs heavily on productivity growth.

Economic  
Outlook

Public  
spending

Tax system

Labour Market

Education

Business  
environment

<sup>36</sup> COM (2019) 501 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Belgium and delivering a Council opinion on the 2019 Stability Programme of Belgium, Brussels, 5.6.2019. Accessed on 18 September 2019.

### 3.2.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in Belgium since 2018. The information originates from the Digital Government factsheet of Belgium.<sup>37</sup>

#### **Political Communications**

On 6 December 2018, the Walloon government validated the adoption of the Digital Wallonia strategy for 2019-2024. The new strategy stipulated the framework defining the direction that the region of Wallonia will take in order to seize socio-economic opportunities of digital transformation in the next five years.

#### **Legislation**

On 25 October 2018, the parliament of the French Community adopted key legislation on the governance framework for digital and information technology policy. The highlights included defining a set of general principles for the digital government transformation, setting up a strategic council for digital transformation providing a legal basis to governance structures, and establishing a strategic plan for digital and IT development (validity five years). In December 2018, the Flemish administration followed suit and adopted a public governance decree. This legal order incorporated previously separate decrees on the Steering Committee for Flemish Information and ICT policy, on electronic intergovernmental data exchange, and on the re-use of public sector information. It addressed the use of base registries and the adoption of the once only principle in the Flemish administration and the local administrations.

#### **Governance**

In 2018, the Steering Committee for Flemish Information and ICT policy became fully active as the main governance body for Flemish information and ICT policy. It adopted important new policies such as an API First strategy for service development, and a Public Cloud First strategy for service deployment.

#### **Infrastructure**

The Belgian eID was officially adopted and peer reviewed with success. The Identity and Access Management Platform of the Flemish government now supports identification and authorisation of users using eIDAS-approved digital identities.

#### **Services**

Several new public services were launched in Belgium in 2018. These included: My unemployment file, which allows citizens to consult their unemployment file online; MyPension.be, which allows pensioners to consult their pension file; My health record, which allows citizens to consult specific health related information and Licence plates, which allow citizens to check the status of their request for a car registration, a number plate or a chassis number.

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<sup>37</sup> Digital Government factsheet 2019, Belgium. Accessed on 20 September 2019.

### 3.2.3 Country Specific Recommendations

The CSR for Belgium<sup>38</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>39</sup>

#### **Thematic Objective 2**

##### *Recommendations*

The CSR issued for Belgium makes no recommendation of the need to intervene in the field of TO2.

##### *Recitals*

The CSR issued for Belgium makes no specific mention in the recitals of the need to intervene regarding TO2.

##### *Opportunities*

In recital 16, Belgium is encouraged to invest in re-skilling and upskilling in some sectors of its labour market. The future of the country's growth, innovation and competitiveness thus lie in the digitalisation of these skills. In addition, recommendation 2 stresses the need to improve the performance and inclusiveness of Belgium's education system and particularly include older workers and people with a migrant background. Thus, this could be seen as an opportunity for Belgium to introduce eSkills in the education and training systems, in order to meet the future needs of its citizens and address skills mismatches.

As mentioned in recommendation 4, the country should aim to reduce the regulatory and administrative burdens that continue to affect small- and medium-sized enterprises. Belgium should see this as an opportunity for the creation and implementation of eGovernment portals for its businesses so as to offer more efficient and faster solutions.

Recital 20 stipulates that the quality of digital public services for businesses is rather low in Belgium. Hence, Belgian companies should strive to use more digital tools and new technologies as a way of delivering faster and more efficient services

#### **Thematic Objective 11**

##### *Recommendations*

The CSR issued for Belgium makes no recommendation of the need to intervene in the field of TO11.

##### *Recitals*

Recital 20 points to the lack of digitalisation of Belgium's judicial system which remains a serious challenge for the conduction of a good legal action in the country. Thus, Belgium should strive to continue the digitalisation of its judicial system so as to ensure a faster and more efficient service.

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<sup>38</sup> COM (2019) 501 final, Council Recommendation on the 2019 National Reform Programme of Belgium and delivering a Council opinion on the 2019 Stability Programme of Belgium, Brussels, 5.6.2019. Accessed on 18 September 2019.

<sup>39</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Belgium to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Belgium. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

## Opportunities

The CSR for Belgium does not describe needs that can be linked to opportunities to intervene in the field of TO11.

### 3.2.4 National Reform Programme

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Belgium's NRP.<sup>40</sup>

#### Thematic Objective 2

- **Dissemination of ICT best practices:** The ICT Cluster 'Infopôle' is the network of digital actors in Wallonia, whose aim is to bring together academic and industrial expertise to create a pole of excellence in ICT. In 2018, it was given three new missions by the Belgian government, which included the identification and development of digital ecosystems to create a business accelerator. Its main function is to enlarge the available ICT expertise of businesses in the Walloon regions by strengthening their positioning at the local, regional, national and international levels.
- **Investment in digital education:** Since October 2018, the government aims to counterbalance the digital education deficit by reinforcing the digital competences and knowledge of its teachers. In Wallonia, a new Digital action plan 2019-2024 was approved, which focuses mainly on developing education and training activities. The aim is to increase students' digital skills. The Brussels-Capital Region is also investing in the expansion of the digital economy and education, as part of its Regional innovation plan.
- **Research and development of new technologies:** The Brussels-Capital Region also selected 7 new digital projects, with a budget of more than 6 million euros, with the intention of promoting effective cooperation between academia and industry in the field of decentralised systems, such as Blockchain.
- **Development of eHealth solutions:** Wallonia established a new innovative platform called INAH (Institute of Analytics for Health) to foster eHealth solutions. The platform aspires to develop tools and methods to create a Walloon research network for the analysis of health data.
- **Reinforcement of cybersecurity initiatives for businesses:** In December 2018, the Brussels Initiative on Cybersecurity Innovation (BICI) was introduced to ensure that new knowledge about cybersecurity is correctly and quickly transmitted to companies. In Wallonia, an awareness and support tool for cyber threats was presented, while Flanders put in place a cybersecurity action plan for 20 million euros.
- **Development of jobseekers' digital skills:** Actiris, the Brussels Regional Office of Employment, offers ICT vouchers to jobseekers in the region. These allow jobseekers to

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<sup>40</sup> Belgium National Reform Programme 2019. Accessed on 1 October 2019.

quickly boost their digital skills, in an efficient and personalised manner, in order to better match the skills required by the future employers.

- **Simplification of administrative measures for businesses through ICT tools:** Measures to simplify administrative procedures for businesses are at the heart of the Administrative Programme of Wallonia's Public Service (SPW). Its main strategic objective "So simple, so digital" particularly focuses on digitalising procedures to make administrative measures easier and faster for everyone. The programme put in place a single online portal for company cheques, for example, to speed up the procedure and have all the information needed in one single platform.

#### **Thematic Objective 11**

- **Enhancement of public procurement:** In the course of 2018, the Belgian administration has dedicated new funds to take further steps in the area of digitalisation. In fact, in Flanders, the digitalisation was carried out through the continuation of the Innovative Public Procurement programme. The 2019 action plan expects that at least 3% of Flemish public procurement expenditure will be dedicated to innovation procurement.
- **Digitalisation of the judicial system:** At the federal level, the Belgian government has started to put forward some reforms to digitalise, and thus simplify, the judicial system. This change will be particularly beneficial for enterprises as they will have the possibility of digitally transmitting official documents such as the company statutes.

#### **3.2.5 Operational Programmes**

A thorough evaluation of Belgium's national OPs for the 2014-2020 financing period has revealed that there are no initiatives planned under TO2 and TO11 that would fall under the scope of this study.

## 3.3 Bulgaria

### 3.3.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Bulgaria's CSR of 2019.<sup>41</sup>

The CSR for Bulgaria reports macroeconomic imbalances in the country. Weaknesses in the financial sector combined with high indebtedness and non-performing loans in the corporate sector remain a risk. The government aims at a headline deficit of 0.3% of GDP this year but a surplus of 0.4% in 2020 and 0.2% of GDP in 2021 is expected. The structural balance is on the right path to be met, as the medium-term budgetary objective. The general government debt-to-GDP ratio, which was 22.6% of GDP in 2018 is expected to decline gradually to 16.7% in 2022. The economic outlook is improving but some important challenges remain, particularly in areas such as tax revenues and compliance, public expenditure, corporate governance and the banking and financial sectors. This is mainly due to several reasons of which, a still large shadow economy, a need of enhancing the bank resolution framework and pursue the insolvency reform, or the urgency to tackle international money laundering, and harmonise the car insurance sector.

Bulgaria increased the public research budget in 2018 but it remains very low compared to the rest of the EU. This is because of a slow pace in implementing reforms and a high fragmentation in the research, development, and innovation systems. Science-business links are weak and more human capital is needed. Hence, the CSR for Bulgaria encourages to increase the digitalisation of companies and introduce new business models to boost the country's productivity.

Despite the numerous adopted reforms in Bulgaria's public administration and eGovernment, their practical implementation is lagging behind. Further investment in these areas face obstacles such as institutional shortcomings, regulatory uncertainty, corruption, and insufficient labour supply. Even with the major deployment of the national procurement strategy, its administrative capacity remains an additional ongoing challenge, which causes delays in the implementation of public projects.

Concerning the Bulgarian labour market, employment rate is at its highest level since the country joined the EU. However, long-term unemployed, young people, Romani and people from poor and rural areas face difficulties entering the job market. Some countermeasures have been adopted such as supporting mechanisms for long-term unemployed. Also, it is highly encouraged to further promote digital skills among young and adult people as Bulgaria's level is one of the lowest in the EU. In the long-term, the economy might suffer from labour and skills shortages.

Though decreasing, the risk of poverty or social exclusion in Bulgaria remains one of the highest throughout the EU. Moreover, Bulgaria faces challenges on the inequality of income and access to services. This is due to the low level of social spending on social protection and to the deficiencies in the minimum income schemes. In fact, the country does not have a transparent process on who is entitled to what level of benefits, a problem the government intends to remedy by setting an objective mechanism that provides an overview of all schemes in the country. On another side, parent's socio-



<sup>41</sup> COM (2019) 502 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Bulgaria and delivering a Council opinion on the 2019 Convergence Programme of Bulgaria, Brussels, 5.6.2019. Accessed on 18 September 2019.

economic status strongly influences educational outcomes. Therefore, more investment is required, especially in primary education, in order to create equal opportunities from an early age and improve future employability.

Healthcare services are still compromised given the low level of public spending. There is an uneven distribution of limited resources and health insurance is not available for all; in fact, out-of-pocket payments are made to receive quality healthcare. Moreover, there is a shortage of nurses and doctors, as they are leaving the country.



### 3.3.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in Bulgaria since 2017. The information originates from the Digital Government Factsheet of Bulgaria.<sup>42</sup>

#### Legislation

The law amending and supplementing the Public Procurement Act introduced mandatory use of the National Electronic Platform, from the opening of the procedures to the receipt and opening of electronic applications for participation and tenders, as well as for electronic communications in the course of the procurement procedure. Regarding cybersecurity, the Cybersecurity Act was adopted in pursuance of the commitments of the Republic of Bulgaria as a Member State of the European Union to establish an organisation for the implementation of the Directive (EU) 2016/1148 concerning measures for a high common level of security of network and information systems across the Union.

#### Infrastructure

Several actions were implemented concerning the digital infrastructure of Bulgaria. For the purposes of cross-border electronic identification, an eIDAS Node was developed and deployed in a production environment in accordance with the requirements of Regulation (EC) No 910/2014. Additionally, the Open Data Portal was created. It is a single, central, public web-based information system that provides for the publication and management of information for re-use in an open, machine-readable format along with relevant metadata. The portal was built in a way that allowed for the complete retrieval of published information or parts of it. In August 2018, the platform for access to public information was launched. It was developed and maintained by the administration of the Council of Ministers. The platform is a unified, central, public web-based information system that electronically provides the entire process of filing and processing of applications for access to information, forwarding to competent bodies where necessary, issuing a decision and publishing the relevant information from those obliged under the Access to Public Information Act while protecting the applicant's personal data under the Personal Data Protection Act.

#### Services

By the end of 2018, 150 administrative services were available in Bulgaria including electronic request, payment and delivery.

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<sup>42</sup> Digital Government Factsheet 2019, Bulgaria. Accessed on 1 October 2019.



### 3.3.3 Country Specific Recommendations

The CSR for Bulgaria<sup>43</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>44</sup>

#### **Thematic Objective 2**

##### *Recommendations*

In recommendation 4, the CSR for Bulgaria stresses the need to strengthen employability by reinforcing digital skills.

##### *Recitals*

In recital 15, the CSR for Bulgaria describes the urgency to further invest in research and development as well as to strengthen science-business links and clusters. It emphasises on increasing digitalisation of companies and introducing new business models to boost the country's productivity.

##### *Opportunities*

The CSR for Bulgaria describes in recommendation 4 the need to improve the inclusiveness of education and training, in particular for Roma and other disadvantaged groups. By implementing eInclusion solutions aimed at promoting digital literacy for instance, such barriers and educational gaps could be minimised.

Moreover, recommendation 4 stresses the need to improve access to health services as well. The two main goals being reducing out-of-pocket payments and addressing shortages of health professionals, the establishment of an efficient eHealth system could help tackle these issues.

#### **Thematic Objective 11**

##### *Recommendations*

The CSR for Bulgaria makes no recommendation of the need to intervene in the field of TO11.

##### *Recitals*

In recital 16, it is clearly stated that "public administration and e-government reforms continue to be slow". The document points out the delay in the uptake of electronic procurement is preventing further improvement in the transparency and efficiency of the system. As a consequence, public projects are taking a slow pace.

In recital 17, various concerns on corruption and institutional shortcomings arise, particularly on the judicial area. Digitalisation would enhance transparency of the system and improve service delivery in the long run. Nevertheless, progress is expected in early autumn 2019.

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<sup>43</sup> COM (2019) 502 final, Council Recommendation on the 2019 National Reform Programme of Bulgaria and delivering a Council opinion on the 2019 Convergence Programme of Bulgaria, Brussels, 5.6.2019. Accessed on 18 September 2019.

<sup>44</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Bulgaria to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Bulgaria. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

## Opportunities

In recital 6, it is described the necessity to improve fiscal policy. Tax administration and collection have an opportunity to digitalise and, by that, improve their efficiency. Tax compliance, innovation and enhanced economy are dependent on each other to improve alongside.

### 3.3.4 National Reform Programme

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Bulgaria's NRP.<sup>45</sup>

#### Thematic Objective 2

- **Improvement of healthcare system:** One of the key measures of the Strategy for ensuring an effective health system is the digitalisation and integration of systems in the sector through the establishment of a National Health Information System (NHIS). The first stage is planned be finalised in 2019 with the implementation of eHealth in Bulgaria. It will allow the shortening of the time for patient care, facilitating the access to modern and high-quality health services and optimising the strategic management of the health sector.
- **Digital service for unemployment:** An electronic labour exchange is currently being implemented to enhance interoperability among the 73 centres for Employment and Social Assistance and provide a better service to long-term unemployed citizens.
- **Boost to the digital economy:** EU fund investments will cover leisure for improving the connectivity and digitalisation of the economy as prerequisites for enhancing competitiveness. Measures aimed at improving the institutional and business environment, the digitalisation of the economy, improving connectivity and encouraging the digital transformation of the economic activity under an accelerated set-up of the electronic data management will be supported.
- **Support measures to foster eCulture:** Support will be provided for the establishment of key registers and digitalisation of cultural values, including for management of cultural heritage.
- **Policies to improve the delivery of public services:** The implementation of the Single Model for request, payment and provision of electronic administrative services, will continue to reduce the administrative burden on the citizens and businesses and will create conditions for delivering accessible comprehensive administrative services through advanced technological means. Along with the upgrade of the developed prototype of the eForm system, all the necessary horizontal systems of electronic government will be provided to implement the Single Model.
- **Improvement of the connectivity and accessibility of agglomerations:** Funding measures for infrastructure investments will develop basic infrastructure geared towards business. This will improve the urban environment and the touristic competitiveness and contribute to the overall improvement of economic activity in the country's regions.

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<sup>45</sup> Bulgaria National Reform Programme 2019. Accessed on 8 October 2019.

- **Broadband Infrastructure Plan:** Adoption of measures for ensuring access for the citizens and the businesses to networks with very high capacity. 5G networks are expected to be substantially faster than 4G ones.
- **Research and Development measures:** A plan is being developed for the creation of a national portal and open science repository and a communication strategy for promoting results of scientific research, as well as a national plan for a science, open to the society and economy.
- **Modernisation of higher education:** Bulgaria will improve the higher education system in accordance with labour market demands by enhancing the quality of management and teaching. This will be done by using digital skills and technologies.

#### Thematic Objective 11

- **Improvement of healthcare quality:** Bulgaria aims to improve the quality of healthcare services through several means. The government will set up a National Health Information System. This will provide patients with information about their own health. In addition, administrative services and financial costs of the government will also improve. New technologies will also be used to advance towards eHealth.
- **Provision of eProcurement services:** The work on the setup of electronic awarding of contracts by means of a single national electronic web-based platform for public procurement continues. A number of actions have been taken to strengthen the administrative capacity and professionalism in the sector.
- **Measures for a transformation of the administrative service model:** Inter-register exchange of reference and supporting information has continued with the number of the included registers, as well as the administrations and organisation entering the respective data, rising. Removing certification services and transforming them into internal administrative electronic services and applying the proprio motu principle are in process of implementation.

### 3.3.5 Operational Programmes

For the funding period 2014-2020, two national OPs of Bulgaria are specifically dealing with themes related to TO2 and TO11. The OP 'Human Resources Development'<sup>46</sup> has two goals: boost employment and reduce social exclusion, as well as reduce poverty levels. The second OP, 'Good Governance',<sup>47</sup> in turn, addresses challenges related to the efficiency of public administrations.

#### Thematic Objective 2

- **Digitalisation of the public administration and its services:** Services will be deployed in the field of eGovernment and the use of ICT will also be expanded within public administrations according to the 'Good Governance' OP. Bureaucracy will be reduced through the simplification of procedures and regulatory regimes. Upgrades will vary in the field of, for

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<sup>46</sup> Bulgaria Human Resources Development Operational Programme. Accessed on 9 December 2019.

<sup>47</sup> Bulgaria Good Governance Operational Programme. Accessed on 9 December 2019.

example, tax collection, the establishment of one-stop shops and making the government more open and transparent.

- **Technological modernisation and digitalisation of enterprises:** Micro enterprises, start-ups and SMEs are financed and receiving support if they are developing new and innovative ideas. These products/services can be related to areas such as ICT and eCommerce and eServices. Technological modernisation, including infrastructure, is also financed under the 'Human Resources Development' Operational Programme.
- **Creation of a single platform for health services:** As part of the eServices initiative in the 'Good Governance' OP, eHealth is one of the most important priorities. The system will be unified and developed to be further upgraded into a single, centralised platform. The complete health records of all Bulgarian citizens will also be available and accessible online.
- **Creation of an innovative strategy for smart specialisation:** The skills of the current unemployed and employed workforce are important to be developed, as explained in the 'Human Resources Development' OP. The ICT sector is creating various jobs that are important for the future development of the country. An innovative strategy for smart specialisation is currently being put in place. Through training, people will acquire the skills needed for the future.

#### **Thematic Objective 11**

- **Enhancing institutional capacity and efficiency:** Large investments are needed to increase the efficiency of public administrations and public services at the national, regional and local levels, as pointed out in the 'Human Resources Development' OP. The expected outcomes are reforms, better regulation and good governance. Furthermore, transnational cooperation for the exchange of best practices and experience will increase the skills, competences and knowledge of employees in Bulgaria.
- **Enhancement of the public administration's digital skills:** The quality of services is an important aspect to tackle, and this starts with the competence of employees in the administration, according to the 'Good Governance' OP. Their skillset should include proper introduction to eGovernment administration, making processes more efficient, fast and affordable.
- **Introduction of electronic procurement:** New legislation that is being implemented on public procurement is introducing electronic services. If this is achieved, there will be a positive effect on the economic development of Bulgaria, and improved business conditions as stated in the 'Good Governance' Operational Programme.
- **Improvement of the judicial system:** In order to enhance the quality of legislation, as well as the capacity of the judicial system, eJustice is being introduced throughout the country under the 'Good Governance' OP. This will apply consistency, faster judicial processes, information security and the opening of the judiciary will have a big anticorruption effect.
- **Installation of new technological and ICT equipment:** The IT infrastructure in Bulgaria is outdated therefore hindering information systems and services. Equipment will be purchased and installed in order to ensure proper exchange of information. The government also plans

to develop a cloud to migrate all resources, systems and services onto it, conforming to the 'Good Governance' OP.

## 3.4 Croatia

### 3.4.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Croatia's CSR of 2019.<sup>48</sup>

Croatia is currently in the preventive arm of the Stability and Growth Pact and thus subject to the debt rule. The 2019 Convergence Programme foresees its headline balance to decline to -0.3% of GDP in 2019 and then gradually improve to a surplus of 0.8% of GDP by 2022. According to the programme, the government debt-to-GDP ratio is expected to fall from 71.6% of GDP in 2019 to 68.5% in 2020 and to continue declining thereafter. Croatia is forecast to comply with the debt rule in both 2019 and 2020.

In 2018, Croatia adopted the Fiscal Responsibility Act, whose aim is to reinforce the set-up and mandate of the Fiscal Policy Commission and lay down numerical fiscal rules, including a structural budget balance rule. The fiscal framework will be further strengthened with the adoption of the amended Budget Act, which is expected to improve budgetary planning and the collection of fiscal data.

The labour market continued its recovery in 2018, as the unemployment rate continued its steady decline. Nonetheless, activity and employment rates remain low compared to the EU average. This is particularly due to early retirements and care responsibilities. In addition, labour shortages continue to affect some sectors of the economy, mainly due to skills gaps. Hence, Croatia should aim to improve its digital skills in order to raise its productivity level.

Croatia suffers from important socio-economic disparities, especially across regions, which impact the level of educational attainment in the country. In fact, it ranks well below the EU average in terms of education and investments in education, especially early childhood one. To overcome this, the government recently created the Regional Centres of Competences, whose aim is to improve the quality of vocational education and training for all regions.

Croatia is a deeply fragmented country. This affects the efficiency of its public administration and exacerbates regional disparities. Indeed, many small local units often lack adequate financial and administrative resources to provide the required services to their citizens. The country suffers from wide disparities in terms of public service provisions between the financially and administratively strong regions and the weaker ones.

Croatia needs to further invest in research and innovation capacities and in advanced technologies. This will strengthen its innovation performance and further promote its productivity growth. The country developed a plan known as the "2016-2020 Smart specialisation strategy" (RIS3) whose aim is to foster innovation, overcome fragmentation in the system and ensure that research and development activities are constructed and coordinated around the country's key economic priorities.



<sup>48</sup> COM(2019) 511 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Croatia and delivering a Council opinion on the 2019 Convergence Programme of Croatia, Brussels, 5.6.2019. Accessed on 20 September 2019.

### 3.4.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in Croatia since 2018. The information originates from the Digital Government factsheet of Croatia.<sup>49</sup>

#### **Political Communications**

The Strategic Plan of the Ministry of Justice for the period 2019-2021 emphasises the use of solutions based on complex algorithms and artificial intelligence in order to increase the efficiency of the proceedings.

#### **Legislation**

In October 2018, the Law on electronic invoicing in public procurement (NN 94/2018) was adopted. Regarding cybersecurity, the Republic of Croatia has fully and successfully implemented the European NIS Directive into its national legislation, through the adoption of the Act on cyber security of operators of essential services and digital service providers on key service providers and providers of digital services.

#### **Infrastructure**

Croatia implemented the Central Salary System (COP) in all institutions whose salaries are financed from the State budget. The COP is a web-based application covering salary calculations for the whole public administration.

#### **Services**

There are numerous new eServices functions that have been made available to citizens and businesses in 2018. For citizens, the country adopted measures such as eDetectives, eSubmission, eInsurance, Online Courses, eExchange of student grades, ePrescriptions, eHealth Record, eNewborn.

### 3.4.3 Country Specific Recommendations

The CSR for Croatia<sup>50</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>51</sup>

#### **Thematic Objective 2**

##### *Recommendations*

The CSR for Croatia makes no recommendation of the need to intervene in the field of TO2.

##### *Recitals*

In recital 12, the CSR mentions the need for Croatia to improve its digital skills, in both the private and public sectors. This will help close some of its skills gaps and raise its productivity. In addition, Croatia

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<sup>49</sup> Digital Government factsheet 2019, Croatia. Accessed on 18 September 2019.

<sup>50</sup> COM(2019) 511 final, Council Recommendation on the 2019 National Reform Programme of Croatia and delivering a Council opinion on the 2019 Convergence Programme of Croatia, Brussels, 5.6.2019. Accessed on 18 September 2019.

<sup>51</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Croatia to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Croatia. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

recently put in place a smart specialisation strategy, mentioned in recital 17, whose aim is to encourage students and professionals to specialise in science, new technologies and innovation policies. This could help Croatia into becoming a more digitalised country.

#### *Opportunities*

Recital 8 mentions the need for Croatia's healthcare system to be improved, to ensure an efficient and quicker primary care for all. There is an opportunity for the establishment of eHealth provisions and tools to modernise the healthcare system as well as medical and hospital equipment. This would lessen the burden on both healthcare providers and the Croatian citizens.

### **Thematic Objective 11**

#### *Recommendations*

In recommendation 4, Croatia is urged to reduce the duration of its court proceedings and to start using electronic communication in courts to make the processes faster and more effective. In this area, the country could think to implement eJustice measures.

#### *Recitals*

The CSR for Croatia makes no specific mention in the recitals of the need to intervene regarding TO11.

#### *Opportunities*

The CSR for Croatia does not describe needs that can be linked to opportunities to intervene in the field of TO11.

### **3.4.4 National Reform Programme**

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Croatia's NRP.<sup>52</sup>

### **Thematic Objective 2**

- **Introduction of eBusiness project:** This programme intends to create a single access point for all electronic business services in Croatia. The platform will allow businesses to oversee and download documents online, such as tax administration, health insurances or pension schemes, through a single platform.
- **Facilitation of business start-up process:** The government developed a new information system for business start-up (START). With this new programme, founding companies online will be possible, without all the administrative steps previously required. The aim is to facilitate the creation of business start-ups through a single electronic process, which will be less time-consuming and more cost-efficient.
- **Further development of the eSchools project:** The aim of the programme is to complete the digital transformation of all Croatian schools. Schools will have access to new ICT equipment, new eServices for students and new eContent. In addition, teachers and school

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<sup>52</sup> Croatia National Reform Programme 2019. Accessed on 3 October 2019.



employees will also be staffed and educated accordingly to develop their digital maturity. Furthermore, every school in the country will have access to this project, which will bridge the digital and social divide that continues to affect Croatia. This will ensure the readiness of students to meet the future demands of the labour market.

- **Digital transformation of healthcare services:** The country has started to implement and use ICT solutions in the healthcare system as a way of improving citizens' health and foster the productivity and efficiency of their health provisions. Croatia will put in place a new Strategic eHealth development plan for the 2020-2025 period and a related 2020-2021 Implementation plan, which will rely on the knowledge and experience of specialists in the sector of eHealth and from the World Health Organisation, among others. In order to make healthcare services more accessible to everyone, Croatia has decided to put in place a new model for booking and managing appointments, in a more transparent and central calendar.

#### **Thematic Objective 11**

- **Improvement of the Open Data Portal:** The portal strengthens the accountability, efficiency and transparency of the public administration. It should thus be thoroughly upgraded and expanded so as to provide for a larger number of data disclosure bodies and a greater amount of quality and worthwhile data free of use.
- **Improvement of ICT in the judiciary:** The government will continue to improve the efficiency of its judicial system through further development of electronic communication between courts and the other participants of the proceedings. In fact, the eCommunication system has already been enforced for all commercial courts in Croatia. In addition, electronic communication has already been set up with attorneys and notaries but is set to expand further, to include all municipal courts and other participants. Electronic communication is very useful for attorneys as it allows them to submit any type of electronic documentation to the court on behalf of their clients. Lastly, incentivising electronic communication will lead to less administrative burden for courts, which in turn, will spur judicial proceedings and provide a more efficient collection of court fees.
- **Establishment of online tax services:** Croatia introduced ePayment for its taxes and contributions, which will lead to the reduction in the number of hours spent on tax analysis and payments.
- **Development of single digital portal for all public services:** In order to reduce costs and provide more cost-efficient administrative procedures, the government decided to establish a single digital portal for all public services, where all information and services will be made available to citizens. In addition, the government is also working on the eFees system which wishes to put in place electronic payments for all types of administrative fees and charges. The implementation of eSignature is also underway and will facilitate the work of the public administration.

### 3.4.5 Operational Programmes

For the funding period 2014-2020, two national OPs of Croatia are specifically dealing with themes related to TO2 and TO11. OP 'Competitiveness and Cohesion',<sup>53</sup> intends to boost economic competitiveness, support alignment with the EU environmental acquis, invest in transport infrastructure and network infrastructure. OP, 'Efficient Human Resources',<sup>54</sup> aims to contribute to creating jobs and strengthening social cohesion in Croatia.

#### Thematic Objective 2

- **Better delivery of healthcare:** Given the low number of doctors and low provision of health services, Croatia is investing in various services. Firstly, eLearning is established in order to support continuous and specialised education to healthcare providers. These skills will be then used in order to provide telemedicine to citizens who cannot easily reach hospitals and healthcare providers. There will also be several investments towards eHealth in Croatia such as a cloud-based standardised and interoperable hospital application system (eHospital); an integrated information system for the Croatian Health Insurance Company; ePrescriptions; and electronic repayment system. The adoption of a strategic plan for eHealth development is planned to be achieved by 2020, as explained in the 'Efficient Human Resources' OP.
- **Implementation of ICT trainings:** eSchools, digital content and IT classes will be introduced to children in secondary schools under the 'Efficient Human Resources' Operational Programme funds. ICT equipment for teachers and students will be provided, along with a high-speed internet connection. The goal is to have 50% of the Croatian schools become eEnabled, i.e. ICT-equipped. The digital content is an important component to the future workforce's knowledge and key competences. Adults are also encouraged to take part in trainings, to enhance the digital skills of citizens. In fact, vouchers will be provided to adults in order to become enrolled in online courses in ICT fields, at the same time enhancing eLearning possibilities in the country.
- **Establishment of various digital platforms for citizens and businesses:** New interventions will support information systems to build an eCitizen platform, an eBusiness platform and a one-stop shop. These are different channels of communications for citizens and businesses, which will reduce administrative burden, therefore using the funds of the 'Efficient Human Resources' OP efficiently.
- **Development of electronic services for citizens:** Croatia has identified the areas of health, education, land management, justice, culture, tourism and inclusion as the main topics for eService development in order to improve policy delivery and increase communication between the citizens and public administration. These will be overseen by the Shared Service Centre that will coordinate and manage the use of ICT applications and eServices while ensuring transparency. The Law on the State Information Infrastructure defined several new services to implement. These are: one government website as single point of contact; a

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<sup>53</sup> Croatia Competitiveness and Cohesion Operational Programme. Accessed on 9 December 2019

<sup>54</sup> Croatia Efficient Human Resources Operational Programme. Accessed on 9 December 2019

common identification and authentication interface; a common user mailbox for citizens; and an interoperability framework towards interconnection with European eServices. The 'Competitiveness and Cohesion' OP focuses on these topics.

- **Development and update of the national IT infrastructure:** To provide eServices to the public, the basic infrastructure needs to be in place. Its development receives support under the 'Competitiveness and Cohesion' OP through investments in the extension of the next generation network (NGN) broadband and e-public services provision. For people living in remote locations, ICT infrastructure in terms of broadband is important both at home and at the public administration offices. eServices, in addition should be user-friendly for all population groups, e.g. elderly and special needs. The aim is also to reduce the digital divide throughout the country.
- **Introduction of ICT tools and techniques in education:** ICT equipment is lacking and outdated in schools, for which funds will be allocated as depicted in the 'Competitiveness and Cohesion' OP. In addition, teachers' ICT competences are also shortcoming. ICT equipment is a tool to enable the use of modern teaching methods and techniques, innovative teaching and learning practices that support student-centred learning, development of key transversal competences for the 21st century, critical thinking, collaborative and project-based learning. The eSchools project aims to equip at least 50% of all Croatian schools with ICT infrastructure and high-speed Internet. The School Cloud will modernise and allow full access to information by school administrations.
- **Creation of an electronic application to improve the spatial planning process:** In order to improve the spatial planning process, ICT applications to support the creation of a database for documents, procedures of construction, and making open access to download spatial information are currently being developed in the public sector through the 'Competitiveness and Cohesion' OP.
- **Establishment of a digital platform to store and preserve cultural heritage:** In order to collect, process, distribute and store cultural heritage, a digitalised platform is being invested in from the 'Competitiveness and Cohesion' OP. The aim is to preserve and present the Croatian national cultural heritage and make it accessible to people throughout Europe through the European platform.
- **Reinforcement of eTourism:** One of the priorities of the 'Competitiveness and Cohesion' OP is investing in an IT system consolidating all the data on tourist boards and registered stakeholders in the tourist sector is meant to contribute to better quality service in the tourism sector as well as higher citizen and tourist satisfaction.
- **Improvement of businesses' efficiency through ICT:** The Croatian government will provide support to enterprises in order to create eBusiness solutions through ICT by optimising business processes, integrating business functions, streamlining workflows and enhancing interactions with clients and suppliers. ICT solutions are also beneficial for the services to support B2B interactions, as described in the 'Competitiveness and Cohesion' OP.

## Thematic Objective 11

- **Reorganisation of the tax administration:** Taxpayers should have more eServices available for their regular needs. The tax administration's institutional framework will be changed to better engage with citizens, in line with the 'Efficient Human Resources' Operational Programme.
- **Enhancement of eGovernment measures:** The core elements of eGovernment in Croatia are further enhanced through the interconnectivity of the information system within public administrations. Interoperability is also set as a framework in order to better organise public services from hierarchical to horizontally integrated. Investments will be made into IT infrastructure at administrations from the 'Efficient Human Resources' OP.
- **Optimisation of judicial processes through ICT tools:** Courts and state attorneys should refer to eRegisters, information systems, records management online and databases that have all information in one place. The ICT area needs the exchange of best practices and knowledge to further develop the interoperability of the judicial information system. Therefore, to make the justice registers more interoperable and more interconnected, the Croatian national and EU registers will become more integral. This will facilitate the access of citizens and businesses to the justice system, keeping with the 'Efficient Human Resources' OP.
- **Establishment of a government cloud:** Financing from the 'Competitiveness and Cohesion' OP will be provided for establishment, equipping and making an operational cloud for the government. The aims are to consolidate the government ICT infrastructure; purchasing or developing software; and delivery of necessary equipment.

## 3.5 Cyprus

### 3.5.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Cyprus' CSR of 2019.<sup>55</sup>

Cyprus is currently in the preventive arm of the Stability and Growth Pact and subject to the debt rule. The government plans a budgetary surplus of 3.0% of GDP in 2019 and remain above 2.0% of GDP over the entirety of the programme period. After having increased, the debt-to-GDP ratio is expected to decrease to 95.7% in 2019 and to steadily decline thereafter, to reach 77.5% by 2022. Based on the Commission 2019 spring forecast the structural balance should stand at 1.1% of GDP in 2019 and at 0.7% in 2020, thus remaining above the medium-term budgetary objective.

The fight against aggressive tax planning continues to be essential to make tax systems more efficient and fairer and impede distortions of competition between firms. Although the country has already taken some measures in this regard, the high levels of dividend and interest payments suggest that the country's tax rules are continuously used by companies that engage in aggressive tax planning.

While employment is on the rise and unemployment is falling fast, concerns remain regarding the high unemployment of young people and the long-term unemployed. In fact, in 2018, the proportion of young people not in education, employment or training was among the highest in the EU. While efforts to improve the administrative capacity of the public employment services continue, the outreach measures and timely, tailor-made assistance for young people are limited.

The justice system still faces some inefficiencies that affect contract enforcement and prevent the swift resolution of civil and commercial cases. Although the country implemented a series of reforms to address the most critical problems, progress remains slow.

The inefficiency in public administration remains a challenge for the Cypriot business environment despite recent efforts regarding eGovernment services, regulatory quality and staff mobilities. Further measures should be put in place to avoid hindrance of the investment capacity in key utilities. The main threat is the containment of the public sector wage bill, which has been a significant factor in fiscal consolidation.

The Cypriot Government's spending on education is well above the EU average, indicating a strong commitment to education and training. Nevertheless, the educational achievements remain poor and skills shortages and mismatches continue to be an obstacle to business investment in the country. Cyprus should continue to modernise its education and training systems to improve its educational outcomes and increase the potential for sustainable growth. In addition, the country should focus on investing in basic digital skills and tools as only 50% of Cypriots between 16 and 74 possess such basic digital and ICT skills.

Economic  
Outlook

Tax system

Labour Market

Justice system

Administrative  
and regulatory  
barriers

Education

<sup>55</sup> COM (2019) 513 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Cyprus and delivering a Council opinion on the 2019 Stability Programme of Cyprus, Brussels, 5.6.2019. Accessed on 20 September 2019.

In the health sector, Cyprus has made some significant progress by adopting the legislation establishing the new National Health System. The system is set out to be fully functional by 2020 but caution is necessary regarding implementation challenges and investment needs.



### 3.5.2 Country Digital Government Outlook

The following overview entails the most relevant digital government highlights that have occurred in Cyprus since 2018. The information originates from the Digital Government factsheet of Cyprus.<sup>56</sup>

#### Political Communications

In 2018, the Cyprus Productivity Centre continued its action on the educational programme, supposed to minimise digital illiteracy and further promote the use of eGovernment services. The programme had a two years horizon (2017-2019) that focused on implementing the number of workshops and training for: learning how to use basic eGovernment services and improving basic internet skills.

#### Legislation

The health system moved towards cross-border integration with the Law on eHealth (59(I)/2019). The eHealth law focuses on supporting Cyprus' efforts to be part of this secure peer-to-peer network allowing the exchange of Patient Summaries (PS) and ePrescriptions (eP). On a national level, the key point is the creation of a Central Citizen Data Warehouse, which uniquely links every citizen to the Central eGovernment Portal, the country Cloud integrated electronic health record system (EHR).

#### Infrastructure

A revamped National Web Portal for Open Data was launched with new features to support the re-use of open data, as well as a larger catalogue of datasets. The National Web Portal for Open Data was ranked first among the national open data portals of the 28 EU Member States by the Open Data Maturity Report 2018. To support and foster the reuse of open data available through the National Web Portal for Open Data, several actions have been promoted. For instance, the second edition of the Cyprus Open Data Hackathon, that took place in September 2018, promoted the development of applications using Public Open Data among computer programmers, analysts, designers, communication and marketing experts, students, and advocates.

#### Services

A new website was created to allow citizens and businesses to compare banks' fees linked to their bank accounts. This tool allowed the public to be informed on current charges per service, thus increasing transparency and provide important information. The comparison included 11 financial institutions operating in Cyprus. Through the website, consumers can learn in advance and before any transaction what the bank charges they are going to pay, and in particular the corresponding fees of other banks, to make informed decisions.

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<sup>56</sup> Digital Government factsheet 2019, Cyprus. Accessed on 23 September 2019.

### 3.5.3 Country Specific Recommendations

The CSR for Cyprus<sup>57</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>58</sup>

#### **Thematic Objective 2**

##### *Recommendations*

In recommendation 4, the CSR urges the country to focus its investments on digitalisation, including digital skills for all. Further investments in the digital economy would bolster Cyprus' productivity. In fact, ICT specialists and citizens with basic digital skills are significantly lacking in the country, thus hampering its potential of becoming a digital economy. In addition, investing in eSkills could bridge the current gap in unemployment, particularly among the younger population. Recitals 10 and 11 stipulate that this gap is due to significant skills shortages and mismatches in education and training. Thus, investing in eSkills could be a solution as the youth would gain skills that would better match today's labour market needs.

##### *Recitals*

In recital 12 and recommendation 3, the efforts of Cyprus establishing a new National Health System are complimented. Nonetheless, its will be challenging. The CSR thus proposes the introduction of eHealth aimed at modernising and improving the efficiency of healthcare providers.

##### *Opportunities*

The CSR issued for Cyprus does not describe needs that can be linked to opportunities to intervene regarding TO2.

#### **Thematic Objective 11**

##### *Recommendations*

In recommendation 5, the CSR urged Cyprus to step up its efforts to improve the efficiency of its judicial system. To do so, the country should increase the specialisation of its courts and set up an operational and fully functional eJustice system.

##### *Recitals*

The CSR for Cyprus makes no specific mention in the recitals of the need to intervene regarding TO11.

##### *Opportunities*

Recommendation 1 urges the country to improve the functioning of its public administration and the governance of its state-owned entities and local governments. This could be the opportunity to encourage the use of eGovernment services, which are already in place but not fully functional in

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<sup>57</sup> COM(2019) 513 final, Council Recommendation on the 2019 National Reform Programme of Cyprus and delivering a Council opinion on the 2019 Stability Programme of Cyprus, Brussels, 5.6.2019. Accessed on 20 September 2019.

<sup>58</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Cyprus to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Cyprus. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

Cyprus. These would ensure smoother communications between the various public entities and faster solutions to administrative procedures.

Recital 8 acknowledges the need for Cyprus to take significant measures against aggressive tax planning in order to make its tax systems more efficient. The country could tackle this problem by introducing eTax measures that would handle all financial administrative processes in one digital platform. This would help the country in the fight against tax evasion and in the creation of a fairer tax system.

### 3.5.4 *National Reform Programme*

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Cyprus' NRP.<sup>59</sup>

#### **Thematic Objective 2**

- **Implementation of eGovernment projects:** One of the main reforms of the Cypriot government for 2019 relates to the good advancement and full implementation of this year's eGovernment projects, designed to improve governance and increase overall productivity. One of these projects is the new Government gateway, Ariadni. The portal intends to provide around 100 public eServices to citizens such as birth certificates, driving licenses and passports, among others. Ariadni is also the reference and only platform for electronic transactions between citizens, businesses, institutions and the government.
- **New focus on eHealth measures:** New initiatives have been put forward to improve the provisions of eHealth services. For example, the country put forward a single contact point for cross-border healthcare, ensuring harmonisation and quicker responses. In addition, Cyprus also implemented a new Laboratory Information Management System and a National Health Information System, designed to respond to the needs of all national hospitals and health centres.
- **Creation of a new open data portal:** Cyprus scored high in the field of Open Data maturity and its new open data portal was ranked first among 31 open data portals across Europe. The country continues on this trajectory by further exploiting public data through the National Open Data Portal.
- **Enhancement of digital skills for all:** The country has put in place free training programs and workshops for citizens to learn about the eGovernment system and all its advantages, as well as to acquire basic digital skills and tools. In addition, it recently introduced a certification programme for students enrolled in secondary education, that will prove fruitful for their future job research. The programme is free of charge and accessible to every student.
- **Development of a blockchain technology:** Together with 25 Member States, Cyprus adhered to the Declaration for Cooperation on a European Blockchain Partnership (EBP). Each country will have to come up with and introduce a national plan for the development of

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<sup>59</sup> Cyprus National Reform Programme 2019. Accessed on 4 October 2019.



a blockchain technology in its country, which will include pilot projects, legislative initiatives and communication strategies.

- **Establishment of an electronic auction system:** In view of introducing more efficient and transparent foreclosure and insolvency frameworks, the country decided to put in place an electronic auction system (eAuction) for properties exposed to foreclosure proceedings. The eAuctions will help banks to better regulate the operations and make them more effective and reliable.
- **Digitalisation of the industrial sector:** The government has adopted a whole new set of digital solutions and systems for the digitalisation of its industries. These include the acquisition of modern equipment and cutting-edge technologies, the creation of smart factories and establishment of digital service infrastructures including digital innovation hubs and technology transfer centres.
- **Implementation of a new online platform for jobseekers:** The country recently launched an online platform to facilitate both employers' search for an employee and jobseekers' quest for a job. This development is part of the government's efforts to expand the use of ICT tools for self-service and public provisions.
- **Set-up of ICT infrastructure for all:** A new pilot scheme has been put in place to finance ultrafast broadband connections (minimum 100Mbps download speed) for all Cypriot citizens. The long-term goal is to increase the demand for ultrafast broadband connection while also fostering the market for investment in ultrafast networks in general.

#### Thematic Objective 11

- **Promotion of eGovernment for local authorities:** The government also wishes to enhance eGovernment projects, such as process automation and service delivery, for public administrations at the regional and local level across the country. This will be done through the creation and implementation of an adequate and flexible IT infrastructure and application architecture, to be used by local and regional authorities.
- **Digitalisation of the judicial system:** New efforts were implemented to digitalise the Cypriot judicial system in order to accelerate the procedures, relieve judges and attorneys of several bureaucratic responsibilities, by providing new digital services.
- **Deployment of eTax:** The Cypriot government adopted new laws making the electronic submission of tax declarations compulsory. This will speed up procedures, improve operational efficiency and reduce the risks of tax evasion.
- **Enhancement of the eProcurement system:** In order to promote transparency and accountability, the government constrains contracting authorities and individuals to publish contract notices and contract award notices for all types of contracts, through the new eProcurement system.

### 3.5.5 Operational Programmes

For the funding period 2014-2020, two national OPs of Cyprus are specifically dealing with themes related to TO2 and TO11. The OP on 'Employment, Human Capital and Social Cohesion'<sup>60</sup> outlines objectives to promote employment, skills, social inclusion and the modernisation of the public administration. The second OP on 'Competitiveness and Sustainable Development'<sup>61</sup> aims to boost competitiveness and growth in Cyprus.

#### Thematic Objective 2

- **Development of new IT services:** In order to increase the efficiency and modernise the private and public sectors, ICT will be promoted through the 'Competitiveness and Sustainable Development' OP. Various projects will be put in place in order to increase the number of digital services provided to citizens. All the Ministries will create a single data centre; a legal framework will be adopted for electronic signatures; the eProcurement system is continuously receiving upgrades; and court cases will become electronically manageable. SMEs competitiveness, in turn, will be improved through the use of ICT such as cloud computing.
- **Development of a digital health sector:** New actions under the 'Competitiveness and Sustainable Development' OP will relate to the computerisation of public hospitals and health centres will be expanded with a new Integrated Information System of Health. A data centre will be created, and all patients' files will be digitalised.
- **Development of ICT and digital skills:** Education, training and lifelong learning are important aspects that the labour market of Cyprus should benefit from. The development of ICT skills is a particular necessity. There is a high level of electronic illiteracy, and the state, together with private universities could provide the necessary means for both young people and adults to be part of the training. The 'Employment, Human Capital and Social Cohesion' OP is making eSkills a priority.
- **Establishment of a new Agency to ensure the good management and payment of welfare benefits:** With the funding from the 'Employment, Human Capital and Social Cohesion' Operational Programme, the Agency for Management and Payment of the guaranteed minimum income aims to enhance the administrative capacity of the welfare benefits service management. This includes making services available online and taking into account the eGovernment and interoperability framework of Cyprus.

#### Thematic Objective 11

- **Improvement of public administrations' interconnected systems:** Every agency stores records in a different manner. There is no database that is accessible by all stakeholders and ICT is not taken advantage of. This hinders communication, data transfer, processing of information and effective use of resources. ICT as well as IT infrastructure will be developed and invested in from the 'Employment, Human Capital and Social Cohesion' OP.

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<sup>60</sup> Cyprus Employment, Human Capital and Social Cohesion Operational Programme. Accessed on 9 December 2019.

<sup>61</sup> Cyprus Competitiveness and Sustainable Development Operational Programme. Accessed on 9 December 2019.

## 3.6 Czech Republic

### 3.6.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Czech Republic's CSR of 2019.<sup>62</sup>

The Czech Republic is currently in the preventive arm of the Stability and Growth Pact. The government expects to move from a budgetary surplus of 0.3% of GDP in 2019 to a deficit of 0.2% in 2020. In this time, the medium-term budgetary objective will continue to be overachieved. Moreover, the general government debt-to-GSP ratio is expected to gradually decline to 29.7% in 2022. The structural balance is forecast to deteriorate to -0.1% of GDP in 2019 and -0.4% of GDP in 2020, remaining above the medium-term budgetary objective.

Medium risks for fiscal sustainability of public finances in the long term have been reported due to the costs of ageing. The main factor negatively affecting sustainability is pension expenditure, but also unfavourable demographics combined with the capping of the statutory retirement age at 65 years. Recent measures have been adopted by the government but the CSR for the country stresses the need to alter the retirement age and implement comprehensive labour market policies that support longer working careers.

The Czech Republic experiences a strong labour market performance with a considerable decrease in unemployment. However, the potential of women, low-skilled and disabled people is not being fully exploited while their participation could offer a solution against labour shortages. Furthermore, motherhood still hinders labour market participation and gender payment gaps remain, despite the measures that aimed to make parental leave more flexible. In addition, efforts should be made to provide jobseekers with personalised continuous support and well-targeted active labour market policies. Initiatives should also be organised regarding upskilling, also covering digital skills, to improve labour market access.

Invest in quality inclusive education and training is of primary importance to tackle the bottlenecks on the Czech labour market. The inclusive education measures still need to be fully implemented, in particular with regards to Roma children. Furthermore, the Czech education system suffers a shortage of qualified teachers that could become more challenging in the future.

Particularly in remote regions, weak transport links are deterring business activity and the planned growth of the recharging infrastructure may not be sufficient to supply for future demand. Despite the improving of digital infrastructure, the disparities between urban and rural areas persist. Hence, to address future connectivity and sustainability needs, investment is required in very high capacity networks and appropriate demand-side measures.

The Czech government continues to face challenges regarding the improvement of transparency and efficiency of public procurement and preventing corruption. Despite efforts to improve the public procurement framework in 2017, the level of competition remains a concern and the lack of a strategic

Economic  
Outlook

Pension  
system

Labour Market

Education

Business  
environment

Administrative  
and regulatory  
barriers

<sup>62</sup> COM (2019) 503 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of the Czech Republic and delivering a Council opinion on the 2019 Convergence Programme of the Czech Republic, Brussels, 5.6.2019. Accessed on 24 September 2019.

approach as well. Furthermore, the administrative and regulatory burden may be hampering investment.

Concerning research and innovation, the country has not yet been able to create a fully functioning innovation ecosystem. It remains a moderate innovator at EU level due to a lack of a fully coherent strategy in public investment and the low cooperation between private sector and academia. The increase of business research and development investment can be traced back primarily to foreign direct investments, as the research and development expenditure by domestic firms has declined over the last years.



### *3.6.2 Country Digital Government Outlook*

The following are some of the digital government highlights having occurred in the Czech Republic since 2018. The information originates from the Digital Government Factsheet of the Czech Republic.<sup>63</sup>

#### **Political Communications**

The government launched the programme Digital Czechia which covered three main concepts: Czech Republic in Digital Europe; the Information Concept of the Czech Republic; and the Digital Economy and Society Concept. The programme is made up of the top objectives of these sub-strategies. It covers areas ranging from the interaction of the Czech Republic in the European Union in the Digital Agenda (1) through digital public administration (2) to the preparation and interaction of society and the economy of the Czech Republic to consume digitalisation (3). The main reason for dividing the material into three pillars is the consistency and continuity given by the already accepted materials at the EU and Czech level and the need for compliance with the valid national legislation, which defines the content framework of the Information Concept for the Czech Republic quite accurately.

#### **Legislation**

Various Digital Government legislations were amended in 2018 such as the Act on Electronic Identification; the Act on Citizen Identity Cards; the Act on Information Systems of Public Administration; the Act on Public Procurement; the Act on Base Registers; the Act on Electronic Communications and on Amendment to Certain Related Acts; the Act on Cyber Security; and the Act on Health Services.

#### **Governance**

Two main changes occurred in the government: Mr. Jan Hamáček became the Minister of the Interior and Mr. Karel Havlíček became the Minister of Industry and Trade.

#### **Infrastructure**

A new version of the Public Administration Portal was launched accompanied by a Citizen's Portal offering over 80 eServices to citizens. Additionally, the next phase of modernisation of the public administration communication infrastructure took place, and its central element is the focus on services 2.0. Finally, the eIDAS node was launched in September 2018 under the name CZ.PEPS and since 1

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<sup>63</sup> Digital Government Factsheet 2019, Czech Republic. Accessed on 2 October 2019.

January 2019, all contracting authorities are obliged to accept incoming eInvoices in ISDOC/ISDOCX formats.

## **Services**

Various new services are now available for citizens on the Citizen's Portal such as a reservation system for filing applications for ID cards and travel documents; services of the Czech Social Security Administration (access to pension data, etc.); criminal record access; electronic submissions for financial management (VAT control reports, tax returns); driver's ranking listing; access to a list of properties owned by the user (preview of the cadastre); access to the patient's drug account (eRecept); information on incapacity for work; national eHealth contact points; and a submission of a request for information service. New services for citizens are also accessible on the Public Administration Portal, the main ones being applications for birth, child, and parental allowance. The Citizen's Portal also made new services available for businesses such as access to extracts from the Trade Register; a single registration form; a non-public extract of the natural person's business; an extract from the list of qualified suppliers; and access to the extract from the insolvency register.

### **3.6.3 Country Specific Recommendations**

The CSR for the Czech Republic<sup>64</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>65</sup>

#### **Thematic Objective 2**

##### *Recommendations*

As indicated in recommendation 2, the Czech Republic is experiencing a strong labour market performance. However, the limited capacity of public employment services causes failings to provide jobseekers with personalised support. It is therefore suggested in the CSR to invest in outreach capacities of public employment, well-targeted active labour market and the enhancement of the labour market access through upskilling measures, also covering digital skills.

##### *Recitals*

The CSR issued by the European Commission for Czech Republic makes no specific mention in the recitals of the need to intervene regarding TO2.

##### *Opportunities*

Both recommendation 1 and recital 6 mentions the risks for fiscal sustainability of public finances in the long term. Therefore, attention for the healthcare sector is needed, as the ageing population will pose challenges to this domain in the future. To tackle this ineffectiveness, the use of eHealth could offer a solution.

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<sup>64</sup> COM (2019) 503 final, Council Recommendation on the 2019 National Reform Programme of the Czech Republic and delivering a Council opinion on the 2019 Convergence Programme of the Czech Republic, Brussels, 5.6.2019. Accessed on 24 September 2019.

<sup>65</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on the Czech Republic to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit the Czech Republic. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

## Thematic Objective 11

### *Recommendations*

The CSR for the Czech Republic makes no recommendation of the need to intervene in the field of TO11.

### *Recitals*

The CSR for the Czech Republic makes no specific mention in the recitals of the need to intervene regarding TO11.

### *Opportunities*

Attempts to foster transparency and efficiency regarding public procurement and corruption are pointed out in recital 8. Despite the reforms introduced in 2017 and the investment in a state-owned eProcurement system, there is a need for better cooperation to strengthen competitiveness. This issue is also mentioned in recommendation 3 where the CSR stresses the need to foster a more quality-based competition in this area. Therefore, an upgrade of the eProcurement system could be put in place to meet these requirements.

## 3.6.4 National Reform Programme

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in the Czech Republic's NRP.<sup>66</sup>

### Thematic Objective 2

- **Development of eHealth:** As part of the National eHealth Strategy 2016-2020, the digitalisation of the health sector is ongoing. The implementation of the second stage of the ePrescription is currently being implemented, the preparations for the eHealth act are to be completed in 2020 and a National eHealth Centre is set out. Furthermore, other eHealth initiatives are planned such as the creation of reference registers and the establishment of the eHealth Infrastructure Services database, which will provide an integrated departmental data interface. Moreover, the eReceipt information system is ready for its launch in 2019.
- **Enhancement of digital skills through education:** In 2019 the Czech Republic will prepare its Education Policy Strategy 2030 which will identify digital literacy, polytechnic education and IT thinking as key priorities for the following period, particularly in basic education. The importance of developing practical skills related to modern technologies will be strengthened as well.
- **Implementation of the Single Digital Gateway Regulation:** When fully functional, the Single Digital Gateway will become a guidepost where citizens and entrepreneurs will find their way to information, procedures and assistance services they need at any given time, even in a foreign language. In 2019, initial steps were planned to be taken to ensure the proper and timely implementation at national level of the Single Digital Gateway Regulation.

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<sup>66</sup> Czech Republic National Reform Programme 2019. Accessed on 16 October 2019.

- **Production of a national plan for the implementation of ICT infrastructure:** To underpin the digital agenda and the evolution towards eGovernment, a national plan for the development of new generation networks, including of high-speed internet and 5G mobile coverage, is set out to complement the digitalisation. The Czech Republic will ensure targeted support is in place to create these networks.
- **Development of Electronic Identification:** As of 1 July 2018, the Electronic Identification Act is effective. It establishes a public administration information system supporting the process of electronic identification and authentication at the national level. The NIA is a key tool for enabling electronic identity verification and providing verified user information needed to use remote services. A separate part of the NIA is also the eIDAS node, which provides interconnection to notified electronic identification systems.
- **Creation of an eGovernment Portal:** The Public Administration Portal aims to safeguard the quality in the provision of trustworthy and guaranteed information services. It will be integrated with the Data Box Information System to simplify communication of Czech citizens with authorities. A new version of the portal has currently been applied to enhance the layout, intuitive control and mobile friendliness. Linked to the Public Administration Portal, a new Citizen's Portal will be created. For the citizens, the Portal will enable them to complete electronic submissions, provide output from public administration information systems and give information on the status of individual actions made by citizens.
- **Achieving full electronic submission:** One of the priorities for eGovernment in Czech Republic is to ensure full electronic submission, which will increase not only user comfort and the quality of services but the speed and efficiency of the administrations.
- **Digitalisation of tax administration:** The Czech citizens are enabled to file most of their tax confirmations electronically, without having to visit the tax office in person. The digitalisation of the administration is being further developed through the Modern and Simple Tax Portal. The aim is to offer taxpayers the services of the tax office in a virtual format.

#### Thematic Objective 11

- **Development of the National Register of Qualifications:** With the advent of new technologies such as digitalisation and robotisation, the Czech government sees the need of enhancing further education. For this purpose, 2019 will see the further development of the National Register of Qualifications, which is a register of professional qualifications existing in the market. The register allows candidates to obtain a nationally recognised certificate of their professional qualification, also by recognising the results of non-formal education and informal learning.
- **Enhancement of eGovernment:** In its attempt to foster eGovernment, the Czech Republic has set out the following three priorities to reduce the burden on both citizens and public administration. To manage the evolution towards eGovernment, the position of government commissioner for information technologies and digitalisation was created. The responsibilities of the commissioner are to oversee the development of digital services and use of ICT in public administration, develop digitally friendly legislation and a digital economy, the fostering of digital skills and monitor the impact of digitalisation on the Czech society.

- **Fostering eLearning within public administrations:** In 2019 the government approved several new methodologies to improve strategic work. Within the project STRATeduka educational texts including e-learning were created and 221 public administration strategists were trained. Positive feedback from participants led to the initiation of accreditation for this training programme.
- **Creation of eProcurement:** In 2019, measures such as the monitoring of foreign best practices in the field of digitalisation of public procurement, including the assessment of the possible implementation of the best solutions in the legislative environment of the Czech Republic, are being continuously implemented. Several actions are taking place as well: information events aimed at introducing electronic public procurement; counselling of the contracting authority and the contractor; revision and development of methodologies for PPA and its implementing regulations with a view to significantly reinforce the obligations of contracting authorities and create a new data publication system.
- **Digital Czech Republic strategy:** The Digital Czech Republic is a set of strategies ensuring the long-term prosperity of the country in the context of the ongoing digital revolution. Three main pillars are envisaged: the first one aims at ensuring a uniform and proactive approach to the issue of digital agenda at EU level; the second focuses on digital areas of exercising public authority at a national level; and the third one establishes a strategy which addresses issues being partly outside the direct responsibility of public authority. It includes industry, construction, education, smart cities, science and research, infrastructure development and connectivity, healthcare and a National Artificial Intelligence Strategy.
- **National Architectural guidelines for eGovernment:** The National Architectural Plan for eGovernment is an activity that includes not only architectural models of shared services but also individual models of public authorities. It will involve the modelling of central shared eGovernment services and individual systems and their services of public authorities. On another side, the National Architectural Framework for eGovernment will define a more effective spending on state IT, better accessibility of eGovernment services to state administration and self-government, but mainly also to public administrations clients – citizens, legal entities and foreigners. It will be fully operational by 2021.
- **Preparation of the eGovernment Cloud:** The government is preparing the setup of an eGovernment cloud in order to enhance the information system of the national public administration.

### 3.6.5 Operational Programmes

For the funding period 2014-2020, two national OPs of the Czech Republic are specifically dealing with themes related to TO2 and TO11. The ‘Employment’<sup>67</sup> OP defines the priorities of investments in promoting employment, social inclusion and an efficient public administration. The ‘Integrated

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<sup>67</sup> Czech Republic Employment Operational Programme. Accessed on 16 October 2019.



Regional Operational Programme<sup>68</sup> will improve public administration and public services in the Czech Republic.

## Thematic Objective 2

- **Enhancement of data sharing among different agencies:** After an evaluation of communication mechanisms in both Operational Programmes, the best practice to implement for the easy access to data, is using the principle of Open Data. There will be new tools developed for both officials and citizens. A centralised public administration information system will be created to enable data sharing by linking the data resources.
- **Implementation of new security measures to fight against cyber-attacks and hacks:** In order to enhance cybersecurity, a new legislation is being adopted. This includes clauses on security measures throughout the country, the implementation of electronic identification as well as authentication and authorisation. Best practices from other countries will also be taken into account when enhancing cybersecurity, as explained in the 'Employment' OP of the Czech Republic.
- **Reduction of administrative burdens through the digitalisation of administrative processes:** The 'Employment' OP demonstrates that thanks to the digitalisation of administration processes, burdens will be greatly reduced. Citizens will have faster access to aid thanks to the harmonisation of inspection activities, reduction of the number of guidance documents, and simplification of terminology.
- **Improvement of public institutions' efficiency:** The 'Integrated Regional Operational Programme' points out that the quality of information systems is an essential element of modern and well-functioning institutions at all levels of government. It contributes to lessening bureaucracy throughout the country. The implementation of the performance management process ensures the transfer and sharing of data communication between and within institutions as well as cross-border, along with communication with the citizens.
- **Implementation of eHealth measures:** An action plan for eHealth will be implemented through the 'Integrated Regional Operational Programme' in order to enhance digitalisation of the sector. The upload of all information on the computer system will include medical management, diagnosis support and followed medical care. The establishment of an eHealth network will improve the interoperability of health systems and will ensure access to safe and high-quality healthcare.
- **Modernisation and digitalisation of businesses:** A new Czech initiative foresees the modernisation of the private sector, through the 'Integrated Regional OP' funds. It consists of reducing the administrative burden on companies. In addition, Open Data, electronic filing, electronic identification and authentication will contribute to the goals of the initiative.

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<sup>68</sup> Czech Republic Integrated Regional Operational Programme. Accessed on 9 December 2019.

- **Modernisation and digitalisation of schools:** In order to improve the educational facilities, school premises will be expanded with new technological equipment in the classrooms with funds from the 'Integrated Regional OP'.
- **Reduction of administrative burdens for citizens through the development of new ICT tools:** The Czech government aims to reduce burden on its citizens through, for example, the reduction of the number of guidance documents and the number of changes; setting up and using consistent terminology in documents; and transparent evaluation procedures. Electronic form of communication and data exchange are necessary steps to change the management style of public administrations, as illustrated in the 'Integrated Regional OP'.

#### **Thematic Objective 11**

- **Further digitalisation of the judiciary and development of eJustice:** The 'Employment' OP explains that eJustice is not yet widely used in the Czech Republic. There is excessive administrative burden in courts as well as lack of process standardisation. To complement the digitalisation of the judiciary and prison systems will also be updated to electronic means.
- **Development of civil servants' digital and ICT skills:** There is an absence of standard knowledge of ICT throughout the public administrations. This lack of education amongst employees leads to insufficient professionalism leading to lack of standards of cybersecurity, crisis management, spatial planning, soft skills and eGovernment. The 'Employment' OP funds will tackle this challenge.

## 3.7 Denmark

### 3.7.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Denmark's CSR of 2019.<sup>69</sup>

The headline deficit of Denmark in 2019 and in 2020 is projected to be at 0.1% of the GDP, and the structural deficit of 0.5% of GDP continues to be overachieved throughout the programme period until 2025. The general government debt-to-GDP ratio is projected to decline to 33.4% in 2019, and then remain stable in 2020, before rising to 37.8% of GDP by 2025. The structural balance is expected to reach a surplus of 0.9% of GDP in 2019 and 1.0% of GDP in 2020. is moderately higher than the target of the 2018 Convergence Programme. Nevertheless, Denmark is on the right path to reach the provisions of the Stability and Growth Pact in 2019 and 2020.

Research and innovation in Denmark are sustained by high levels of investment, a strong human resources base, as well as scientific excellence. Despite that, this is especially true only for a small number of players, for instance big companies in the pharmaceutical and biotechnology sectors. Considering that, Denmark could invest more to boost the growth of highly innovative companies.

Denmark's goal is to ensure labour supply, especially of skilled workers and ICT specialists, in order to promote sustainable growth. In this regard, increasing the participation rate to vocational education and training is expected to bring a positive impact. Further investments in adult life-long learning and digital skills are also seen as a possible solution. Finally, disadvantaged groups such as young people with low education levels, disabilities, people of migrant background and people with reduced work capacity, need to be better integrated within the Danish labour market.

High productivity is essential to continue Denmark's economic growth, to maintain high level of welfare and to ensure competitiveness. Despite being among the highest in the EU, productivity growth has been declining for decades. In order to address this, Denmark has put in place measures to enhance productivity growth, which is burdened by the limited domestic competition in the financial sector and has continued to implement the utilities strategies. Preventing money laundering and terrorism financing is also one of the main priorities of Denmark. The government has therefore put in place measures to increase financial supervision.

The country is witnessing increasing levels of road congestion, especially around cities. In light of that and of the need to decarbonise the transport sector, Denmark is planning to invest in sustainable transport infrastructure.

Denmark's housing market has been characterised for several years by overvalued prices, which increased moderately in 2018. Despite the fact that several measures have been put in place by the Danish government to address the problematic Danish housing market, high household debt with high interest rate sensitivity, high loan-to-income ratios and overvalued prices still pose risk to economic and financial stability.

Economic  
Outlook

Research and  
Innovation

Labour Market

Business  
environment

Mobility

Housing  
Market

<sup>69</sup> COM(2019) 504 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Denmark and delivering a Council opinion on the 2019 Convergence Programme of Denmark, 5.6.2019. Accessed on 20 September 2019.

### 3.7.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in Denmark since 2017. The information originates from the Digital Government Factsheet of Denmark.<sup>70</sup>

#### **Political Communications**

Denmark has updated and launched several new strategies towards better eGovernment, service delivery and infrastructure. The overall Danish eGovernment Strategy, which covers the period 2016-2020, is updated yearly and in 2018 all the initiatives of the strategy are advancing successfully. The National Cyber and Information Security Strategy, launched in 2018, was further reinforced to improve cyber and information security in critical sectors, i.e. the telecommunications, financial, energy, healthcare, transport, and maritime. In March 2019, the government also launched a National Strategy for Artificial Intelligence in line with the recommendation from the EU. The strategy puts emphasis on an ethical approach to artificial intelligence. Finally, Denmark has a tradition of joint public sector strategic work on digitalisation. Accordingly, the Danish government entered into a Digitisation Pact with the Local Government Denmark and Danish Regions in the spring of 2019 in order to strengthen cohesion in the public digital service and adopt new technology in the public sector.

#### **Legislation**

The Danish government implemented the General Data Protections Regulation (GDPR) in May 2018. The Danish Data Protection Authority oversees the regulation with both planned and ad hoc reviews of data controllers and data processors.

#### **Infrastructure**

The government has developed a new digital identity solution, MitID, which will replace the NemID-solution in 2021. The development of the system will take place in a partnership between the state and Finance Denmark, the Danish Bankers Association. Further to that, the Basic Data Programme, a programme aimed at strengthening re-use of core information registered by public authorities, has completed all sub-programmes, and data on properties, addresses, persons, companies and geography are now accessible for users. Finally, following the agreement on a common Framework for Federal Digital Architecture (FDA) reached in 2017, in spring 2019 guidelines on architecture description including common rules for concept and data modelling v.2.0 was established.

#### **Services**

The current Danish digital identity solution, NemID, is a two-factor solution. In 2018, the government launched an app as an alternative to cardboard code cards held by the citizens. Moreover, the government launched the My Overview Programme that provides citizens with a considerably better overview of their current cases and benefits, as well as easy access to the information the authorities have about them, thus strengthening transparency in the public sector. There is an equivalent programme to create an overview for businesses. Finally, the Agency for Digitisation and the Danish Business Authority developed several user journeys in order to make it easier for citizens and businesses to engage with the public sector.

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<sup>70</sup> Digital Government Factsheet of Denmark 2019. Accessed on 20 September 2019.

### 3.7.3 Country Specific Recommendations

The CSR for Denmark<sup>71</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>72</sup>

#### Thematic Objective 2

##### *Recommendations*

The CSR for Denmark makes no recommendation of the need to intervene in the field of TO2.

##### *Recitals*

As described in recital 7, Denmark needs to address some labour shortages, especially when it comes to skilled workers and ICT experts. In order to address this issue, Denmark should consider investing in the development of digital skills, along with general trainings and vocational education in order for workers to better respond to market needs.

##### *Opportunities*

The CSR for Denmark does not describe needs that can be linked to opportunities to intervene regarding TO2.

#### Thematic Objective 11

##### *Recommendations*

The CSR for Denmark makes no recommendation of the need to intervene in the field of TO11.

##### *Recitals*

Denmark's NRP makes no specific reference to measures related to the TO11.

##### *Opportunities*

As described in recital 11, the prevention of money laundering and terrorism financing represents a major challenge for Denmark. In this regard, the potential of the use of ePayment methods could be considered as a way to support the detection of money-laundering and terrorism financing cases.

### 3.7.4 National Reform Programme

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Denmark's NRP.<sup>73</sup>

#### Thematic Objective 2

- **Establishment of a national Centre for research in new technologies:** Denmark is planning to establish a new national Centre for research in digital technologies. This initiative is part of the broader research and innovation strategy, as well as the Strategy for Denmark's

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<sup>71</sup> COM(2019) 504 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Denmark and delivering a Council opinion on the 2019 Convergence Programme of Denmark, 5.6.2019. Accessed on 20 September 2019.

<sup>72</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Denmark to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Denmark. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

<sup>73</sup> Denmark National Reform Programme 2019. Accessed on 27 September 2019.

Digital Growth. The main aim of this cross-disciplinary establishment will be supporting the development of the digital sector, with specific attention given to research in the fields of artificial intelligence, big data, Internet of Things and IT security.

- **Improvement of technology literacy in schools:** As part of the Strategy for Denmark's Digital Growth, a pilot programme for mandatory technology literacy in schools has been launched for the period 2018-2021.
- **Implementation of the New Technology Pact:** Following the close collaboration between the business sector and educational institutions, a boost in the skills of the workforce is expected, along with an increase of young people choosing an educational programme in the digital and technology area.

#### **Thematic Objective 11**

Denmark's NRP makes no specific reference to measures related to TO11.

#### **3.7.5 Operational Programmes**

A thorough evaluation of Denmark's national OPs for the 2014-2020 financing period has revealed that there are no initiatives planned under TO2 and TO11 that would fall under the scope of this study.

## 3.8 Estonia

### 3.8.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Estonia's CSR of 2019.<sup>74</sup>

Estonia is in the preventive arm of the Stability and Growth Pact. The general government deficit is expected to move from 0.6% of GDP in 2018 to a deficit of 0.2% of GDP in 2019 and a deficit of 0.7% of GDP by 2022. The medium-term budgetary objective is not planned to be achieved in 2019. The general government debt-to-GDP ratio is projected to decline to 5.3% of GDP by 2022. The CSR for Estonia urges the country to ensure that, after a structural GDP adjustment, the nominal growth rate of net primary government expenditure does not exceed 4.1% in 2020.

After a series of scandals, preventing money laundering has become a priority for the country. Consequently, the government strengthened its anti-laundering framework and introduced additional measures and guidelines on how to fight against it.

Productivity in the business environment is limited by skills shortages and mismatches. Counter reforms have been implemented in the past, but the labour market trends and the decrease in the working-age population present long-term challenges to the education and training system. For instance, a high rate of school leaving, an ongoing reorganisation of the school network and insufficient vocational education and training, among others. Also, companies rarely provide digital skills trainings to their employees.

Despite improvements, social benefits are still not effective in reducing poverty and the social safety net is weak, especially among elderly. This is due to a weak coordination between health and social services and because of the disparity within municipalities to identify the needs and deliver a service. In addition, Estonia is one of the EU countries that spends the less on long-term care, hindering the accessibility and effectiveness of it. The population, as throughout Europe, is ageing and the country needs a long-term strategy for care services. The gender pay gap at 25.6% in 2017 remains one of the highest in the EU. The parental leave and benefit system have been improving to provide a better work-life balance for women, but many challenges still need to be faced.

Estonia has a moderate performance on research, technology and innovation, which negatively impacts its productivity growth. Only 0.61% of GDP is dedicated towards business research and development, about half the EU average. Moreover, the country's transport infrastructure faces some important shortcomings in terms of connectivity and sustainability, leading the CSR to recommend further investments in infrastructure, digitalisation and automation.



<sup>74</sup> COM (2019) 506 final, Council Recommendation on the 2019 National Reform Programme of Estonia and delivering a Council opinion on the 2019 Stability Programme of Estonia, Brussels, 5.6.2019. Accessed on 23 September 2019.

### 3.8.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in Estonia since 2018. The information originates from the Digital Government Factsheet of Estonia.<sup>75</sup>

#### **Political Communications**

Following the mid-term review of the Digital Agenda 2020 for Estonia, the expanded document includes now more detailed sub-objectives in two fields: development of the information society and increasing cyber security. Moreover, the third Cybersecurity Strategy was adopted, defining the longer-term vision for the field, the objectives, priority activity areas, the roles and functions necessary for achieving it. In the field of Artificial Intelligence, in early 2018 the country launched a task force to adopt a national strategy. It focused on the adoption of AI in the public sector for creating additional value and more efficiency through the deployment of AI-enabled systems. Finally, in December 2018, the government approved the concept of moving towards a more seamless government. The goal was to kick off with 15 life/business-event services that will be offered proactively for citizens. Compared to current eServices, the new seamless services will function proactively and are more user-centred.

#### **Legislation**

Four main measures have been put in place since 2018. In May, the Cybersecurity Act entered into force, the purpose of which was to strengthen the security of digital systems used in providing vital and other socially important services to the public. In November, a regulation regarding cross-border exchange of information for health services came as well into force. • In December, the amendments to the Public Information Act were implemented, which created requirements regarding accessibility of the websites and mobile applications of public sector bodies. In July 2019, the Act on Amendments to the Accounting Act (795 SE), initiated by the government, made machine-processable invoices mandatory in invoicing with the public sector.

#### **Governance**

Several changes linked to digital governance occurred in Estonia: Ms. Kert Kingo is now the Minister of Foreign Trade and Information Technology; Mr. Raul Rikk has become the National Cyber Security Policy Director; Mr. Kristo Vaher has been appointed as Government Chief Technology Officer; Mr. Ott Velsberg is now the Government Chief Data Officer; and Mr. Margus Noormaa is the new head of RIA (Information System Authority).

#### **Infrastructure**

The eesti.ee portal, the gateway to government information and eServices, was renewed during the last year. Estonia launched the first version of a government code repository, making software solutions built for the government publicly accessible at [koodivaramu.eesti.ee](http://koodivaramu.eesti.ee)

#### **Services**

The digital register option was added to [digilugu.ee](http://digilugu.ee) and for hospitals, offering the possibility to book ambulatory appointments, pay bills, view and cancel registered ambulatory appointment times. This

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<sup>75</sup> Digital Government Factsheet 2019, Estonia. Accessed on 2 October 2019.



adds the possibility to do different transactions in one view for all health care institutions that interact with the solution.

### 3.8.3 Country Specific Recommendations

The CSR for Estonia<sup>76</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>77</sup>

#### Thematic Objective 2

##### *Recommendations*

The CSR for Estonia makes no recommendation of the need to intervene in the field of TO2

##### *Recitals*

The CSR for Estonia makes no specific mentions in the recitals of the need to intervene regarding TO2.

##### *Opportunities*

In recital 10, the CSR for Estonia points out to the insufficient capacity to innovate as one of the main outputs of the current skills shortages and mismatches. It is highly encouraged then, to promote digital skills trainings delivered by enterprises in order to avoid further limitations in the labour market.

#### Thematic Objective 11

There are no recommendations, recitals or opportunities linked to TO11 in the CSR for Estonia.

### 3.8.4 National Reform Programme

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Estonia's NRP.<sup>78</sup>

#### Thematic Objective 2

- **Development of competences:** The NRP for Estonia stresses the need to develop the digital skills of both teachers and pupils. These skills are important to successfully join the labour market that is connected to the information society.
- **Measure to reduce the gender pay gap through a digital tool:** A digital tool will be created to help employers analysing the gender equality situation within their organisation and developing solutions to eliminate the inequalities identified.
- **National eHealth Strategy:** Various eHealth solutions play an important role in improving the quality, accessibility and effectiveness of health care services. A national eHealth Strategy has been adopted to develop the eHealth and personal medicine in Estonia.

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<sup>76</sup> COM (2019) 406 final, Council Recommendation on the 2019 National Reform Programme of Estonia and delivering a Council opinion on the 2019 Stability Programme of Estonia, Brussels, 5.6.2019. Accessed on 23 September 2019.

<sup>77</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Estonia to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Estonia. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

<sup>78</sup> Estonia National Reform Programme 2019. Accessed on 10 October 2019.

- **Enhancement of ICT infrastructure:** Estonia plans to enhance its ICT transportation and other public infrastructure. Information exchange, for example, should be available to all, not depending their living location. ICT infrastructure is planned to develop throughout the country and establish a quality high-speed broadband Internet access. In 2019-2023, the government will support establishing “last mile” connections to market failure areas with a new measure.
- **Introduction of a smart grid:** This measure will help to reduce energy losses on transfer, optimise energy production, develop dispersed energy production and connect more sources of renewable energy to the grid. The improved functionality of the grid enables the development of new innovative services for all consumers of energy.

#### Thematic Objective 11

- **Recruitment of ICT skilled labour force:** A special focus will be made on addressing labour shortages in the ICT sector. Step-by-step, the regulations on recruiting foreign workers will be simplified to facilitate the migration of skilled labour.
- **Promotion of a broader use of the potential of creative industries, ICT and other key technologies in the administration:** Estonia will promote activities in the administration that integrate the fields of training, policy-making and financing. The use of ICTs, key technologies and creative industry methods for innovating or even improving processes within the administration, will require cross-domain implementation policies.
- **Implementation of eSolutions for public administration:** Work needs to continue on enhancing digital information exchange and administration and to implement the principle of “once only” to develop cooperation between various data collectors and data exchange between information systems.

### 3.8.5 Operational Programmes

For the funding period 2014-2020, one national OP of Estonia is specifically dealing with themes related to TO2 and TO11. The ‘Operational Programme for Cohesion Policy Funding’<sup>79</sup> is a multifund programme aimed to deliver a strategy for smart, sustainable and inclusive growth.

#### Thematic Objective 2

- **High-speed broadband coverage for the whole territory:** In order to allow for further growth of the knowledge economy, Estonia aims to cover the whole territory with high-speed broadband infrastructure. This will contribute to the development of eServices, productivity in the public and private sectors such as teleworking, as well as ICT implementation in health and learning. For children, eLearning opportunities through modern resources will be installed in various schools.
- **Introduction of new technologies and eServices:** Today’s most important technology trends (e.g. cloud technology, social media, AI) have a significant impact on future innovations such as Internet of Things and data exchange. eID and digitally signed contracts can be better

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<sup>79</sup> Estonia Operational Programme for Cohesion Policy Funding 2014-2020. Accessed on 9 December 2019.

implemented and become more interoperable across borders if new technologies are well-implemented. In addition, hospitals are also encouraged to make use of new technologies and IT systems.

- **Enhancement of cross-border interoperability:** In order to augment cross-border eGovernment services, a more modern digital service infrastructure will be put into place. Digital signature is one of the priorities.

#### **Thematic Objective 11**

Estonia's OP does not make any specific reference to measures related to TO11.

## 3.9 Finland

### 3.9.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Finland's CSR of 2019.<sup>80</sup>

Finland is currently in the preventive arm of the Stability and Growth Programme. The government plan a headline balance of -0.3% of GDP in 2019. Even if it is a down from 0.7% of GDP from 2018, it is expected to improve further in 2020 to 0% and to worsen again in the upcoming two years. However, the medium-term budgetary objective (structural deficit of 0.5% of GDP) is planned to continue being overachieved. Concerning the general government debt-to-GDP ratio, it will continue to decrease and reach 57.4% of GDP in 2021. The main risks identified by the CSR relate to the eventual higher cost of ageing and higher inflation.

Precisely, Finland needs to face expenditures related to an ageing population, a declining workforce, health and long-term care. A reform designed to address equal access to health and reduce waiting lists was rejected on March 2019, which may hinder the opportunity of saving costs. Moreover, the CSR of the country stresses on the need of a future fiscal consolidation to stabilise the debt-to-GDP ratio in the long term.

The Finnish labour market is tightening despite several inactivity and unemployment traps hindering a better use of the labour force. This is mainly due to the complexity of the benefits system and to the existence of different types of allowances. Hence, it is recommended revising the social security system to create better synergies between benefits and earnings. Furthermore, investments are needed in labour inclusion as women, lowed-skilled workers and people of migrant background are in general less employed. Some attempts were made, such as a reform of family leave, but it failed to be adopted. On another side, Finland is investing in skills and technology, especially in the fields of energy-intensive industries and clean transports.

Household debt is at a historically high level, 67% of GDP in 2017. It is predominantly at a variable rate which may be a risk if interest rates rise in the medium term. Moreover, Finland's major banks do not have yet an inclusive and efficient credit registry that covers the information on debtors. This could prevent banks from having a full picture of households' overall indebtedness.

### 3.9.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in Finland since 2018. The information originates from the Digital Government Factsheet of Finland.<sup>81</sup>



<sup>80</sup> COM (2019) 526 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Finland and delivering a Council opinion on the 2019 Stability Programme of Finland, Brussels, 5.6.2019. Accessed on 18 September 2019

<sup>81</sup> Digital Government Factsheet 2019, Finland. Accessed on 1 October 2019.

## **Political Communications**

The Artificial Intelligence Programme was launched with the aim of steering Finland towards the age of AI, taking into consideration measures reaching far into the future and at the same time measures that are relevant today.

## **Legislation**

Three new pieces of digital legislation recently came into force: the first one is the Act on Providing Digital Services, which aims to promote the availability, quality, security of information and accessibility of digital services, and thereby improve everyone's access to digital services. The second one is the Act on Secondary Use of Health and Social Data. The purpose is to facilitate the effective and safe processing and access to the personal social and health data for steering, supervision, research, statistics and development in the health and social sector. A second objective is to guarantee an individual's legitimate expectations as well as their rights and freedoms when processing personal data. Finally, the Act on eInvoicing for contracting entities and traders was adopted on 22 February 2019.

## **Governance**

The law on a new Digital and Population Data Agency was approved, and the new Agency will start in the beginning of 2020.

## **Infrastructure**

New digital infrastructure was put in place in Finland: Third parties were granted the power to file taxes online and the eAuthorisations service was put in place. It verifies a person's or organisation's authorisation to use digital services. Moreover, a semantic interoperability workbench was implemented, and two new important registers were created: incomes register and register of housing company shares.

## **Services**

Citizens are benefiting from new digital public services offered since 2018. For instance, there is a new service for applying for and changing one's driving licence. On another side, the national study credit, degree and qualification disclosure service Koski brings together all study credits, degrees and qualifications stored in different data warehouses. Furthermore, a new eHealth service, named Omaolo, was launched.

### ***3.9.3 Country Specific Recommendations***

The CSR for Finland<sup>82</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>83</sup>

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<sup>82</sup> COM (2019) 526 final, Council Recommendation on the 2019 National Reform Programme of Finland and delivering a Council opinion on the 2019 Stability Programme of Finland, Brussels, 5.6.2019. Accessed on 18 September 2019.

<sup>83</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Finland to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Finland. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

## Thematic Objective 2

### *Recommendations*

The CSR for Finland stresses the need to strengthen the monitoring of household debt and establish a credit registry system.

### *Recitals*

Finland is undergoing demographic and technological changes as described in recital 12. As a consequence, the CSR calls on the need to promote continuous training and reskilling of the workforce through flexible ways of learning. This will ensure an alignment with future market needs.

### *Opportunities*

In recommendation 1, as well as in recital 9, the CSR for Finland points out the necessity to ensure equal access to healthcare. One of the main issues being the long waiting lists affecting in particular people outside the workforce. In this domain, eHealth solutions could be implemented in order to manage more efficiently these challenges, improve the cost-effectiveness of the system and promote inclusivity.

Concerning recital 18, it is highly recommended to Finland to establish a central credit registry that collects information on debtors of its major banks. This implies an opportunity to promote digitalisation within the Finnish banking sector.

## Thematic Objective 11

There are no recommendations, recitals or opportunities linked to TO11 in the CSR for Finland.

### 3.9.4 *National Reform Programme*

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Finland's NRP.<sup>84</sup>

## Thematic Objective 2

- **Modernisation of health and social services:** The purpose, among others, is to provide better integration between health and social services on the one hand and between basic and specialised services on the other, and to ensure flexible and correctly timed access to the services. Furthermore, the objective is also to improve the shared use of client and patient data and to have better electronic services.
- **Programme to recruit experts on new technologies for growth companies:** This programme is connected to the growth programme for micro enterprises and SMEs and the recruitment programme for highly educated people. It aims to find highly educated experts on automation, robotics and AI sectors, and to successfully tackle the matching challenges in the tourism sector.

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<sup>84</sup> Finland National Reform Programme 2019. Accessed on 21 October 2019.

- **Digital measures supporting the integration of immigrants:** On one side, and as part of the Talent Boost action plan, there will be actions supporting the largest university cities to prepare coordinated service models (Talents Hubs) to support interaction between international talent, companies and innovation actors. On another side, Finland will provide training to migrants in their own mother tongue and the usability of electronic tools as a guidance instruments will be considered. Finally, the country will also implement a new vocational and training legislation aiming to enhance study skills to strengthen linguistic, mathematical and information technology skills, as well as to help the students to improve their study techniques.
- **Enhancement of tertiary education through digital skills:** Finland will boost tertiary education by increasing flexible study paths, recognition of prior learning and digital learning environments. This should facilitate completion of studies and a better reconciliation of work and studies. Additional funding will be allocated to increase cooperation between higher education institutions from the perspective of digitalisation. Education and student-orientation will also be developed. And finally, this funding should also be channelled through the development of continuous learning.

#### Thematic Objective 11

- **Plan for the digitalisation of the education system:** The New Comprehensive School action plan, aims at long-term development of the comprehensive school through the digitalisation of teaching, introduction of new curricula and the development of teacher competence. The introduction of digital material and new learning environments will be speeded up by means of digi-pedagogical supplementary education and through trial and innovation projects. Moreover, a gradual changeover to a digital matriculation examination began in 2016 and the spring 2019 examination was planned to be already fully digitalised.
- **EU Funds for innovation:** The European Regional Development Fund will support the development of innovation and competence structures in regions and companies' innovation activities. A total of about EUR 573 million in funding was allocated for the purpose between 2014 and 2018. Guidance and advisory services in competence and training, expert networks for employers, teachers and instructors as well as novel teaching and studying methods are also extensively developed with European Structural Fund support.
- **New programme on Research and Development:** A development programme (2017 – 2021) will continue to be implemented in order to carry out research infrastructures and services in data management and computing. Access to and use of public data reserves, research material, methods and results will be improved as well.

#### 3.9.5 Operational Programmes

For the funding period 2014-2020, the 'Sustainable Growth and Jobs – Finland's structural funds programme'<sup>85</sup> OP is specifically dealing with themes related to TO2 and TO11. The OP will

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<sup>85</sup> Sustainable growth and jobs 2014-2020 – Structural Funds Programme of Finland. Accessed on 9 December 2019.

contribute to Finland reaching the key EU and national development priorities along with the Europe 2020 objectives.

#### **Thematic Objective 2**

- **Enhancement of digital and ICT skills:** Literacy, number skills and ICT skills are a prerequisite for full participation in the labour market. In order to support citizens' access to jobs, lifelong learning should be possible to adapt, change and renew skills. The government intends to put in place opportunities and learning tools accessibilities.
- **Reduction of administrative burdens by promoting electronic communication between the different entities:** In order to enhance electronic communication between the government and the citizens, agencies will cooperate to remove unnecessary or duplicate requirements on data provision. In addition, various processes will become electronic such as tax filing. The government aims to abide by the once-only principle.

#### **Thematic Objective 11**

- **Development of a platform for the sharing of digital information and resources:** Public and private sector as well as academia should work together towards developing services and platforms for everyday needs. The modernisation of public services will also create new jobs amongst the developer community. The development of digital information resources, business processes through open data, procurement and systems interoperability are important for the Finnish economy. In addition, new ICT services will better link the remote areas of Finland in order to access public services.



## 3.10 France

### 3.10.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in France's CSR of 2019.<sup>86</sup>

France is experiencing economic imbalances related to high public debt and weak competitiveness dynamics in a context of low productivity growth. Currently in the preventive arm of the Stability Growth Pact, the government plans the headline deficit to increase from 2.5% of GDP in 2018 to 3.1% of GDP in 2019 and eventually decline to 1.2% of GDP in 2022. The general government debt-to-GDP ratio is expected to increase to 98.9% of GDP in 2019 and to decline thereafter to 96.8% in 2022. The medium-term budgetary objective, a structural deficit of 0.4% of GDP, is not planned to be achieved over the period covered by the 2019 Stability Programme.

The French level of public expenditure at 56% of GDP remains the highest in the EU. Despite a renewed fiscal consolidation strategy, expenditure on healthcare has steadily increased over time. Its success will depend on the set up of clear legal and organisational framework that provides the right incentives and fosters collaboration between public and private actors. At local level, public spending exceeded the planned growth target in 2017 as the territorial reform reduced the number of regions but not considerably the number of municipalities. Concrete actions need to be taken to reduce the expenditure-to-GDP ratio by 2022 and tackle sustainability changes.

In 2018, the employment rate continued to increase while the unemployment decreased. The labour market remains nonetheless highly segmented and almost 85% of new hires are on temporary contracts. Moreover, the employment rate for non-EU born people is one of the lowest of the EU at 57.7% in 2018. Indeed, the impact of socioeconomic and migrant background on educational performance is high and stills hampering labour market integration. Labour market conditions improve overall, but shortages of skilled workers are increasing in some specific sectors and may create higher long-term unemployment.

France's innovation performance remains below that of EU innovation leaders, even though there is a high level of public support. The country needs to implement simplification measures to ensure better coordination between national and regional support to innovation. Cooperation of the public and private sectors is envisaged by initiatives such as the Innovation and Industry Fund. Its main goal is to provide funding for artificial intelligence and related technologies such as the Internet of Things, 5G networks, high performance computing and, more generally, the data economy. High investment is required to mitigate significant regional differences in the energy sector and to improve the interconnections with the internal EU energy market.

The French tax system is characterised by a high level of complexity due to tax expenditures, inefficient taxes and taxes on production that drain away the activity of businesses and SMEs in particular.



<sup>86</sup> COM (2019) 409 final, Council Recommendation on the 2019 National Reform Programme of France and delivering a Council opinion on the 2019 Stability Programme of France, Brussels, 5.6.2019. Accessed on 25 September 2019.

Moreover, efforts to discontinue barriers to entry and to increase competition in business services should be pursued.

### 3.10.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in France since 2018. The information originates from the Digital Government Factsheet of France.<sup>87</sup>

#### Political Communications

On 1 February 2018, the Prime Minister announced the first measures relating to the transformation of public action carried out as part of the Public Action 2022 initiative. On 29 of October, a second Inter-ministerial Committee on Public Transformation was launched. The transformation plan included precise and quantifiable indicators to measure and report on the success of the programme. Later, in September 2018, the National Plan for inclusive Digital and launch of Digital in common(s) was launched, the first event bringing together all the actors of digital mediation in the nation. Concerning healthcare, a new comprehensive eHealth-based plan aiming to restructure the health system, and named *Ma santé 2020 plan*, was launched. In the justice field, the *Procédure pénale numérique*, which is an eJustice project to enable a digital criminal procedure, started in 2018 as well. In what regards to Artificial Intelligence, one year after the announcement of the National Artificial Intelligence Strategy, DINSIC and DITP launched a second invitation for expressions of interest from administrations to experiment with artificial intelligence in public services. More recently, on 28-29 May 2019, a conference was organised by the University of Lille on Blockchain, Open Education and Digital Citizenship and later, in April 2019, the French government launched Techgouv, the roadmap to accelerate the digital transformation of public services

#### Legislation

Regarding legislative measures related to digital matters, the French government launched several different actions. The first one was the Personal Data Protection Act which was implemented on 20 June 2018. The second was the implementation of the Law for a State at the Service of a Trusted Society, which allows for experiments in the exchange of information between administrations by API, in August 2018. Finally, regarding legislations on specific domains, three laws were implemented in 2018 actually: one related to eJustice is the Justice Programming and Reform Act 2018-2020, another related to eHealth, draft law on the transformation of the health system, and finally a bill for a school of trust.

#### Governance

Bertrand Pailhès was appointed to be the legal successor of the National Coordinator Artificial Intelligence in September 2018; Nadi Bou Hanna as Inter-ministerial Director of Digital and State Information on 24 October 2018; and Cedric O as Secretary of State for Digital Technology in April 2019.

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<sup>87</sup> Digital Government Factsheet 2019, France. Accessed on 3 October 2019.

## Infrastructure

Since 23 January 2018, for all online processes on [impots.gouv.fr](https://impots.gouv.fr), users benefit from a new way of connecting with FranceConnect, a portal which allows each individual to connect to the various online services of public administrations, using the digital identity of their choice.

## Services

Since mid-October 2018, the Directorate General of Public Finance (DGFIP) provided public authorities and their users with an enhanced, secure and modern online payment service, PayFiP.

### 3.10.3 Country Specific Recommendations

The CSR for France<sup>88</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>89</sup>

#### Thematic Objective 2

##### *Recommendations*

In recommendation 3, the CSR for France stresses the need to invest further on interconnections with the rest of the Union and on digital infrastructures to benefit from the digital economy, improve efficiency of public support and reduce territorial disparities. Recital 24 specifies the need to improve broadband coverage.

##### *Recitals*

The CSR for France makes no specific mention in the recitals of the need to intervene regarding TO2.

##### *Opportunities*

In recommendation 2, the CSR for France encourages to take action in addressing skills shortages and mismatches. The labour market will be strengthened by more equal opportunities for low qualified workers and better opportunities for jobseekers. This is also an occasion to enhance the eSkills of citizens, who can enter the job market more easily, with the necessary technological skills for the digital economy.

#### Thematic Objective 11

##### *Recommendations*

The CSR for France makes no recommendation of the need to intervene in the field of TO11.

##### *Recitals*

The CSR for France makes no specific mention in the recitals of the need to intervene regarding TO11.

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<sup>88</sup> COM (2019) 510 final, Council Recommendation on the 2019 National Reform Programme of France and delivering a Council opinion on the 2019 Stability Programme of France, Brussels, 5.6.2019. Accessed on 25 September 2019.

<sup>89</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on France to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit France. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

## *Opportunities*

France's tax system is characterised by its high complexity. In recital 25, the CSR mentions that it leads to inefficiency and barriers. As a solution, the implementation of eTax could help decreasing the intricacy of the system.

In recommendation 3, France is called on taking action in increasing the performance of the innovation system. This can be done through efficient public support schemes and better transfer of knowledge between public institutions, academia and the private sector. Through this, the efficiency of all stakeholders would be increased.

### *3.10.4 National Reform Programme*

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in France's NRP.<sup>90</sup>

#### **Thematic Objective 2**

- **Digital measures to improve the quality of public services:** The NRP for France points out that the government is pursuing its efforts to achieve the objective of making all public services accessible online. Moreover, in 2018 the second meeting of the Interministerial Government Transformation Committee took place, setting up several cross-cutting initiatives including the digital transformation of the public action by way of the EUR 700 million Government Action Transformation Fund.
- **Vocational schools reform for the future:** France understands the importance of investing in skills for a 21<sup>st</sup> century economy. That is why the vocational schools reform focuses on the development of training courses aimed at boosting the professions for the future. Moreover, the Career Choice Act signed in 2018, established the creation of a digital application to consult, obtain information, register and pay for trainings. This tool will be available in autumn 2019.
- **Measures to support investments in robotics and digital technology in the business sector:** Since 2018, the government envisages several measures in order to support new key sectors of the economy. First, a new depreciation allowance of 40% on investments in robotics and digital transformation tools in 2019 and 2020 will be set. Moreover, French Fab loans from BPI France (the French Private Investment Bank) will support investments in robotics and digital technology for SMEs.
- **Digital measures to simplify the creation and growth of businesses:** The Business Growth and Transformation Action Plan adopted in April 2019 establishes the creation of an online one-stop shop to help with procedures relating to setting up and running a business.
- **High Speed Broadband coverage:** With a EUR 20 billion investment, France is still working towards achieving its goal of very high-speed Internet by 2022. The investment stems from the private sector, the government and the European Union.

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<sup>90</sup> France National Reform Programme 2019. Accessed on 14 October 2019.

## Thematic Objective 11

- **Investment in innovation:** In order to increase productivity and the employment rate, as well as to achieve savings in public spending, France envisages to implement a Great Investment Plan of EUR 57 billion to support competitiveness and innovation, the digital economy, the skills sector and the ecological transition. Its goal is to boost not only innovation and research but to finance the main objectives of energy transition, skills transformation, innovation in industry and government transformation. Additionally, an industry and innovation fund of EUR 10 billion was allocated in 2018 to support innovation among start-ups and SMEs.
- **Creation of the Innovation Board:** Co-chaired by the ministers responsible for the economy and research, the Board's objective is to help breakthrough innovation emerge, improve the management of innovation policy and make proposals regarding that main trends and priorities in this field. It is also tasked with deciding on the use of the Innovation and Industry Fund's annual credits. This fund will be allocated to address mainly major challenges related to innovation, a Deep Tech Plan and the 2022 Nano Plan.

### *3.10.5 Operational Programmes*

A thorough evaluation of France's national OPs for the 2014-2020 financing period has revealed that there are no initiatives planned under TO2 and TO11 that would fall under the scope of this study.

## 3.11 Germany

### 3.11.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Germany's CSR of 2019.<sup>91</sup>

Germany is currently experiencing macroeconomic imbalances, particularly a slowly declining of the account surplus, which is expected to continue in the coming years due to more domestic demand. In its 2019 Stability Programme, the government plans a budget surplus of between 0.5% and 0.75% of GDP over 2019-2023. The medium-term budgetary objective continues to be overachieved and the general government debt-to-GDP ratio is estimated to fall below 60% of GDP Treaty reference value in 2019 and to gradually decline until 2023.

In general, public investment has been increasing robustly for the last 3 years. However, there are still more opportunities to pick up on at the regional and municipal levels. Public expenditure on education, in turn, was at 4.1% of GDP in 2017, slightly below the 4.6% EU average. Promising legislative changes allowing direct investment by the federal government in digital education have been implemented but have yet to show results. Spending on education, digitalisation, and on research and innovation will be crucial for sustaining Germany's growth and adapting to technological change.

Regarding the business environment, research and development intensity of SMEs continues to fall behind EU average while large companies benefit more from public support. Investment in this area is crucial to boost productivity and to transition to a low-carbon and circular economy. Also, digitalisation is progressing slowly among SMEs. This is partly due to a lack of connectivity, especially in rural areas, and the lag in the deployment of very high-capacity broadband at national level. A boost in digital public services, eHealth and ePrescription is required as the current performance remains far below the EU average. Additionally, changes in the regulation of businesses services to increase competition would boost the efficiency and effectiveness of investment and economic activity.

Since 2015, both rents and house prices have increased than their long-term averages. Hence, German elders face an excessive cost burden compared to Europeans levels. Moreover, the tax system is characterised by its complexity, which leads to inefficiency and distortions on decision-making. The corporate tax system is also complex, burdening the government with high tax administration costs as well as distorting the level and location of investments.

The labour market of Germany remains strong, reaching a record low of 3.2% in unemployment in 2019. Youth unemployment is among the lowest in the EU, however, labour shortages are becoming increasingly apparent and hindering production in some regions and sectors. Additionally, the labour market potential of certain groups, particularly women and people with a migrant background, is underused. Wage growth is also moderate throughout the country, and the number of low-wage earners remains high. The income inequality and the percentage of population at risk of poverty is declining, thanks to the solid social protection system. However, population is ageing, and Germany's pension expenditure is steadily growing. By 2040 the country is expected to face one of the largest



<sup>91</sup> COM (2019) 505 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Germany and delivering a Council opinion on the 2019 Stability Programme of Germany, Brussels, 5.6.2019. Accessed on 26 September 2019.

increases in spending on public pensions in the EU. The high levels might deteriorate adequacy, and people with low wages and breaks in working experience are mostly at risk of poverty in old age.

Concerning education, little progress in reducing the influence of socio-economic background on educational outcomes has been made. Germany has a good track record of integrating recently arrived migrants and refugees into education and training, however they still facing more challenges than native-born students. Finally, the future share of adult population that is low-skilled remains a problem, especially because adult learning is below the EU average.



### 3.11.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in Germany since 2018. The information originates from the Digital Government Factsheet of Germany.<sup>92</sup>

#### **Political Communications**

The implementation strategy *Digitalisierung gestalten – Umsetzungsstrategie der Bundesregierung* was adopted in November 2018 and aims to 'shape' the future of digital transformation that Germany will undertake in the coming years. The main goal of the strategy is to further increase the quality of life for all German citizens in order to be able to develop additional economic and ecological potential and secure social cohesion.

#### **Legislation**

The eIDAS Implementation Act entered into force on 29 July 2017 in Germany. The core of the eIDAS Implementation Act is the Trust Service Act (VDG). It regulates the nationally required clarifications for the effective implementation of the eIDAS Regulation. On 28 February 2019, the Trust Services Ordinance (VDV) came into force, providing the final specifications of the requirements for trust services and trust service providers, such as accessibility and financial security.

#### **Governance**

In March 2018 Ms. Dorothee Bär was appointed to the newly established post of State Minister for Digitisation at the Federal Chancellery.

#### **Infrastructure**

The eInvoicing Service for the Federal Government (eRechnung) was launched on 27 November 2018.

#### **Services**

As part of the current digitalisation programme, digital government services are developed in digitalisation laboratories. These laboratories represent a multi-stakeholder approach where different experts and users are brought together to achieve user-oriented solutions.

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<sup>92</sup> Digital Government Factsheet 2019, Germany. Accessed on 3 October 2019.

### 3.11.3 Country Specific Recommendations

The CSR for Germany<sup>93</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>94</sup>

#### **Thematic Objective 2**

##### *Recommendations*

The CSR issued by the Commission for Germany makes no recommendation of the need to intervene in the field of TO2.

##### *Recitals*

Recital 10 explains the slow progress of digitalisation throughout the country, in both society and the economy. High-capacity broadband is lagging, and there is a persistent disparity amongst urban and rural areas in terms of Internet speed. One of the main problems is the small territory covered with high-performance fibre-based access networks, as it was cheaper to upgrade only the existing copper cable networks. Furthermore, digital public service delivery and eHealth services are below the EU average performance.

##### *Opportunities*

The CSR for Germany does not describe needs that can be linked to opportunities to intervene regarding TO2.

#### **Thematic Objective 11**

##### *Recommendations*

The CSR for Germany stresses in recommendation 1 the need to focus investment-related economic policy on research and innovation, digitalisation and very high capacity broadband among others.

##### *Recitals*

The CSR for Germany makes no specific mention in the recitals of the need to intervene regarding TO11.

##### *Opportunities*

The CSR for Germany explains there is scope to improve digital public services and public procurement in recital 7. It would be convenient then to invest on an eProcurement solution in order to boost the digitalisation of the public administration.

The tax system in Germany remains complex. This leads to inefficiencies and distortions in investment, financing, and labour market participation. Moreover, the high tax administrations costs are also burdening the system. For these reasons, recital 15 raises the opportunity for Germany to become more focused on investing in an eTax system.

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<sup>93</sup> COM (2019) 505 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Germany and delivering a Council opinion on the 2019 Stability Programme of Germany, Brussels, 5.6.2019. Accessed on 26 September 2019.

<sup>94</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Germany to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Germany. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.



### 3.11.4 National Reform Programme

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Germany's NRP.<sup>95</sup>

#### Thematic Objective 2

- **Set up of digital infrastructure at national level:** In order to let people benefit from the digitalisation of the country, the federal government aims to work together with private sector operators. Federal funds of EUR 4.4 billion will be used to expand the fibre optic cable in underserved regions. A joint effort between the private sector and the state will support broadband rollout. Germany plans to become the leader in 5G networks and is continuously researching and setting up trials of the modernised mobile communication standard.
- **Preparation of digital education for citizens:** The government plans to provide students with a digital infrastructure learning environment in all subjects through a digital education initiative of EUR 3.6 billion. This way, children are becoming accustomed to a wide variety of digital technologies that will be needed in the future workforce and the German digital economy. Digital is also planned to be present in higher education, especially for teaching in universities. Lifelong learning amongst adults is also an investment, especially for digital knowledge. As for adults no longer in the education system, centres for digitalisation will be made available for them to strengthen digital literacy for all ages.
- **Digitalisation of the business sector:** The federal government fully supports the modernisation of the private sector. The digitalisation of businesses is one of the most important factors towards achieving globalisation. Competition is more overseen by the government, especially in favour of German digital companies, which aim to achieve an international base.
- **Support to start-ups and SMEs with digital equipment:** There are various types of support possibilities available to start-ups. The ones that are dealing mostly with digitalisation can compete towards receiving further funding and support from the government. Start-ups are important to strengthening the innovation environment of Germany. Several SMEs were chosen to purchase digital equipment for them, in order to ensure high-quality and modern training. The government supports SMEs because many are specialising in digital-related topics, such as IT architecture and enhancing digital societies.
- **Digitalisation of public services:** In addition to the eGovernment Act, a supplementary law was adopted that obliges the federal and state governments to make all their administrative services available on one portal. The implementation of a single, unified digital portal will be available for citizens and businesses.
- **Development of digital technologies:** The German digital economy is seizing various opportunities through digital technology advances. The cooperation between academia and

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<sup>95</sup> Germany National Reform Programme 2019. Accessed on 14 October 2019.

the industry is important and receives funding. The aim of the funding is to adopt new technologies such as blockchain, Internet of Things and Big Data.

- **Digitalisation in the health care sector:** Germany is pursuing several measures in order to expedite the expansion of the telematics infrastructure and the introduction of digital applications, particularly electronic patient records, to move forward with research, development and the practical implementation of digital innovations, and to identify faster and better ways to incorporate these innovations into the health care system.
- **Preparation of a digital administration:** All German administrative services are to be digitalised and available online for the citizens by the end of 2022 in a simple, secure and fast manner. In connection with this, existing administrative processes are to be examined and made less bureaucratic where possible.

#### **Thematic Objective 11**

- **Establishment of an Artificial Intelligence Centre:** In order to expand the activities of Industry 4.0, the federal government set up a Centre for Artificial Intelligence, together with French partners. To further enhance this digital innovation, Germany and Poland made a joint research agreement.

#### **3.11.5 Operational Programmes**

A thorough evaluation of Germany's national OPs for the 2014-2020 financing period has revealed that there are no initiatives planned under TO2 and TO11 that would fall under the scope of this study.

## 3.12 Greece

### 3.12.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Greece's CSR of 2019<sup>96</sup>.

Greece is currently in the preventive arm of the Stability and Growth Pact and is subject to the debt rule. In 2018, the country was exempt from the monitoring and assessment under the European Semester since it was subject to a macroeconomic adjustment programme. However, in the 2019 Stability Programme, the Greek government plans a headline surplus of between 1.1% and 1.7% of GDP for the period 2019-2022. The general government debt-to-GDP ratio is expected to gradually decline to 153.3% by 2022.

The country's unemployment rate in Greece is still one of the highest in the Union. In addition, the share of long-term unemployed is particularly high, representing 70% of the unemployed in 2018. Youth unemployment and low labour market participation of women also pose serious threats to the future of the country's labour market. In addition, Greece faces high income inequality and has the lowest impact of social transfers on reducing the risk of poverty in the EU.

Despite recent improvements, the Greek judicial system still faces significant challenges and presents some inefficiencies, as decisions are not taken fast enough, and backlogs weigh on the courts' productivity and effectiveness.

After the financial crisis, Greece experienced several years of underinvestment which have led to major investment gaps in the country. In addition, the digital transformation of the economy and society remains a challenge for Greece. In fact, the country has very limited access to high-speed broadband networks and access to digital skills is well below the Union's average. The country particularly needs to invest in information and communication technology, in order to keep up with the other Member States.

Greece adopted a far-reaching reform on its healthcare system in 2017, which was crucial to ensure access to primary healthcare for all Greek citizens. Nevertheless, this reform will need to be coupled with further investments in the system, through the deployment of local healthcare units.

### 3.12.2 Country Digital Government Outlook

The following overview entails the most relevant digital government highlights that have occurred in Greece since 2018. The information originates from the Digital Government factsheet of Greece.<sup>97</sup>

#### Political Communications

The Greek government launched two new financial actions with a total budget of 100 million euros. The Digital Step and Digital Leap are aimed at supporting businesses in all sectors for targeted investments in Information and Communication Technologies (ICT). In addition, the new digital



<sup>96</sup> COM(2019) 508 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Greece and delivering a Council opinion on the 2019 Stability Programme of Greece, Brussels, 5.6.2019. Accessed on 24 September 2019.

<sup>97</sup> Digital Government factsheet 2019, Greece. Accessed on 24 September 2019.

General Commercial Registry and One Stop Services for Business were adopted. They are flagship projects to facilitate eBusiness in Greece. Their main objective is the upgrade of the General Commercial Register, so that it becomes a modern and complete register for the benefit of business and administration.

### **Legislation**

Greece transposed Directive 2016/1148/EU of the European Parliament and the Council, which relates to measures for a high common level of network and information security throughout the Union and other provisions. The country also adopted Law 4601/2019 on the issuing of electronic invoices in the context of public procurement in accordance with the provisions of Directive 2014/55/ EU of the European Parliament and of the Council of 16 April 2014.

### **Infrastructure**

There have been some achievements in terms of infrastructure in the last year. First, Greece implemented the Citizens' Register in January 2018 to include all the population data on demographic and registry events available to organisations certified in the system. In addition, the country will put in place a Central Infrastructure for the Electronic Exchange of Documents between public bodies with "Advanced Digital Signatures".

### **Services**

Citizens and businesses now also have several new digital public services available for their use. Citizens can access their personal health records online through a new application called IDIKA. Citizens can now create their own company without having to visit any public service now that a new digital platform, One Stop Shop, has been put in place. Lastly, Greece created a new portal called AADE, which provides and supports eServices to citizens, businesses and public sector bodies to achieve tax fairness and transparency.

## **3.12.3 Country Specific Recommendations**

### **Thematic Objective 2**

#### *Recommendations*

The CSR for Greece makes no recommendation of the need to intervene in the field of TO2.

#### *Recitals*

Recital 18 urges Greece to invest in information and communication technology, as the country significantly lags behind other Member States in terms of high-speed broadband networks. In fact, the digital transformation of the economy and society remain a particular challenge for the country, creating major bottlenecks for dynamic export-oriented businesses.

#### *Opportunities*

Recital 19 advises Greece to reverse its current scarce technological development. To do so, the country could focus its future investments on new technologies so as to fully tap into the potential of start-ups and scale-ups.

In 2017, Greece implemented a far-reaching reform of its healthcare system. However, further investments are needed to ensure healthcare access to all. This could be the opportunity to put in place eHealth tools and services so as to ensure and facilitate access to healthcare even in remote areas and regions of the country.

The Greek educational system continues to face various challenges due to its underachievement and lack of basic, especially digital, skills. Thus, in recital 11, the country is encouraged to promote a new type of inclusive education and training system, as well as to establish closer links between education and the new needs of the labour market. This could be the opportunity for the deployment of eSkills in education and training, so as to counter current skills mismatches and foster job creation.

### **Thematic Objective 11**

#### *Recommendations*

The CSR for Greece makes no recommendation of the need to intervene in the field of TO11.

#### *Recitals*

The CSR for Greece makes no specific mention in the recitals of the need to intervene regarding TO11.

#### *Opportunities*

As recital 9 mentions it, challenges in the Greek judicial system continue to weigh on the productivity and efficiency of the courts. Hence, using the eJustice approach could make any legal action process more effective.

## **3.12.4 National Reform Programme**

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Greece's NRP.<sup>98</sup>

### **Thematic Objective 2**

- **Improvement and digitalisation of schools' curricula:** The country has decided to upgrade its educational curricula and to create new learning materials for primary and secondary students, with a strong emphasis on making digital material accessible to all. This will also provide students with the necessary digital knowledge and skills to tackle the requirements of the future labour market.
- **Creation of a simplified licensing framework to improve the business environment:** The country aims to create a simplified licensing framework for economic activities so as to establish a climate of trust between the entrepreneurs and the public administration, and thus improve the business environment overall. It wishes to do so by developing new digital technologies and introducing new administrative tools that will make business procedures simpler and less time-consuming.
- **Support for small- and medium-sized enterprises:** The Greek Ministry of Economy and Development has launched a support network for SMEs in order to provide tailor-made and

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<sup>98</sup> Greece National Reform Programme 2019. Accessed on 7 October 2019.

personalised business information on policies supporting entrepreneurship, to small businesses. This will allow them to improve their competitiveness, develop new innovative products and services and adopt appropriate digital technologies that, for the moment, are only available to big corporations, such as artificial intelligence, blockchain, etc.

#### **Thematic Objective 11**

- **Modernisation and digitalisation of corporate law:** Greece recently passed a bill to modernise the existing legal framework concerning companies. It aims to do so through the expansion of the number of procedures and actions carried out by electronic means.

### **3.12.5 Operational Programmes**

For the funding period 2014-2020, two national OPs of Greece are specifically dealing with themes related to TO2 and TO11. The OP on the 'Reform of the Public Sector'<sup>99</sup> has three funding priorities: strengthen capacity; promote eGovernment; and develop human resources. The OP on 'Competitiveness, Entrepreneurship and Innovation'<sup>100</sup> contributes to achieving the Europe 2020 targets for smart, sustainable and inclusive growth.

#### **Thematic Objective 2**

- **Digitalisation of administrative procedures:** In order to enhance interoperability, internal communication will be digitalised thanks to the 'Reform of the Public Sector' OP. This will drastically change the routine of the public sector. The administration will record documents through electronic data formats. The priority is to create an environment of digital collaboration/communication between departments and public officials. This will also enhance the accessibility of citizens to digital services. The government will provide a single platform of multi-channel services in order to enhance electronic communication.
- **Enhancement of eParticipation:** In order to improve the services provided to citizens and businesses, their participation in the design, implementation and monitoring of public policies is essential. The strengthening of participatory democracy through ICT services is one of the main actions of the 'Reform of the Public Sector' OP.
- **Enhancement of ICT and digital services' infrastructures:** In order to promote the growth of the economy, Greece will invest in its digital service infrastructures. New generation networks such as broadband technology will be installed throughout the country in order to bridge the digital divide between urban centres and peripheral areas of Greece. The computing infrastructure in the government will be secure, interoperable, cost-effective and will actively promote the sharing of electronic resources. Digitalisation through the 'Competitiveness, Entrepreneurship and Innovation' OP funds will promote eGovernance without borders.
- **Digitalisation of businesses:** Greece is below the EU average of Internet usage. For example, eCommerce within enterprises and SMEs, i.e. online purchases, were limited. These

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<sup>99</sup> Greece Reform of the Public Sector Operational Programme. Accessed on 9 December 2019.

<sup>100</sup> Greece Competitiveness, Entrepreneurship and Innovation Operational Programme. Accessed on 9 December 2019.

companies should target international markets and put in place a strategy to enhance ICT usage. The demand and offer for ICT by businesses is constantly growing, therefore new technologies such as cloud computing, data processing and management, digital content and various solutions will lead the development of the market. These actions will be funded from the 'Competitiveness, Entrepreneurship and Innovation' OP.

- **Development of new technologies:** The government is leveraging open data and big data to enhance digital entrepreneurship through the 'Competitiveness, Entrepreneurship and Innovation' OP. Other technologies such as machine to machine transaction, contactless systems, software solutions, digital public services and cloud computers are currently being developed.

#### **Thematic Objective 11**

- **Development of information systems:** In order to further enhance the communication between all levels of government as well as various agencies, a common language will be used to bind standards and have a unified interface. Another action is, for example, identifying and implementing a unified policy for the supply, use, management and maintenance of basic IT infrastructure in public administration bodies. The transparency and credibility of the state will be enhanced as well, as depicted in the 'Reform of the Public Sector' OP.
- **Enhancement of civil servants' digital and ICT skills:** The civil servants' digital illiteracy should be tackled, and IT skills should be strengthened through the 'Reform of the Public Sector' OP. The action includes pre-entry training, developing knowledge, skills and competences. Furthermore, there will be training in the use of new devices, in order to modernise the public administration. 'On the job training' for current employees will be promoted through eLearning solutions, possible to do at employees' desks.

## 3.13 Hungary

### 3.13.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Hungary's CSR of 2019.<sup>101</sup>

Hungary is currently in the preventive arm of the Stability and Growth pact and subject to the debt rule. The government expects to improve the headline deficit to 1.8% of GDP in 2019 from 2.2% on the previous year. The deficit is forecasted to continue improving to 1.2% in 2021 and to a balanced budgetary position in 2023. After some readjustments, Hungary would be close to its medium-term budgetary objective in 2022 and would achieve it in 2023. The general government debt-to-GDP ratio is expected to decline gradually to below 60% in 2022.

On 22 June 2018 and following a reported significant deviation from the medium-term budgetary objective, the Council recommended to ensure that the nominal growth rate of primary government expenditure does not exceed 2.8% in 2018. Nonetheless, the country did not take effective action in response. Despite further recommendations made to the country on June 2019, no further actions have been taken, leading the Commission, in its spring forecast, to report a risk of deviation from that recommended adjustment. Additionally, under unchanged policies, there is also a risk of deviation from the requirements made to comply with the Stability and Growth pact for 2020.

The robust economic trend has favoured the employment rate but not equally for all groups. The gender employment gap, for instance, remains wide due to the limited supply of good quality childcare. On top of that, the public work scheme remains the main active labour market policy, the scheme is found to be insufficiently focussed with limited effectiveness in reintegrating participants in the open labour market. The CSR proposes to keep improving employability by developing digital skills among population. Another challenge related to public transport arises: weak connectivity and high commuting costs are contributing to unemployment in disadvantaged areas.

The share of people at risk of poverty and social exclusion is falling but Roma and people with disabilities remain vulnerable. Furthermore, education outcomes are below the EU average and show wide territorial disparities. The shortage of teachers also remains a challenge, especially in underpopulated areas. And the education system not only hinders social mobility, but Hungarian higher institutions have the lowest financial autonomy in the EU which raises concerns over academic freedom.

The healthcare system in Hungary stills facing various difficulties: poor health outcomes due to unhealthy lifestyles, low levels of healthcare spending, an inefficient allocation of resources and a limited effectiveness. Besides that, Hungarians are among the most likely in the EU to suffer premature death due to bad air quality and important shortages of healthcare staff thwarts access to care in poorer areas.



<sup>101</sup> COM (2019) 517 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Hungary and delivering a Council opinion on the 2019 Convergence Programme of Hungary, Brussels, 5.6.2019. Accessed on 24 September 2019.



Concerning research and innovation, Hungary has a modest performance. There is a small number of innovative businesses, a lack of science-business cooperation and research and development policies turned out to be inefficient. Public underfunding and uncertainty in academic and research forums may result in the emigration of top research talent.



The CSR for Hungary expresses concerns regarding the attempts to prevent and prosecute corruption, as it appears to have increased over the past years. Some measures to fight low level corruption seem to have been applied with success, but there are still no signs of further action to prosecute corruption involving high-level officials. Moreover, judicial independence seems to be gradually compromised since the National Judicial Council faces increasing difficulties in counter-balancing the powers of the President of the National Office for the Judiciary. With regard to the public procurement framework, it has improved in recent years but obstacles to competition remain, these are mainly related to the opacity of the system. Therefore, the CSR recommends the wider use of eProcurement in order to increase efficiency and transparency.



While Hungary did implement measures to improve its tax system, some problems are yet to be solved. The tax wedge on labour remains high in EU comparison and the overall complexity of the tax systems is still found to be a weakness.



### 3.13.2 Country Digital Government Outlook

The following overview entails the most relevant digital government highlights that have occurred in Hungary since 2019. The information originates from the Digital Government Factsheet of Hungary.<sup>102</sup>

#### Political Communications

The new Cybersecurity Strategy was adopted at the end of December 2018 and the Digital Success Programme initiated the establishment of the Hungarian Artificial Intelligence and 5G Coalitions.

#### Governance

In terms of digital governance, as the legal successor of the Ministry of National Development, the new Ministry for Innovation and Technology became responsible for IT infrastructure development and information society related tasks. For high level coordination and strategy-making related to information communications and eGovernment, the Department for eGovernment and IT Developments of the Prime Minister's Cabinet Office is in charge instead of the former prime minister's office.

#### Infrastructure

The Superfast Internet Programme 2.0 was launched in January 2019. It aimed to further develop the networks, to raise the capacity to at least 100 Mbps available anywhere in the country, and to further develop optical networks with Gigabit capabilities to expand the Gigabit broadband network coverage. Moreover, 70 public administration bodies were connected to the KKSZB Central Government Service Bus interoperability platform in 2018. Altogether, 135 registries and services have been integrated to the platform. In addition, eServices already integrated into the Central Authentication Agent service and can be accessed via electronic identification with the use of the Hungarian eID card since 1

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<sup>102</sup> Digital Government Factsheet 2019, Hungary. Accessed 3 October 2019.

February 2018. The national central eProcurement System was launched in January 2018 as well. Its use became obligatory from 15 April 2018, meaning that paper-based administration of procurements ceased. For eInvoicing, from 1 July 2018 online data provision became obligatory regarding invoices that include output VAT of more than 100 000 HUF (approximately 320 EUR) issued between domestic taxpayer businesses. For this purpose, the National Tax and Customs Administration (NTCA) developed and launched a central Online Invoice system that can be connected to the financial management software or ERP system of businesses via machine to machine interface, thus the automated data provision does not need bureaucratic steps.

## **Services**

In January 2019, the new Vehicle Service Platform (JSZP) was launched. Clients can now check the data for all vehicles registered in Hungary free of charge on the [szuf.magyarorszag.hu](http://szuf.magyarorszag.hu) portal. From 1 January 2019, business organisations are obliged to access the electronic administration and use their Company Gate digital mailbox for official communications with the State.

### **3.13.3 Country Specific Recommendations**

The CSR for Hungary<sup>103</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>104</sup>

#### **Thematic Objective 2**

##### *Recommendations*

The CSR for Hungary makes no recommendation of the need to intervene in the field of TO2.

##### *Recitals*

The CSR for Hungary points out that developing digital skills could help improve employability and reduce the several territorial and gender gaps.

##### *Opportunities*

In recommendation 2, Hungary is encouraged to keep improving education outcomes and increasing the participation of disadvantaged groups, particularly Roma. For this, several digital solutions could be implemented such as the launch of online courses or eLearning platforms.

Recital 12 indicates the Hungarian healthcare system is found to have limited effectiveness. The primary care takers are not sufficiently equipped to function as gatekeepers and there is a shortage of medical staff in the poorest areas as well. The CSR thus highlights the need to rationalise hospital resources and target investments to strengthen primary care services. By introducing eHealth systems to strengthen the ICT applications in the sector these required improvements could be facilitated.

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<sup>103</sup> COM (2019) 517 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Hungary and delivering a Council opinion on the 2019 Convergence Programme of Hungary, Brussels, 5.6.2019. Accessed on 24 September 2019.

<sup>104</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Hungary to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Hungary. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

## Thematic Objective 11

### *Recommendations*

The CSR for Hungary makes no specific mention in the recommendations of the need to intervene regarding TO11.

### *Recitals*

The CSR for Hungary sets out in recital 18, that, to strengthen the anti-corruption framework, reinforce the prosecutorial efforts and improve transparency and competition in public procurement, data gained from the eProcurement system should be accessible to the public. The necessity to improve public procurement is also stressed, in a more general way, in recommendation 3.

### *Opportunities*

The CSR for Hungary describes in recommendation 4 the need to reinforce the anti-corruption framework and strengthen judicial independence. To achieve this goal, a solution could be to achieve digitalisation in the judicial administration. This would enhance transparency of the system and improve service delivery in the long run.

## 3.13.4 National Reform Programme

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Hungary's NRP.<sup>105</sup>

### Thematic Objective 2

- **Measures to foster digitalisation of businesses:** The government launched the Modern Sample Plant Programme, which provides development plans and services for SMEs ready for renewal. To this date, 6 demonstration factories have been set up in the programme. SMEs can gain direct experience of how industrial digitalisation works. Moreover, interested companies will learn about the operation of unique digital industrial devices in a separate Technology Center. So far, 47 on-site preparedness assessments have been carried out as part of the programme, and 194 have been involved in local consultations, while 15 beneficiaries have received investment support for the implementation of the programme's development plan.
- **Enhancement of the eGovernment portal for citizens:** A new customer-friendly administration interface (SZÜF) will replace the current government portal magyarorszag.hu by December 2019. It will enable an easier access to e-administration and enhance competitiveness by making the administration more efficient and simplifying the administrative processes on the client side.
- **Enforcement of ICT use in public education:** In less developed regions, EU funding has been used to develop digital literacy and programmes to achieve a quality and fair education system. Within the framework of the developments, broadband internet and wireless networks

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<sup>105</sup> Hungary National Reform Programme 2019. Accessed on 17 October 2019.

are being built in public education institutions and modern IT equipment has been acquired. Infrastructure and wireless network have been developed as well, which is supplemented by further training of teachers using ICT tools. Finally, 45.630 laptops have been distributed to teachers and classrooms and 24.000 tablets have been distributed to students to spread digital education.

- **Enhancement of the digital portal for education:** New features have been added to the National Public Education Portal, resulting in significantly more content being accessed including a best database-level interconnection with digital public collections repositories. The portal also helps students with special needs and coming from ethnic minorities to learn.

#### **Thematic Objective 11**

- **Development of the Digital Wellbeing Programme:** Hungary will adopt more than 20 new development proposals and industry strategies in 2019 and 2020 in order to deploy the Digital Wellbeing Programme. The next Digital Prosperity Programme 2030 aims to define the exact organisation and mission system for the digital state, data policy, data assets, robotics, network research, competence development, affordable access and digitalisation of SMEs.
- **Development of an electronic public procurement system:** As of 15 April 2018, the use of the electronic public procurement system is compulsory for the Hungarian contracting authorities. This measure aimed at further reducing the administrative burden on contracting authorities and economic operators. The platform was improved to enable a more user-friendly display.
- **Strategy for the Digital Workforce Programme:** Hungary aims at implementing a new vocational training strategy focused on improving the general and industry-specific digital skills of the employees, increasing the number of adults undergoing training, and deploying guidance for the digital skills training system.

#### **3.13.5 Operational Programmes**

For the funding period 2014-2020, out of all the Hungarian OPs, the 'Public Administration and Civil Service Development OP'<sup>106</sup> of Hungary is specifically dealing with objectives related to TO2 and TO11. Various funding will reinforce the services provided by the public authorities.

#### **Thematic Objective 2**

- **Digitalisation of services to facilitate citizens' administrative procedures:** As a first step towards the harmonisation of administrative procedures, physical one-stop shops will be established at regional and local levels. The development of eSolutions consists mostly of allowing citizens to firstly start administrative processes online. Some procedures will soon be available to be conducted fully online. Citizens want to be able to file their taxes online, for example.

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<sup>106</sup> Hungary Public Administration and Civil Service Development Operational Programme. Accessed on 9 December 2019.

## Thematic Objective 11

- **Enhancement of technology in government:** The current procedures in government are not standardised. The government has started adopting a more modern (electronic) form of administration. Broadband communications infrastructure is also currently being developed towards more efficient eGovernment. The harmonisation of technology is important because of the varying office systems at different level of government. In addition to enhancing the system, administrative processes are also enhanced, such as document verification, document delivery and basic building blocks.
- **Development of public service employees' digital literacy and skills:** Public service employees lack continuous feedback and collaboration. This will be remedied by eLearning, courses, exchange of ideas and training. People entering in new functions have to pass several exams, one of which will measure their proficiency.
- **Implementation of eProcurement:** The use of eProcurement solutions is still in the initiation phase in Hungary. There are several problems hindering full implementation which are, for example, absence of standardised application, fragmentation of market solutions and high costs. eProcurement will also increase transparency, through an electronically structured system. The administrative burden on procurers will be greatly lessened thanks to online consultations, online support, eSignature and SMS notifications.

## 3.14 Ireland

### 3.14.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Ireland's CSR of 2019.<sup>107</sup>

Ireland is currently in the preventive arm of the Stability and Growth Pact and is subject to the debt rule. The government expects the headline balance to improve to 0.2% of GDP in 2019 and then continue to improve thereafter to reach 1.3% of GDP by 2023. The general government debt-to-GDP ratio is expected to fall to 61.1% in 2019 and to continue declining to reach 51.6% by 2023. Ireland is expected to comply with the provisions of the Stability and Growth Pact in 2019 and 2020.

In 2019, Ireland is urged to continue its fight against aggressive tax planning, so as to ensure fairer and more efficient tax systems. Ireland has already taken some measures in this regard, but the high level of royalty and dividend payments as a percentage of GDP suggests that Ireland's tax rules are used by companies that engage in aggressive tax planning. Very few companies based in Ireland withhold taxes on outbound payments (i.e. from EU residents to third country residents). This may lead to those payments escaping tax altogether.

Due to the rapidly ageing population, the Irish healthcare system is under pressure and Ireland faces fiscal sustainability risks related to the cost of ageing. Spending on healthcare is projected to rise from 4.1% of GDP in 2016 to 5.1% in 2070. Although some sectors of the Irish healthcare system work well and are improving, the overall system continues to be inefficient, struggling to meet demand and not delivering a coordinated and integrated care. Recently, the Irish government approved and set up the Sláintecare Implementation Strategy to comprehensively reform and modernise Ireland's health and social care services. This programme will render the system accessible and sustainable for everyone and meeting the high demand of an ageing population.

Ireland has been suffering from a tightening labour market and increasing skills shortages and mismatches in certain sectors. This should encourage Ireland to increase its investments in skills, particularly digital ones, that will better need today's labour market needs. Further investment in education and training as well as in social inclusion are essential for improving Ireland's productivity and long-term inclusive growth. In addition, digital skills remain crucial for domestic companies to effectively use digital technology and to ensure a thriving domestic information and communications technology sector.

Ireland continues to suffer from low levels of public research and development with only 1.05% of GDP dedicated to it, compared to a Union average of around 2.0%. Nevertheless, the country recently adopted the Future Jobs Ireland 2019 programme, which provides a promising framework to stimulate innovation and technological change and improve the productivity of small and medium-sized enterprises.



<sup>107</sup> COM (2019) 507 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Ireland and delivering a Council opinion on the 2019 Stability Programme of Ireland, Brussels, 5.6.2019. Accessed on 25 September 2019.

### 3.14.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in Ireland since 2018. The information originates from the Digital Government factsheet of Ireland.<sup>108</sup>

#### **Political Communications**

In 2018, Ireland adopted the National Public Procurement Policy Framework, which defined the overarching policy framework for public procurement in the country. It established the procurement procedures to be followed by Government Departments and State Bodies under national and EU rules. In addition, in April 2018, the Minister for Trade, Employment, Business, EU Digital Single Market and Data protection signed the EU Declarations on Artificial Intelligence, Blockchain and Innovation Radar which aimed at harnessing opportunities for Ireland in the sector.

#### **Legislation**

Concerning eGovernment legislation, Ireland signed into law the Data Sharing and Governance Act 2019 (the 'Act') on 4 March 2019. The Act came in the wake of the GDPR and Data Protection Act 2018 and its purpose was to provide a generalised legal basis for the sharing of data between public bodies while also setting out appropriate safeguards under which such sharing could take place.

#### **Governance**

A single governance group, the Digital Leaders, was established in early 2019. Its main purpose is to drive and oversee digitalisation of services within the Irish Civil Service.

#### **Infrastructure**

In light of infrastructural changes related to eGovernment, Ireland has undertaken various innovative initiatives. The country implemented a new website, which is a central portal for online government services, allowing citizens to search and find all government services in a single, convenient manner. The Government Network, which is a privately managed, wide area multi-carrier, national network connecting public service agencies on a data, voice and video capable network, also expanded its work. In fact, in 2018, the Government Network broadened the provision of high speed, high capacity networks to smaller towns that until now had relied on lower capacity links.

#### **Services**

As part of the eGovernment services, Irish citizens can now request a new passport online as a result of the new Passport Renewal Service. It can be used by Irish citizens living anywhere in the world and is available 24 hours a day, 7 days a week, 365 days a year.

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<sup>108</sup> Digital Government factsheet 2019, Ireland. Accessed on 25 September 2019.

### 3.14.3 Country Specific Recommendations

The CSR for Ireland<sup>109</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>110</sup>

#### **Thematic Objective 2**

##### *Recommendations*

The CSR issued for Ireland makes no recommendation of the need to intervene in the field of TO2.

##### *Recitals*

Recitals 13 and 14 point to the low percentage of workers with basic digital skills, one of the lowest in the EU. Thus, further investments in workplace-based training and upskilling of the adult workforce are crucial to improve Ireland's productivity and growth. Further investment in digital skills will also benefit domestic companies who are lacking basic knowledge of digital technologies.

##### *Opportunities*

In recommendation 1 and in recital 11, there is a reference to the expected increase in age-related expenditure. The CSR thus suggests to ensure a more cost-efficient healthcare system and to pursue the envisaged pension reforms. These reforms could include the introduction of eHealth applications so as to increase the overall efficiency of the health sector.

In recital 17, the CSR mentions the need to create stronger links between multinationals and domestic firms, so as to improve the diffusion of innovation throughout the economy. In addition, a closer cooperation between firms and public centres would also increase Ireland's innovation potential. This could be the opportunity to develop new measures to digitalise the business sector and help it to make the most out of new technologies. The digitalisation of businesses will boost investments and ensure a better and more efficient communication and cooperation between public and private entities.

#### **Thematic Objective 11**

##### *Recommendations*

Recommendation 3 urges Ireland to focus investment-related economic policy on digital infrastructure. Indeed, further developing ultrafast broadband has become a key measure for the country in order to diminish barriers to business investment, as mentioned in recital 14.

##### *Recitals*

The CSR issued for Ireland makes no specific mention in the recitals of the need to intervene regarding TO11.

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<sup>109</sup> COM (2019) 507 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Ireland and delivering a Council opinion on the 2019 Stability Programme of Ireland, Brussels, 5.6.2019. Accessed on 20 September 2019.

<sup>110</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Ireland to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Ireland. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.



## *Opportunities*

Recital 10 mentions the need for Ireland to fight against aggressive tax planning and tax evasion. Although some actions have been taken in this regard, the situation does not improve fast enough. Hence, the introduction of eTax solutions could help Ireland fight against aggressive tax planning and make the tax system more efficient and fairer for all.

### *3.14.4 National Reform Programme*

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Ireland's NRP.<sup>111</sup>

#### **Thematic Objective 2**

- **Further development of digital skills in education and training:** The Irish government developed a range of different ICT programmes in the educational sector, for individuals wanting to acquire or develop digital skills. These programmes particularly target the adult working-age population, who lacks basic digital skills. The government also presented a new programme targeted at women wishing to pursue a career in the technology sector. Indeed, the Skillnet Ireland's Women ReBOOT programme is an innovative initiative to create opportunities for talented women to work in the technology sector, by fostering their professional and digital skills. Lastly, the Irish Science Foundation launched a new training programme for 700 postgraduate students in identified future skill needs in the digital, data and ICT areas.
- **Digitalisation of the healthcare system:** Ireland's new National Development Plan for 2018-2027 disposes of enough budget to make significant investments in the healthcare system and its overall services. Ireland also implemented new health strategies and policies, including the adoption of eHealth services, which it wishes to further develop and expand.
- **Investment in the development and deployment of innovative technologies:** Project Ireland 2040, the overarching framework for the social, economic and cultural development of Ireland, has decided to allocate some funds (€500 million) to invest in the development of new innovative technologies to tackle national challenges.

#### **Thematic Objective 11**

Ireland's NRP makes no specific reference to measures related to TO11.

### *3.14.5 Operational Programmes*

A thorough evaluation of Ireland's OPs for the 2014-2020 financing period has revealed that there are no initiatives planned under TO2 and TO11 that would fall under the scope of this study.

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<sup>111</sup> Ireland National Reform Programme. Accessed on 8 October 2019.

## 3.15 Italy

### 3.15.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Italy's CSR of 2019.<sup>112</sup>

Italy is still in the preventive arm of the Stability and Growth Pact and subject to the debt rule. According to the 2019 Stability Programme, the headline deficit is projected to increase from 2.1% of GDP in 2018 to 2.4% in 2019, and then gradually decline thereafter. The medium-term budgetary objective is not planned to be reached within the programme period. In addition, the general government debt-to-GDP ratio is projected to increase and reach 132.6% in 2019, and then decline to 128.9% by 2022. A debt-based excessive deficit procedure has been warranted to Italy due to its non-compliance with the debt rule in 2018.

Italy's taxation system continues to significantly weigh on the factors of production, to the detriment of economic growth, as the high tax burden on labour and capital prevents employment and investment growth. Efforts should be done to use tax bases that have a lesser impact on growth, such as property and consumption, and to reduce the complexity of the tax code as a way of fighting against tax evasion, which is particularly high in Italy. The new mandatory electronic transmission of receipts for all commercial transactions will prove beneficial in this regard.

The fight against corruption remains a challenge for the country, especially with regard to the business environment and public procurement. Recently, the country has made some progress in improving its anti-corruption framework by giving a stronger role to the National Anti-Corruption Authority and by enacting a new anti-corruption law. However, the fight against corruption will remain ineffective as long as gaps will persist in the prosecution framework for specific offenses, in particular for embezzlement of public money.

Italy's old-age pension expenditure is among the highest in the EU and is expected to follow this trend in the medium term, due to the worsening old-age dependency ratio. The 2019 budget further increased pension expenditure. This situation impedes public spending on other social and growth-enhancing sectors such as education or investment. In addition, income inequality and risk of poverty are high, well above the EU average.

Investments have consistently been below the Union's average since the early 2000s and to change this, the country will need to further focus on technology transfer and to invest in intangibles. In addition, business and public expenditures on research and development are almost half the average level of the other euro area countries. However, investment is strongly needed to raise the quality and sustainability of the country's infrastructure, in both the transport and energy sectors.

Labour market conditions improved in 2018 but at a slower pace than in previous years. In fact, the country's employment rate exceeded pre-crisis levels but is still far below the EU average. In addition, regional gaps remain substantial and the labour market remains significantly segmented, with an



<sup>112</sup> COM (2019) 512 final, Council Recommendation on the 2019 National Reform Programme of Italy and delivering a Council opinion on the 2019 Stability Programme of Italy, Brussels, 5.6.2019. Accessed on 17 September 2019.

increase in the share of temporary workers. Lastly, long-term and youth unemployment remain high, which impedes on the country's growth and social cohesion.

### *3.15.2 Country Digital Government Outlook*

The following are some of the digital government highlights having occurred in Italy since 2018. The information originates from the Digital Government factsheet of Italy.<sup>113</sup>

#### **Political Communications**

In March 2019, Italy's Minister for Simplification and Public Administration, Giulia Bongiorno, approved the Three-Year Plan for Information Technology in public administration 2019 - 2021. In particular, the new plan introduced a novel perspective to understand the digital transformation by identifying the areas of intervention and by defining the roles of the main actors involved.

#### **Legislation**

As part of the initiatives for the digital transformation of public administrations, Circular No. 3 of 1 October 2018, was approved. It urged all public administrations to identify within them a person responsible for the transition to digital.

#### **Infrastructure**

In 2018, Italy created the Innovative procurement portal, which is meant to promote the use of innovation contracts, to support Italian public administrations in carrying out procurement procedures and to match supply and demand of innovative solutions by encouraging effective collaborations between public administrations, companies and research institutions, in line with the provisions of the Italian Digital Agenda.

#### **Services**

In 2018, the main change in digital public service delivery for citizens has been the possibility to rely on an Electronic Health File (FSE), which contains the set of digital data and documents of a health and social-health nature generated by present and past clinical events concerning patients. In addition, a new initiative called PagoPA, has been put in place to allow citizens and businesses to electronically pay public administrations, on the basis of rules, standards and tools defined by the Agency for Digital Italy and accepted by public administrations, banks, post offices and other payment institutions.

### *3.15.3 Country Specific Recommendations*

The CSR for Italy<sup>114</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>115</sup>

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<sup>113</sup> Digital Government Factsheet 2019, Italy. Accessed on 20 September 2019.

<sup>114</sup> COM(2019) 512 final, Council Recommendation on the 2019 National Reform Programme of Italy and delivering a Council opinion on the 2019 Stability Programme of Italy, Brussels, 5.6.2019. Accessed on 17 September 2019.

<sup>115</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Italy to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Italy. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

## **Thematic Objective 2**

### *Recommendations*

In an effort to fight against corruption, recommendation 1 calls on the Italian government to better control and encourage the use of ePayments by imposing lower legal thresholds for cash payments.

In recommendation 2, Italy is urged to improve its educational outcomes, by fostering upskilling and strengthening its digital skills. In addition, recital 19 also mentions the need to further invest in digital skills and digital infrastructure. In order to do so, the country needs to firstly invest in human capital so as to improve the employability of its workers. Indeed, the country needs to boost adult learning in order to meet the future needs of the labour market and this could be done through the acquisition of eSkills.

### *Recitals*

The CSR issued for Italy makes no specific mention in the recitals of the need to intervene regarding TO2.

### *Opportunities*

The CSR issued for Italy does not describe needs that can be linked to opportunities to intervene regarding TO2.

## **Thematic Objective 11**

### *Recommendations*

In recommendation 3, Italy is encouraged to improve the effectiveness of its public administration through investments in the skills of public employees, acceleration of digitalisation and increase efficiency of public services.

### *Recitals*

In recital 24, the CSR for Italy urges on the need to enforce eInvoicing in all public administrations.

### *Opportunities*

In recommendation 4, Italy is urged to reduce the length of its civil trials at all instances by enforcing and streamlining procedural rules. This can be seen as an opportunity for eJustice measures, and thus the use of ICT tools to improve efficiency.

In addition to the use of ePayments suggested in recommendation 1, Italy could promote the use of eTax solutions to handle all types of financial administration processes. This would be beneficial for the fight against tax evasion, which is one of the main challenges faced by the country.

### **3.15.4 National Reform Programme**

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Italy's NRP.<sup>116</sup>

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<sup>116</sup>Italy National Reform Programme 2019. Accessed on 9 October 2019.

## Thematic Objective 2

- **Investment in innovative and new technologies:** Italy has invested €9.2 billion to develop key technologies, including supercomputers and artificial intelligence for the future of Italy's innovative sector. One additional sector of particular interest is that of the blockchain technology, which is increasingly central in the development of digital technologies in Italy, both in the private and public sectors. It is attracting significant investments and proposing regulatory issues which are particularly relevant and interesting.
- **Launch of the project 'Piazza Wifi Italia':** In order to stimulate the demand for digital services, a further boost has been given to the WiFi.Italia.IT plan. With this project, the government strives to make Italy a 4.0 country. For the realisation of this objective, the project 'Piazza Wifi Italia' has been started, which will allow all citizens to connect, free of charge and in a very simple way through a dedicated application, to a free wi-fi network, covering the whole national territory. The project will contribute to the lessening of regional disparities that continue to be a significant issue in Italy.
- **Digitalisation of the healthcare system:** The Health Pact 2019-2021 contains new measures aimed at implementing an Electronic Health File in all Italian regions. In addition, the government wishes to put in place a system of interconnectedness and interoperability of the National Health Service that will allow to track the patients' health records. Lastly, the Pact has envisaged the implementation of an electronic reservation system to access healthcare facilities.
- **Implementation of eID:** The Italian government has completed the design of the IT platform aimed at introducing the electronic identity card for all. The government is currently working on the last stage before its implementation and subsequent usage.
- **Digitalisation of businesses, especially small- and medium-sized enterprises:** The country also introduced financial benefits for small- and medium-sized enterprises, in line with the 'Piano Impresa 4.0'. These financial investments will enhance the digital transformation of businesses and support the capitalisation of small- and medium-sized enterprises.
- **Continuation of the National Digital School Plan:** The Plan deals with the development of students' digital skills as well as the training of teachers. In 2019, the government decided to put in place a National Digital School award and to continue the promotion of educational and digital innovation in schools throughout the whole territory, particularly focusing on rural areas. In fact, in January 2019, the government identified 60 schools located in Italy's sub-urban areas where it invested €2 million to foster digital education and learning.

## Thematic Objective 11

- **More efficient use of eProcurement tools:** Italy continues to invest in the digital transformation of its public entities, to endow its citizens with increasingly more digital tools to access essential services such as social security and civil registries. In addition, the country continues to reform its public administration through a programme called *Programma per la razionalizzazione degli acquisti nella PA*, which aims at making more efficient and effective the use of eProcurement tools for both the public administration and businesses.

- **Further digitalisation of judicial procedures:** In order to improve the efficiency and quality of the judicial system's performance, besides the reforms that have already been carried out at national level, the government also developed a dispute resolution platform to simplify and speed-up disputes. In addition, it set up a digital interoperable platform to deal with the fluxes of documents that circulate everyday between judicial offices and local authorities.
- **Adoption of electronic payments:** In order to fight against tax evasion, the country reinforced its use of ePayments, by lowering the legal limits for cash payments. Since January 2019, it is also mandatory to dispose of electronic invoices. Together, these measures will help to tackle the problems of fiscal fraud, which remains a significant issue in the country.

### 3.15.5 Operational Programmes

For the funding period 2014-2020, four national OPs of Italy are specifically dealing with the themes related to TO2 and TO11. The OP 'Education'<sup>117</sup> on improving the efficiency of public administrations and public services through increased access to and interoperability of public data on education, as well as the definition and development of quality standards and quality management systems. In the OP 'Governance and Institutional Capacity'<sup>118</sup> the modernisation of Italy's public administration as to increase transparency, interoperability and access to public data is seen as a key priority. The reduction of administrative burdens and the improvement of the judicial system are also at the centre of the funding priorities, along with the enhancement of online public services and digital inclusion. The OP 'Social Inclusion'<sup>119</sup> addresses the needs to improve skills and employability of marginalised people and to find new systems and models for social intervention. This includes the provision of training to public servants to boost their ability to deliver services. Finally, the OP 'Employment'<sup>120</sup> supports operations for reinforcing the administrative capacity of the labour market systems.

#### Thematic Objective 2

- **Enhancement of interoperability and access to public data:** in order to achieve a successful modernisation and digitalisation of the Italian public administration, the OP 'Education' recognises the need to enhance the interoperability of and access to public data. This concerns also school administrations, which are more and more implementing new administrative procedures embracing the 'open government' approach, and providing digital services, like online enrolment.
- **Promotion of digital skills:** The OP 'Employment' stresses the importance of increasingly promote and disseminate the necessary digital skills both in the schools and for the adult population, especially to guarantee the digital inclusion of groups of potentially disadvantaged people.

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<sup>117</sup> Italy Operational Programme 'Education' 2014-2020. Accessed on 9 December 2019.

<sup>118</sup> Italy Operational Programme 'Governance and Institutional Capacity' 2014-2020. Accessed on 9 December 2019.

<sup>119</sup> Italy Operational Programme 'Social Inclusion' 2014-2020. Accessed on 9 December 2019.

<sup>120</sup> Italy Operational Programme 'Employment' 2014-2020. Accessed on 9 December 2019.

## Thematic Objective 11

- **Adoption of innovative teaching methods with the help of ICT tools:** According to the OP 'Education', digitally equipped schools will be promoted as a way to foster the emergence of innovative teaching methods in order to tailor them to the evolving needs of the students. This entails also the possibility of accessing the didactic material through online means.
- **Improvement of the justice system:** The OP 'Governance and Institutional Capacity' aims to improve the efficiency and performance of judicial offices through technological innovation and support the computerisation and digitalisation of the judicial offices. This aims to reduce the length of both civil and criminal proceedings and make the judicial process more efficient.
- **Digitalisation and modernisation of the public administration:** The OP 'Governance and Institutional Capacity' contains actions aimed at supporting the digitalisation on the public administrations in order to strengthen transparency, accountability and citizens' participation through the development of open data and open government. This in turn aims to achieve the integration and simplification of the processes that affect citizens and businesses, with a focus on the simplicity and usability of services and online communication, as well as on the digital-by-default principle and a reduction of administrative burdens.
- **Improvement of online services for citizens and businesses:** One of the priorities of the OP 'Governance and Institutional Capacity' is to increase the use of online services. In order to do that, the aim is to provide better and interoperable digital public services to both citizens and businesses.
- **Enhancement of civil servants' digital literacy:** The OP 'Governance and Institutional Capacity' mentions actions aimed to strengthen the digital skills of the civil servants involved in the management and provision of services like ePayments, eInvoicing and eID.
- **Increased transparency, interoperability and access to public data:** The OP 'Social Inclusion' highlights the need to improve the integration of information, statistical and administrative databases by developing shared systems in the social policy field aimed at simplifying citizens' access to public data, as well as allowing the use of existing information by the public administrations themselves, thus reducing administrative burden.

## 3.16 Latvia

### 3.16.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Latvia's CSR of 2019.<sup>121</sup>

Latvia is currently in the preventive arm of the Stability and Growth pact. The government plans an improvement of the headline balance from a deficit of 1.0% of GDP in 2018 to a deficit of 0.5% of GDP in 2019 and 0.4% of GDP in 2020. The medium-term budgetary objective is planned to be reached in 2019 and the general government debt-to-GDP ratio is expected to decrease to 33.1% of GDP by 2022.

The income inequality in Latvia stills amongst the highest in the EU due to the low redistribution produced by the tax-benefit system. It limits the correct delivery of public services such as healthcare and social inclusion. At the same time, tax burden on labour remains high for low-wage earners in comparison to EU levels, and the share of the shadow economy is higher as well. On another hand, and as a result of tightened regulations, money laundering risk in Latvia has significantly decreased since May 2018.

The country faces challenges on delivering social protection and inclusion principles, as poverty risk among the elders and the people with disabilities is high, and benefits do not keep pace with wage growth. Further investments are then required to address social exclusion.

Because of adverse demographic developments and emigration, the labour market is tightening. In addition, employment varies between regions and skills levels. The labour force is limited due to the low level of digital skills that languishes businesses and their potential for innovation. Concerning the education system, it performs well in terms of learning achievement but access to quality education remains dependent on the place of residence and type of school. Vocational school environment has improved due to recent reforms, but further investments are required in order to align education with the future needs of the labour market.

Despite undergoing reforms and increased funding, the Latvian health system needs to tackle inefficiencies such as workforce shortages, especially of nurses, and ensure timely and equal access to healthcare for everyone. Early phase reforms to address these issues should be accelerated.

Moreover, Latvia's investment gap in innovation is important as research funding relies almost entirely on European Union Funds. Therefore, the country is a moderate innovator with strengths in information, communication and technology infrastructure but weaknesses in human resources, public-private cooperation and investments in intellectual property.

Regional disparities arise regarding the competitiveness and quality of public services. Investments needs to address significant differences in mobility and digital infrastructure. Following the uncovering of several high-profile corruption cases, some countermeasures have been adopted. Nevertheless, the procurement process still lacks transparency. Finally, the CSR for Latvia stresses that public



<sup>121</sup> COM (2019) 514 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Latvia and delivering a Council opinion on the 2019 Stability Programme of Latvia, Brussels, 5.6.2019. Accessed on 20 September 2019.



services have not been adjusted to the declining and ageing population. Hence, infrastructure and public services are underused in the rural areas. For this, a territorial reform is planned to be implemented in 2021.

### *3.16.2 Country Digital Government Outlook*

The following are some of the digital government highlights having occurred in Latvia since 2018. The information originates from the Digital Government Factsheet of Latvia.<sup>122</sup>

#### **Political Communications**

In 2018, the Office of Citizenship and Migration Affairs launched the Modernisation of the Natural Persons Data Service project for the European Regional Development Fund. Its objective is to develop the information system for the Register of Natural Persons, which will be based on the existing Population Register, and extending the population register to foreign nationals who enter into legal relations with the state. During the same period, the National Blockchain Working group has been developed by the Ministry of Economics. A policy planning document was written to inform the Cabinet of Ministers about the perspectives and advantages that the blockchain technology can bring to the public and private sector.

#### **Legislation**

The eID Decision on 'Possible financing solutions for the provision of certification services in personal certificates (eID) and how a single and priority means for ensuring the electronic identity of a person' was approved by Cabinet of Ministers on 28 August 2018 and submitted to Parliament for enactment on 1 January 2021. It endorsed the recommendation to make a personal certificate (eID) a mandatory personal identification document for all Latvians during the transitional period. In the field of data protection, through Article 29 of the Personal Data Protection Act, the Data State Inspectorate oversees determining violations and imposing penalties against those in violation of the Act. Finally, Latvia has six laws and acts related to base registries, the population, civil, enterprise, land, and vehicle registries Laws.

#### **Governance**

The legal successor to Kaspars Gerhards, the Minister of Environmental Protection and Regional Development, is now Juris Pūce.

#### **Infrastructure**

Concerning digital infrastructure, the Latvian government implemented two main measures. The most recent one being the Latvia's eIDAS-Node: this software is a sample implementation of the eIF eIDAS Profile. The software contains the necessary modules to help Member States to communicate with other eIDAS-compliant counterparts in a centralised or distributed fashion. In 2017, the eIDAS solution was implemented for use by Latvia's and EU eServices, in accordance with eIDAS regulations. The CEF eID Digital Service Infrastructure (DSI) allows citizens of one European country to use their national eIDs to securely access services provided in other European countries.

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<sup>122</sup> Digital Government Factsheet 2019, Latvia. Accessed on 1 October 2019.

## Services

In 2018, Latvia implemented a mobile application, Ceļo droši (Travel Safe) which provides citizens with information to prepare for cross-border trips, warns of possible risks abroad and gives directions in the event of an emergency. In addition, the country implemented a register for the safety of travellers. The Ministry of Foreign Affairs provided an option for travellers to register their travel data so that the foreign service could offer assistance in case of emergency.

### 3.16.3 Country Specific Recommendations

The CSR for Latvia<sup>123</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>124</sup>

#### Thematic Objective 2

##### *Recommendations*

In recommendation 3, the CSR for Latvia encourages to focus investment-related economic policy on innovation and, amongst others, digital infrastructure. This shall be done taking into account regional disparities.

##### *Recitals*

The CSR for Latvia makes no specific mention in the recitals of the need to intervene regarding TO2.

##### *Opportunities*

In recommendation 2, Latvia is urged to consider upskilling of low-skilled workers and jobseekers. The education in eSkills to improve digital literacy of unemployed citizens or those working low-skilled jobs could therefore be an opportunity to prepare the future labour market.

Both, in recommendation 2 and recital 12, the CSR stresses the need of increasing accessibility, quality and cost-effectiveness in the healthcare system. By introducing eHealth services, the three issues could be addressed.

#### Thematic Objective 11

There are no recommendations, recitals or opportunities linked to TO11 in the CSR for Latvia

### 3.16.4 National Reform Programme

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Latvia's NRP.<sup>125</sup>

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<sup>123</sup> COM (2019) 514 final, Council Recommendation on the 2019 National Reform Programme of Latvia and delivering a Council opinion on the 2019 Stability Programme of Latvia, Brussels, 5.6.2019. Accessed on 20 September 2019.

<sup>124</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Latvia to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Latvia. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

<sup>125</sup> Latvia National Reform Programme. Accessed on 20 September 2019.

## Thematic Objective 2

- **Development of the eHealth system:** The Latvian government has made an eHealth system available to residents, medical institutions and pharmacies since 12 September 2016. By January 2018 its use became mandatory. The eHealth portal [www.eveselib.gov.lv](http://www.eveselib.gov.lv) provides residents access to their electronic healthcare and enables medical practitioners to write medical documents such as ePrescriptions, eSick leaves and execute eReferrals. A further development of eHealth system is planned using funding from EU funds programming period 2014-2020. On another side, there are intentions to introduce an IT solution to ensure the availability of clinical guidelines, as well as drafted clinical algorithms and paths of clinical patients to medical practitioners.
- **Development of eGovernment and eServices on a one-stop-shop principle:** Latvia has ensured the availability of basic services necessary to residents and entrepreneurs electronically in the single electronic contact point [www.latvija.lv](http://www.latvija.lv). In 2019 it is planned to organise a design thinking workshop on the development of content of the business section of the Portal.
- **Digitalisation of cultural heritage content:** In 2017 the National Library of Latvia in cooperation with the culture Information Systems Centre and other institutions started the implementation of the ERDF project Digitalisation of Cultural Heritage Content (Round 1). It is planned to develop single open information system platform stage one and its components, to create cultural heritage digitalisation competence centres. In 2019 extensive digitalisation of cultural heritage collection was carried out.
- **Promotion of a wider use of an eID card:** The Cabinet of Ministers supported the proposal to determine eID as a mandatory and primary means of personal identification starting from 2023 envisaging a transition period from 2019 until 2022.
- **Development of eSkills:** In order to foster the development of information society, the opportunity will be given to the Latvian population to learn eSkills relevant to their education and professional activity. The eSkills development policy includes, among others, the following activities: improvement of eSkills of the population, entrepreneurs and employees of public administration; training of the employed organised in a form of partnership; and eSkills training for the unemployed and job seekers. Additionally, a programme envisaged to end in 2020 will be launched to inform society about various state and municipal eSolutions.
- **Support measures to reduce unemployment:** Several measures were introduced in 2018 to help young people and unemployed to develop practical digital skills and to foster the possibility for them to find a job. 31 online trainings were organised for young people and a survey tool available online was improved in order to better monitor the quality of trainings for unemployed.
- **Introduction of modern teaching methods:** The Cabinet of Ministers approved several reforms on education in order to promote technologies and engineering sciences among the pupils. A new curriculum was developed for examinations in Physics, Chemistry, Natural Sciences as well as for 12 diagnostic tests in STEM subjects. Moreover, digital teaching is being encouraged and particular attention is paid to the supply of STEM interest-related

education programmes, such as the organisation of the Baltic and Nordic Regional Informatics Olympiad in 2020.

- **Modernisation of the material-technical base of higher education institutions:** A territorially focused infrastructure of the studies and scientific works is being enhanced by the provision of advanced devices, equipment and new technologies. Fields of studies such as natural sciences, mathematics, information technologies, engineering, manufacturing and construction are the ones targeted by the measure.

#### **Thematic Objective 11**

- **Reduction of administrative burden in municipalities through digital processes:** A measure was taken in 2018 to effectively reduce administrative burden at local level by putting in place a new digital infrastructure. It aims at improving the cooperation between different levels of public regulatory authorities by digitalising information exchange processes.
- **Improvement of the system for prevention of money laundering and terrorist financing:** A plan was approved in 2018 providing an extensive range of infrastructure measures to be taken in order to improve the system for prevention of money laundering and terrorist financing. Several measures were taken among which, the need of introducing information technology solutions for timely and efficient data management.
- **Shadow economy combating measures:** From October 2017 an electronic working hours registration in construction was introduced aiming to arrange the construction sector, improving payment of taxes for employees, preventing illegal employment and incorrect registration of working hours, as well as improving traceability of economic activity.

### **3.16.5 Operational Programmes**

For the funding period 2014-2020, one OP of Latvia is specifically dealing with themes related to TO2 and TO11. The OP 'Growth and Employment'<sup>126</sup> focuses on promoting the information society; ensure competitiveness and innovation of SMEs; promoting employment and work force mobility; investments in education; skills and lifelong learning; enhance social inclusion and fight against poverty and efficient administration of the EU funding.

#### **Thematic Objective 2**

- **Digitalisation of rural areas:** To reduce the digital divide between low and high economic interest areas, Latvia plans to contribute to the continuation of the 2007-2013 project 'broadband communication infrastructure in rural areas. The aim is to ensure increase the mobility of the rural population and the business community by using the high-quality broadband service benefits, e.g. access to e-services, high-volume data transfer or e-commerce.
- **Promotion of ICT in businesses:** Latvia acknowledges the benefits of ICT and its application in the commercial and socio-economic environment, in particular regarding information

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<sup>126</sup> Latvia Growth and Employment Operational Programme. Accessed on 9 December 2019.

exchange. To support the continuous use of ICT in economic activity, there is a need for broadband network development and the development of digital infrastructure.

- **Creation of eHealth infrastructure:** Latvia plans to continue the efforts on the eHealth integration platform that was set up in the 2007-2013 planning period. Furthermore, systems that will transform the health sector, like eReferral, electronic health records, ePrescription and a single eHealth portal will be put in place. To ensure a successful implementation in the EU framework, eHealth solutions for interoperability and standardisation will be considered.
- **Fostering of eLearning:** Investments are to be continued to develop eLearning solutions. Latvia aims to expand the educational information system's current capacity by integrating it in other information systems. Furthermore, ICT investments to ensure digital teaching materials and a digitalisation of the education will be made.
- **Development of eCulture:** To ensure that the Latvian cultural heritage is as widespread as possible and can be freely available online, the process of digitalisation of cultural resources is ongoing. ICT opportunities to access culture promote not only cultural presence online but also promote new products and services. Latvia intends to continue to finetune the earlier investments made to protect cultural heritage, including the creation of the digital library of eServices. The next step entails the set-up of publicly accessible digital collections and making cultural content resources available to the general public. Furthermore, the cultural guidelines 'Creative Latvia' will be digitalised.
- **Creation of an ICT platform for spreading the use of digital tools among the population:** Latvia indicated to foster its ICT infrastructure by establishing a centralised administration and ICT platform with interfaces transformation, modernisation and semantic technology.
- **Provision of eServices:** To enhance the operational process of public administration as well as the service delivery, Latvia intends to invest in transformation and optimisation through ICT. By establishing electronic services, the most cost-effective solutions such as the one-stop shop principle and user support security can be established. Furthermore, these innovations will raise the possibility of ICT use for citizens.
- **Enhancement of digital administration:** Latvia aims to foster the use of eServices by its citizens. Therefore, it will not only ensure the citizens possess the adequate skills to benefit from digital services but also enhance the digitalisation process of the health, education, justice and cultural services, continuing the transformation towards fully digitalised administrations.

#### **Thematic Objective 11**

- **Establishment of an open data system to improve data exchange among the public administration:** Latvia will deploy the SAM framework to enhance and improve data exchange, data publication and availability of data. A centralised information interoperability platform will be established that ensures full public electronic data exchange between systems and increase opportunities for local information systems to transfer data to the state information systems in a secure way and open for citizens.

- **Stimulation of eInvoicing:** The government will stimulate the development of information and data services that can be used in the creation of services for private sector e-business and eCommerce solution. Furthermore, it considers eInvoicing as one of the e-business development-enhancing aspects of ICT investment.
- **Development of eGovernment and interoperability:** To ensure Latvian integration into the European single market and to ensure cross-border cooperation, it is planned to provide the national e-solution for interoperability with the EU solutions, including the creation of machine translation technology base.
- **Digitalisation of the justice system:** To ensure a timelier processing of the case load and related problems, Latvia will develop a wide range of modern ICT based solutions to use in judicial proceedings. These eSolutions include an investigations and judicial proceedings eFile solution and also introduce the process of eProceedings. Furthermore, a centralised electronic archive data system will be introduced to monitor the judicial process quality.
- **Investment in innovation capacity building:** Latvia intends to respond to the current challenges in the field of research and development. Therefore, it will invest in innovation capacity building with particular attention to knowledge-based development and scientific and technological development of human capital, including in the field of ICT.

## 3.17 Lithuania

### 3.17.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Lithuania's CSR of 2019.<sup>127</sup>

Lithuania is currently in the preventive arm of the Stability and Growth Pact. The Government intends to reach a headline surplus of 0.4% of GDP in 2019 and 0.2% in 2020, and then steadily decrease to reach 0.1% by 2021. The general government debt-to-GDP ratio is expected to fall from 34.2% of GDP in 2018 to 32.9% in 2022. The Commission's 2019 spring forecast states that Lithuania's structural balance is forecasted to register a deficit of 1% of GDP in 2019 and 0.9% in 2020, in compliance with its medium-term budgetary objective.

Despite significant efforts and measures to fight the shadow economy and tax evasion, Lithuania's tax compliance remains low. In fact, the country continues to have one of the largest value added tax (VAT) gaps in the EU. The tax base should be broadened so as to close this gap and improve tax collection.

In 2018, a new pension indexation formula was introduced to ensure the fiscal sustainability of the Lithuanian pension system, which is expected to diminish public pension expenditure in the long-term. Nonetheless, the current system is driven by a decline in employment, which may negatively impact pension adequacy as pension benefits would not be able to keep up with wage growth. The pension benefit ratio is expected to continue its steady decline, although it is already one of the lowest in the Union.

One of the main challenges faced by Lithuania is the high proportion of people at risk of poverty and/or social exclusion. This poses a threat to any prospect of inclusive economic growth for the country. Although some reforms have been put in place, such as an increase in the universal child benefit, more efforts are still needed for the country to converge towards the Union's average levels of social security.

As a consequence of robust economic growth and adverse demographic developments, including emigration, Lithuania's labour market significantly tightened. As a result, the country continues to face skills shortages and mismatches. Thus, significant steps are still needed to consolidate the higher education network and provide everybody with the relevant skills. Reforms in vocational education and trainings are also needed so as to modernise the curricula. The Lithuanian economy could also benefit from further investments in upgrading, especially digital skills and innovation.

Lithuania's healthcare system also lacks investments and requires deep reforms. These measures are needed to improve the quality of primary care services and ensure a better and more systemic cooperation between public health offices and primary care. In addition, measures to tackle and fight corruption in the healthcare system are particularly needed.

Economic  
Outlook

Tax system

Pension  
system

Social  
inclusion

Labour Market

Healthcare

<sup>127</sup> COM (2019) 515 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Lithuania and delivering a Council opinion on the 2019 Stability Programme of Lithuania, Brussels, 5.6.2019. Accessed on 25 September 2019.

### *3.17.2 Country Digital Government Outlook*

The following are some of the digital government highlights having occurred in Lithuania since 2017. The information originates from the Digital Government factsheet of Lithuania.<sup>128</sup>

#### **Political Communications**

In the first quarter of 2019, Lithuania adopted a National Strategy on Artificial Intelligence. The strategy details the importance of development and harnessing of AI by state institutions and the private sector. It also lays down six priority areas and detailed policy recommendations for each.

#### **Legislation**

The Lithuanian government adopted several pieces of legislation relating to eID and Trust services in 2018. One of them is the Law on Electronic Identification and Trust Services for Electronic Transactions, which ensures the compliance of Lithuania's legal framework with the eIDAS Regulation. Its main purpose is to create a legal basis for the effective operation of electronic identification, to ensure the best possible protection of the users' interests.

#### **Governance**

The Lithuanian Ministry of the Economy and Innovation is now the main governmental body responsible for the policy setting and coordination in the digital government domain.

#### **Infrastructure**

In 2018, the Information Society Development Committee started to implement a new project to create appropriate organisational (management), methodological, legal environment and tools for smooth, operational-oriented and secure state information resource infrastructure consolidation and provide cloud services. In addition, the same Committee started a project to develop and deploy information and communication technology infrastructure for state cloud services and form human resources which need to provide state cloud services.

#### **Services**

Two main services for citizens entered into force in 2018. The first one relates to the expanded functionalities of the Information System of Legal Entities Participants. In fact, it is now possible for users to provide data about members and shareholders of cooperative companies and agricultural companies online. The second service is a Passenger's portal, where travellers can fill in and present to Lithuanian Customs various types of declaration including travellers' declaration, cash declaration, etc. The portal also contains various information for travellers.

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<sup>128</sup> Digital Government factsheet 2019, Lithuania. Accessed on 29 September 2019.



### 3.17.3 Country Specific Recommendations

The CSR for Lithuania<sup>129</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>130</sup>

#### **Thematic Objective 2**

##### *Recommendations*

The CSR for Lithuania makes no recommendation of the need to intervene in the field of TO2.

##### *Recitals*

The CSR identifies in recital 14 the need for Lithuania to invest in digital skills in order to support competitiveness and innovation, which are significantly lacking in Lithuanian firms. In fact, there is a shortage of information and communication technology specialists, who are strongly needed, so as to foster a shift towards a more knowledge-based economy. In addition, recommendation 2 and recital 11 point out that Lithuania's labour market is suffering from significant skills shortages and mismatches. Hence, eSkills could also be included in educational and training systems so as to help jobseekers and workers meet the future needs of the labour market.

##### *Opportunities*

Recommendation 2 and recital 12 explain how Lithuania's healthcare system faces continuous challenges and is overall ineffective. In addition, despite new measures and reforms, corruption and irregularities in the sector persist. Hence, eHealth measures could serve as tools to curb these issues in the sector.

#### **Thematic Objective 11**

##### *Recommendations*

The CSR for Lithuania makes no recommendation of the need to intervene in the field of TO11.

##### *Recitals*

The CSR for Lithuania makes no specific mention in the recitals of the need to intervene regarding TO11.

##### *Opportunities*

The CSR for Lithuania points out in recommendation 1 and recital 8 that the country should take new and stronger measures to fight against tax evasion. This could be the opportunity for Lithuania to set up eTax solutions so as to ensure all financial administrative processes undergo and are controlled by the same IT system. This tool would harmonise the procedures and reduce tax evasion.

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<sup>129</sup> COM(2019) 515 final, Council Recommendation on the 2019 National Reform Programme of Lithuania and delivering a Council opinion on the 2019 Stability Programme of Lithuania, Brussels, 5.6.2019. Accessed on 25 September 2019.

<sup>130</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Lithuania to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Lithuania. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

### 3.17.4 National Reform Programme

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Lithuania's NRP.<sup>131</sup>

#### Thematic Objective 2

- **Deployment of new technologies:** Lithuania aims to test blockchain technology in the country by issuing digital coins. It also wishes to build and enhance basic artificial intelligence competences, to then make them accessible to all business bodies and public administrations. In 2018, an electronic licence application was introduced in the market and in 2019, the government plans to investigate and test the potentials of robotics and to automate some measures using a robot.
- **Creation of an open data portal:** The country wishes to increase the scale and opportunities of using new technologies. To do so, it needs to further open up public sector data by creating an open data portal, which is currently being developed. It will publish all public sector data and guidelines for public sector institutions, which will simplify the process of data opening.
- **Digital transformation of the business sector:** High-tech companies are increasing the country's industrial competitiveness, productivity and integration, into the high-added value chains of Europe. To continue the country's industrial digitalisation, the Ministry of Economy and Innovation adopted an Action programme promoting two main activities. The first one relates to the conduct of technological audits of industrial SMEs so as to evaluate the possibilities and prospects of further digitalisation processes. The second activity refers to the installation of a manufacturing process equipment for SMEs, which includes integrated digitalisation technologies such as robotics, artificial intelligence, automation, smart sensors, clouds, etc.
- **Improvement of electronic health services:** New measures have been put in place to improve the Lithuanian Electronic Health System. These intend to limit the administrative burden on healthcare professionals and enhance the transparency of the whole healthcare system. The ePrescription functionality is also being successfully used.
- **Creation of new electronic services for citizens:** As the number of people with access to the internet increased, there is also a growing number of Lithuanians who uses public and administrative electronic services. The goal for 2019 is to create new services or update older ones in order to better respond to citizens' needs and provide them with secure, advanced, user-friendly and responsive services.
- **Enhancement of eSkills:** In the framework of the Digital Europe Programme, Lithuania has expressed the need to further develop the digital skills of its population, particularly in the fields of high-performance computing and cybersecurity.

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<sup>131</sup> Lithuania National Reform Programme 2019. Accessed on 14 October 2019.

## Thematic Objective 11

- **Electronic measures to simplify tax procedures:** The State Tax Inspectorate (STI) introduced an electronic system for dealing with administrative services (iAPS). It intends to promote voluntary tax payments and to simplify tax procedures by collecting, processing and saving income and expenditure data of those engaged in individual activities and by making more rigorous preparatory declarations of their personal income taxes.

### 3.17.5 Operational Programmes

For the funding period 2014-2020, one OP of Lithuania is specifically dealing with themes related to TO2 and TO11. The OP 'Growth and Employment'<sup>132</sup> focusses on promoting the information society; ensure competitiveness and innovation of SMEs; promoting employment and work force mobility; investments in education; skills and lifelong learning; enhance social inclusion and fight against poverty and efficient administration of the EU funding.

## Thematic Objective 2

- **Enhancement of broadband internet access:** to meet the objectives set out in the Digital Agenda, Lithuania will speed up the process of providing a minimum of 30Mbps internet access across all households. This will benefit not only households but also business enterprises and public sector institutions.
- **Creation of a safer digital environment:** As the amount of security incidents monitored by the Lithuanian National Computer Emergency Response Team continues to grow, the Government set out the objective to put strengthen the protection of ICT infrastructure and resources. Furthermore, Lithuania aims to ensure that ICT infrastructure meets the highest safety requirements using the following strategy: identify objects of the information structure of particular importance, develop and implement methodology to monitor these objects, provide support for the protection of ICT infrastructure with the necessary technological tools.
- **Promotion of the reuse of public data:** Lithuania intends to encourage the reusing of public sector data as it believes this creates considerable opportunities for setting up new businesses and jobs. This objective is aimed at developing tools to ensure a transparent, efficient and convenient way to make public sector information available for reuse and encourage businesses and other stakeholders to actively use this information for the development and delivery of new digital services and products. In this way the objective will contribute to the development of new business opportunities, including electronic commerce.
- **Enhancement of the use of Internet:** Lithuania would like to increase the share of the population that uses Internet and eServices. Therefore, it will provide free-of-charge public access to Internet for individuals in public libraries to enhance digital competences. This way, citizens can discover the potential of Internet without making the investment in putting in place infrastructure themselves first.

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<sup>132</sup> Lithuania Operational Programme for EU Structural Funds Investments for 2014-2020. Accessed on 9 December 2019.

- **Delivery of eServices:** To ensure advanced eServices for individuals and businesses, Lithuania will deploy ICT solutions in administrative procedures and digitalise public administration. The aim is to develop customer-oriented administrative eServices. The investments will come from the Administrative Public eService Design, Typing and Evaluation Model and will include electronic public procurement; expansion of the electronic health system and electronic health services; dissemination of the Lithuanian cultural digital content; expansion of electronic democracy (development of measures for openness, transparency and involvement of citizens) and advanced ICT solutions for intelligent transport systems and universal post service.
- **Establishment of a digital business environment:** The Government of Lithuania will support SME projects that focus on the implementation of eSolutions for businesses. These include efforts that aim to optimise business processes such as customer service, logistics, eMarketing and resource management using information technologies.

#### **Thematic Objective 11**

- **Development of eProcurement system:** To improve the existing public procurement system, Lithuania provides funding to tackle the transparency and efficiency of public procurement. This implies setting out activities related to the development of electronic and centralised procurements.

## 3.18 Luxembourg

### 3.18.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Luxembourg's CSR of 2019.<sup>133</sup>

Luxembourg is currently in the preventive arm of the Stability and Growth Pact. The government expects a decrease in the headline surplus from 2.4% in 2018 to 1.0% of GDP in 2019, followed by an almost steady increase thereafter, reaching a 2.2% surplus in 2023. The medium-term budgetary objective continues to be overachieved and the government debt-to-GDP ratio is expected to remain well below the 60% of GDP Treaty reference value. The structural balance is forecast to register a surplus of 0.9% of GDP in 2019 and 0.5% of GDP in 2020.

The public expense, despite recent reforms and a proven viability of the social security system until 2041, is expected to increase markedly in the long term due to the ageing of the population. Additional holistic reforms have been suggested as, for now, more than three quarters of long-term care expenditure comes from public sources. In order to diminish recent labour shortages and to sustain social cohesion and public finances, demographic policies need to concur with educational and training policies to tackle the challenges of the future digital economy.

The labour market is performing well but the employment rate is stagnating, in particular for older people. Further measures need to be envisaged to improve their participation to the workforce of the country. A draft law submitted to Parliament in 2014 which aims to encourage firms to hire and retain old workers is still pending. Luxembourg continues its efforts to diversify the economy into areas such as the information and communication technologies industry and the space sector. However, this significant public investment has not spilled over yet. The CSR for the country encourages to invest in digital skills, employability and education to align with the labour market needs.

Concerning the housing market, investment and supply appear insufficient which may affect negatively to Luxembourg's attractiveness. Two main issues arise: on the supply side, insufficient land availability and lack of incentives for private owners to sell land or buildings is the main bottleneck. On the demand side, high population and employment growth increases the prices. As a result, traffic congestion and pollution have exacerbated, and concerns rise about the sustainability of household debt.

Lastly, the CSR for Luxembourg points out to the fact that tax rules are used by companies engaged in aggressive tax planning. Moreover, the majority of the foreign direct investment is held by special purpose entities. Luxembourg takes positive steps to tackle the taxpayers aggressive planning strategies, an essential measure to prevent distortions of competition between firms.



<sup>133</sup> COM (2019) 416 final, Council Recommendation on the 2019 National Reform Programme of Luxembourg and delivering a Council opinion on the 2019 Stability Programme of Luxembourg, Brussels, 5.6.2019. Accessed on 26 September 2019.

### 3.18.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in Luxembourg since 2018. The information originates from the Digital Government Factsheet of Luxembourg.<sup>134</sup>

#### **Political Communications**

In Luxembourg, the third national strategy on Cybersecurity was approved and implemented for the period 2018-2020. The Government Council approved on 1 March 2019, the Luxembourg NIF (National Interoperability Framework) defining the principles, the objectives, the governance and the recommendations in the field of interoperability. In an effort to fortify the digital competitiveness of Luxembourg & Europe, the government signed a European high-performance computing (HPC) declaration. Known as EuroHPC, the move promised collaboration in setting up an EU-wide HPC network initiated by Luxembourg. Furthermore, a 5G taskforce was established and a national 5G strategy was defined and launched on 12 September 2018.

#### **Legislation**

First of all, the Luxembourg Parliament adopted a new law on public procurement in 2018. Then, the law on electronic invoicing in public procurement and concession contracts passed on 26 March 2019. The Law of 14 September 2018 relating to a transparent and open administration defined the framework for the implementation of a policy of opening up to citizen's administrative documents held by government departments, municipalities, local authorities and public institutions placed under the supervision of the State or under the supervision of the municipalities. And a new Law amending the amended Law of 1 August 2001 on the circulation of securities was published on 1 March 2019. The purpose of this new law was to create a legal framework enabling the circulation of securities created by new secure electronic registration technologies, in particular those based on the 'Blockchain', with the aim of increasing legal certainty in this area.

#### **Governance**

A Ministry of Digitalisation was put in place to promote ICT and contribute to the development of digital infrastructure and Prime Minister Xavier Bettel became Minister for Digitalisation. Moreover, Marc Hansen also became Minister Delegate for Digitalisation.

#### **Infrastructure**

The new Cybersecurity Competence Centre (C3) promoted the national cybersecurity ecosystem by focusing on three areas of expertise: observation, training and testing. On 30 January 2019, Luxembourg became the first European country to launch an AI partnership with NVIDIA, a global pioneer in AI technology & GPU computing. As part of this national agreement, a joint AI laboratory will be set up in Luxembourg. Additionally, The Grand Duchy of Luxembourg and the Principality of Monaco agreed in 2018 to launch a study to safeguard sensitive data in a Luxembourg Data Centre with immunity guarantees and privileges resembling those of the Estonian Data Embassy in Luxembourg. Among other websites, the public service portals [guichet.lu](http://guichet.lu), [douanes.public.lu](http://douanes.public.lu) and [fonctionpublique.public.lu](http://fonctionpublique.public.lu) were relaunched in 2018.

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<sup>134</sup> Digital Government Factsheet 2019, Luxembourg. Accessed on 3 October 2019.

## Services

New digital government services for citizens in Luxembourg in 2018 are the following: Informing the Ministry of Foreign and European Affairs of a decision to stay abroad; applying for a certificate of authenticity concerning a driving licence; online payment of a standard fine; contesting a fine or penalty notice when caught by a speed camera; registering on the electoral rolls; application to vote by post; consultation and/or modification of the bank details indicated to the Children's Future Fund (CAE); and receive certain official documents in electronic format. Moreover, new digital government services for businesses in Luxembourg were launched in 2018 and are the following: New version of applying for a business permit; online services for maritime companies; mandatory reporting of infectious diseases; certifying Luxembourgish documents for use abroad; cooperation of professionals in the fight against money laundering; declaration of withholding tax on directors' fees; declaration of apprenticeship vacancy; and staff delegate elections..

### 3.18.3 Country Specific Recommendations

The CSR for Luxembourg<sup>135</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>136</sup>

#### Thematic Objective 2

##### *Recommendations*

The CSR for Luxembourg makes no recommendation of the need to intervene in the field of TO2.

##### *Recitals*

The CSR for Luxembourg makes no specific mention in the recitals of the need to intervene regarding TO2.

##### *Opportunities*

In recommendation 1, the CSR for Luxembourg tackles the issue of the low employment rate of older people. In order to keep them engaged in the labour market, recital 8 points out that comprehensive measures need to be taken to improve their employability and to increase labour market options. Therefore, the training of older people aiming to develop eSkills could be a solution to raise their labour market opportunities.

#### Thematic Objective 11

There are no recommendations, recitals or opportunities linked to TO11 in the CSR for Luxembourg.

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<sup>135</sup> COM (2019) 516 final, Council Recommendation on the 2019 National Reform Programme of Luxembourg and delivering a Council opinion on the 2019 Stability Programme of Luxembourg, Brussels, 5.6.2019. Accessed on 26 September 2019.

<sup>136</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Luxembourg to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Luxembourg. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

### 3.18.4 National Reform Programme

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Luxembourg's NRP.<sup>137</sup>

#### Thematic Objective 2

- **Measures to improve lifelong learning and digital skills:** The Luxembourgish government will implement the measures of the white paper on the national strategy for lifelong learning. Hence, in order to improve the quality in the area of adult training and to secure jobs for older people, the Luxembourg Digital Skills Bridge pilot projects will be launched.
- **Digitalisation of administrative procedures through a portal:** The one-stop shop Guichet.lu was completely redesigned and modernised in 2018. The use of the portal in general, and in particular the transactional process offered online, have grown rapidly and exponentially in recent years. For instance, the use of eGovernment procedures has increased by more than 500% in four years.
- **Measures to boost digitalisation in the business sector:** Luxembourg has made significant investments in the integration of digital technologies in companies and is now one of the most advanced European countries in terms of digitalisation. Various specific actions are envisaged in the 2019 innovation strategy such as: strengthening digital infrastructure by setting up an HPC skills centre; supporting industry in integrating digital technologies through experimentation and innovation; and the setting up a Digital Innovation Hub for industrial companies of all sizes. Moreover, a legal and financial environment conducive to the development of a data-driven economy will be created.
- **Creation of the e-commerce platform LetzShop.lu:** The Government launched an e-commerce platform project within the framework of the Pact PRO Commerce, together with the Chamber of Commerce, the Luxembourg Confederation of Commerce and the larger municipalities. The aim of the platform is to function as a digital showcase for all businesses in Luxembourg and to enable traders to strengthen their visibility and/or enhance their image. Furthermore, the customer services are increased by offering a dynamic, fast and efficient online shopping experience for the customers.
- **The European High-Performance Computing initiative:** This initiative, launched by Luxembourg, will oversee the pooling of resources within the EU to develop and stimulate the use of supercomputers. High performing computing is key to digitalising industry and the economics of data.
- **Open Science platform cOAlition S:** An open science policy for scientific data and publications is to be determined. By increasing the flow of scientific knowledge through open access to scientific data and publications resulting from publicly funded research the exploitation of scientific results will be maximised. Several national research funding bodies,

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<sup>137</sup> Luxembourg National Reform Programme 2019. Accessed on 14 October 2019.



with the support of the European Commission, have already launched cOAlition S, a joint initiative to achieve open and full access to research publications in 2020.

- **Measures to support innovation through digital platforms:** With regards to activities promoting and supporting innovation, an innovation portal centralising all information on Research Development and Innovation has been set up by the government. Moreover, a site which includes all innovative solutions originating in Luxembourg intended to promote the use of innovative solutions in public contracting. Finally, as a national contact point, Luxinnovation advises and supports researchers and companies.
- **Enhancement of the public transport network through technologies:** The sustainable mobility strategy, MoDu 2.0, aspires to the development of public transportation, to more intense use of the soft mobility concept and to the establishment of a near real time Public Transport Telematics System.

#### Thematic Objective 11

- **Smart specialisation strategy:** Since 2017, the government is pursuing its efforts in adopting and implementing a smart specialisation strategy which recommends specific actions plans for developing priority sectors: manufactory industry 4.0, clean technologies, smart mobility and the circular economy, health technologies and ICT. These areas will provide the foundation for an innovative economy and a smart society.
- **Action Plan for digitalisation in SMEs:** In 2019, during the announcement of the 5<sup>th</sup> edition of the SME Action Plan in Luxembourg, it was decided that digitalisation of retail and craft businesses is one of the priorities. Furthermore, initiatives aimed at raising the awareness of business leaders and supporting them in their strategic approaches to implement digital tools will be supported by the government. Finally, the programme Fit4Digital will ensure the digital transformation of companies, and an SME support programme carried out with the support of Luxinnovation.
- **Programmes to promote technology industries:** The Joint Research programme is being developed to promote solid public-private partnerships on a long-term basis between Research and Technology Organisations and industries in areas deemed priority by the government. The first calls for projects should be launched in 2019. Moreover, the 2018-2023 government programme stresses that intellectual property rights must be taken into account in a cross-functional manner, particularly as part of the digital innovation strategy for the development of a sustainable data-driven and trust-based economy. Finally, the Luxembourg Cluster initiative will stimulate synergies and emulation amongst members by promoting networking between the public and private sectors, open innovation and exchange of technologies in the following fields: Biohealth, eco-innovation, ICT and automobility among others.

#### 3.18.5 Operational Programmes

A thorough evaluation of the Luxembourg's national OPs for the 2014-2020 financing period has revealed that there are no initiatives under TO2 and TO11 that would fall under the scope of this study.

## 3.19 Malta

### 3.19.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Malta's CSR of 2019.<sup>138</sup>

Malta is currently in the preventive arm of the Stability and Growth Pact. The Government projects a decline in its headline surplus from terms for 2.0% of GDP in 2018 to 0.9% in 2019, followed by a slight increase until 2022. The general government debt-to-GDP ratio is expected to remain below the 60%-of-GDP Treaty reference value. The Commission 2019 spring forecast expects the structural balance to register a surplus of 0,6% of GDP in 2019 and then reach 0.8% of GDP by 2020, which is above the medium-term budgetary objective. Nonetheless, the expenditure developments should be carefully monitored, especially in light of possible future risks of the robustness of revenues.

Malta's employment rate is now above the EU average and is still increasing. However, the gender gap persists and remains one of the largest in the Union as women's participation in the labour market significant decline from their mid-thirties. More labour market support could help address this gap.

Malta continues its fight against aggressive tax planning, which is essential to make tax systems more efficient and fairer. However, the persistent high level of royalty and dividend payments as a percentage of GDP indicates that Malta's tax rules are still used by companies that carry out aggressive tax planning. To counter this, Malta has set up a Notional Interest Deduction regime, whose anti-abuse rules would guarantee close monitoring to counter any mistreatment for aggressive tax planning.

Malta invests high amounts in education and training. However, this has not translated into better outcomes for all, nor has it reduced the numbers of early school leavers, which continues to be one of the highest rates in the Union and thus remains an important challenge for the country. To be in line with the EU's Social Pillar principle on quality and inclusive education, Malta should focus its investment strategy on ways to tackle and correct the social disadvantage that persists in the country.

Malta has increased its age-related public spending in the pension system. This may represent a risk for the long-term sustainability of public finances, but it has helped to increase the supply of labour and prolong working lives, with positive impacts on overall employment, particularly for women and older workers.

Regarding the healthcare sector, Malta has fostered the decentralisation of services from hospitals to primary care and took measures to improve the provision of long-term care services. However, these actions are not enough to decentralise services from hospitals to primary care level. The country has started to use eHealth in order to counter these challenges and should be encouraged to continue doing so.

The country has continued to improve the independence of its judiciary and justice system, by adopting an important reform on the establishment of a new prosecution service, independent from the Attorney

Economic  
Outlook

Labour Market

Tax system

Education

Pension  
system

Healthcare

Justice system

<sup>138</sup> COM(2019) 518 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Malta and delivering a Council opinion on the 2019 Stability Programme of Malta, Brussels, 5.6.2019. Accessed on 25 September 2019.

General and the police. However, Malta should further invest in strengthening its governance framework, by promoting an effective and anti-corruption enforcement.

### *3.19.2 Country Digital Government Outlook*

The following are some of the digital government highlights having occurred in Malta since 2017. The information originates from the Digital Government factsheet of Malta.<sup>139</sup>

#### **Political Communications**

Malta launched in 2018 various initiatives aimed at improving the country's digital governance. These included the National Cyber Security Awareness and Education Campaign, which served as a framework to protect information systems, networks and information on the internet, together with the respective users of the services that they provide, including the government, the private sector and civil society. In addition, the eSkills Malta Foundation decided to develop a new National eSkills Strategy for the period of 2019 to 2021. It aims to complement initiatives at both the local and EU levels to address the need for existing and new digital skills that will be required by nearly all jobseekers in the medium-term.

#### **Legislation**

The eInvoicing Directive 2014/55/EU was transposed into Maltese local legislation in November 2018.

#### **Infrastructure**

In 2018, Malta became one of only four Member States to meet the regulatory deadline for the recognition of other Member States' eID schemes under the eIDAS Regulation. In addition, Malta also implemented My Personal Kiosk, which is an mAdministration service to provide public service employees with the opportunity to access their leave balance (sick and vacation) and view their payslips.

#### **Services**

As a means of enabling digital government services for those citizens who require some form of assistance, servizz.gov, the national portal for citizens, set up five regional hubs across Malta to deal with education, taxes and family services.

### *3.19.3 Country Specific Recommendations*

The CSR for Malta<sup>140</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>141</sup>

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<sup>139</sup> Digital Government factsheet 2019, Malta. Accessed on 25 September 2019.

<sup>140</sup> COM(2019) 518 final, Council Recommendation on the 2019 National Reform Programme of Malta and delivering a Council opinion on the 2019 Stability Programme of Malta, Brussels, 5.6.2019. Accessed on 25 September 2019.

<sup>141</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Malta to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Malta. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

## Thematic Objective 2

### *Recommendations*

The CSR for Malta makes no recommendation of the need to intervene in the field of TO2.

### *Recitals*

Recital 7 mentions the gradual use of eHealth to decentralise services from hospitals to primary care level, which is needed to improve the provision of long-term care. This is a positive step for Malta, who should continue investing in eHealth to improve the overall efficiency of the healthcare sector.

### *Opportunities*

Recital 11 states that Malta is lacking in innovative enterprises. To counter this, the country should invest in research and innovation, with a focus on smart specialisation and digital skills, in order to contribute to growth in productivity.

## Thematic Objective 11

### *Recommendations*

The CSR for Malta makes no recommendation of the need to intervene in the field of TO11.

### *Recitals*

The CSR issued for Malta makes no specific mention in the recitals of the need to intervene regarding TO11.

### *Opportunities*

Malta's justice system still needs significant reforms to counter problems of corruption. Although some efforts have recently been made, such as the creation of a new independent prosecution service, a strengthened governance framework is still needed. The establishment of eJustice could prove advantageous for the country, as it would make all legal actions more effective, and thus make corruption less likely.

Malta has also taken measures against tax planning. However, these have proved to be insufficient. Hence, the country could take this opportunity to invest in eTax so as to handle all financial processes through one single IT system, which could help to avoid tax evasion.

### 3.19.4 National Reform Programme

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Malta's NRP.<sup>142</sup>

## Thematic Objective 2

- **Development of primary health care services through electronic initiatives:** By 2020, the country hopes to have introduced an Electronic Patient Record system, that will replace the current paper-based one. This will significantly cut down the costs related to health care

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<sup>142</sup> Malta National Reform Programme 2019. Accessed on 14 October 2019.

services and it will reduce the current administrative burdens faced by the personnel. This is intended to improve the overall health care provisions.

- **Development of a national strategy for artificial intelligence:** The Maltese government established a MALTA.AI Taskforce through which it aims to foster a National Strategy for Artificial Intelligence. Through this taskforce, the government intends to discuss and consult with all relevant stakeholders in order to form a nationwide AI Framework, which will determine the policy, regulatory and fiscal measures that will bolster Malta's appeal as a hub for AI. In addition, the Framework will determine the required skill base and infrastructure needed to support AI.
- **Introduction of blockchain technology in education:** In 2018, Malta became the first country to use emerging blockchain technologies to deliver digital, tamper-proof and self-sovereign accreditations in the education system. The country aims to expand the usage of blockchain to other sectors and thus reinforce its strategic position as a "Blockchain island". In addition, Malta put in place the Fintech Accelerator Programme so as to offer affordable facilities and services to start-up Fintech companies. The programme intends to capitalise on Malta's growing importance as a global centre for blockchain innovation.
- **Enhancement of citizens' digital skills:** The new Digital Malta Strategy aims at transforming Malta into a digitally enabled nation by empowering its citizens with basic digital skills that will allow them to take on new opportunities in the technology and digital sectors. The Strategy also wishes to make digital services more affordable, secure and accessible to all. Through the eSkills Malta Foundation, the country continues to focus on the cooperation between Government, education and businesses, with a strong focus on enhancing ICT skills that are fundamental to the country, if it wishes to sustain its Digital Economy. In 2018, the Foundation also launched the National eSkills Strategy 2019-2021 to sustain basic and advanced digital skills and to further develop IT professions.

#### **Thematic Objective 11**

- **New ICT reforms for the national justice system:** In recent years, the Maltese government has embarked on a variety of initiatives to reform the national justice system. Indeed, since 2018, the use of ICT tools allows advocates, notaries and procurators to scan certain judicial acts faster. In addition, other eJustice initiatives and the promotion of alternative measures of dispute resolution were put in place, in order to reduce bureaucratic barriers and delays in civil courts.

### **3.19.5 Operational Programmes**

For the funding period 2014-2020, two OPs of Malta are specifically dealing with themes related to TO2 and TO11. The OP 'Investing in human capital to create more opportunities and promote the wellbeing of society'<sup>143</sup> will focus on employment, social inclusion, strengthening education and training systems and improve administrative capacity and efficiency. The OP 'Fostering a competitive and

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<sup>143</sup> Malta Investing in Human Capital Operational Programme. Accessed on 9 December 2019.

sustainable economy to meet our challenges'<sup>144</sup> sets out the ambitions to strengthen competitiveness of SMEs; promote social inclusion and invest in education.

## **Thematic Objective 2**

- **Empowerment of persons with special needs:** To ensure all citizens are empowered to seize opportunities that will improve their lives, the Maltese government aims in OP 'Investing in human capital' to eliminate all barriers to training, education and other support measures which socially excluded persons and vulnerable groups might face, including digital illiteracy. Efforts will be made to provide the most vulnerable citizens with basic ICT skills, which is key in today's society.
- **Enhancement of students' digital literacy and knowledge through ICT tools:** Malta aims at improving the educational experience of children by enhancing the use of digital technologies and IT applications. The general aim is to better integrate digital technologies into the Maltese national curricula by providing appropriate technology equipment, including electronic tablets, and further online learning tools. To ensure a smooth implementation, according to the OP 'Investing in human capital', complementary trainings in ICT will be organised for teachers and schools' staff.
- **Enhancement of eServices:** As indicated in the Digital Malta Strategy, various entities providing services such as healthcare, welfare, justice, tourism, utilities and transport, amongst others, require specific ICT programmes which enable them to serve customers and cut across boundaries. In addition, through specific IT platforms and data sets, Government aims to improve service delivery and enable the shift towards new technologies. To this end, the Government states in OP 'Fostering a competitive and sustainable economy' it will aim to simplify digital public services, extend Government transparency, make government services accessible and increase citizens' engagement with government, amongst others, by further developing eGovernment services.
- **Provision of better eHealth services:** To provide eHealth services, Malta will facilitate the accessibility of health and clinical data through electronic means to enable more efficiency, flexibility and transparency in the delivery of healthcare practises for citizens as pointed out in OP 'Fostering a competitive and sustainable economy'. Both the eHealth and m-services developed in the Digital Malta Strategy are planned to provide citizens secure and easy access to their health records as well as equip health care providers with secure access to patients' records.
- **Development of public clouds:** To reduce the administrative burden and smoothen the interface between Government services and enterprises, Malta will support measures to develop innovative public clouds. This will happen, according to OP 'Fostering a competitive and sustainable economy', through the provision of online Government certified ICT services. Furthermore, as a measure for increasing competitiveness and innovation, Malta is considering opening the access to its base registers.

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<sup>144</sup> Malta Fostering a competitive and sustainable economy to meet our challenges Operational Programme. Accessed on 9 December 2019.

- **Modernisation and digitalisation of businesses:** The Government plans financial incentives in OP 'Fostering a competitive and sustainable economy' to support enterprises' transformation towards innovative and digital enterprises that allow users to transmit information electronically, embrace smart application of web technologies and ICT products. The support measures include infrastructural investments for cloud computing mechanisms, and efforts to raise productivity and efficiency through the use of ICT and e-based solutions. Furthermore, the provision of a 'single window' system will be created to simplify information flows between trade and Government in cross-border interventions. As particular sector Malta is investing in, is digitalising the tourism sector to interact electronically on BDB and B2C level. The government is thus fostering both eCommerce and eTourism services.
- **Enhancement of digital learning:** Malta acknowledges in OP 'Fostering a competitive and sustainable economy' more efforts are needed to encourage digital learning amongst citizens. As eSkills are necessary to ensure access to the benefits of ICT, such as better employment prospects and social inclusion, the government plans more investment in actions that develop ICT skills. Besides focusing on citizens only, the Digital Malta Strategy also targets to increase ICT entrepreneurial activities and support businesses in being more digitally literate and innovative
- **Stimulation of ICT in the private sector:** As set out in OP 'Fostering a competitive and sustainable economy', Malta will allocate 8% of its European Regional Development Fund resources to stimulate investment in ICT and e-based solutions within the private sector. For the period of 2014-2020, the government will build on the existing framework to further increase the take up of eServices by enterprises. Actions will be installed to facilitate the exploitation of digital technologies to increase competitiveness.

#### **Thematic Objective 11**

- **Reform of the justice system:** Based on OP 'Investing in human capital', the justice reform in Malta will include an upgrade of the existing infrastructure as well as investment in ICT technology. Furthermore, the capacity building and training of court personnel to support this digital reform will be put in place.
- **Reduction of administrative burdens through the implementation of eGovernment and other ICT tools:** Malta recognises in OP 'Investing in human capital' ICT as a key contributor towards the reduction of administrative burden. Its application through eGovernment acts as an enabler, making ICT considered as an important tool that contributes towards the simplification of procedures as well as adopting a more customer-oriented approach. In this regard, Government will ensure that ICT will continue to be leveraged through appropriate capacity building interventions to achieve simplification and reduction in administrative burden. Investment within this area will provide employees within the public administration with the necessary skills so as to reach the main aims of the National ICT Interoperability Framework (NIF).
- **Establishment of eProcurement:** As the investments made in ICT tools in the public procurement field increased efficiency, the Maltese government indicates in OP 'Investing in human capital' to continue investment in a transformation towards an eProcurement system.

One ambition is to meet the provisions of the revised directives in terms of eProcurement, making sure all public tenders with an estimated value exceeding the EU thresholds are being published as electronic tenders.



## 3.20 Netherlands

### 3.20.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Netherlands' CSR of 2019.<sup>145</sup>

The Netherlands is currently in the preventative arm of the Stability and Growth Pact. The Stability Programme expects a decrease in the general government surplus from 1.5% of GDP in 2018 to 0.0% of GDP in 2022. In addition, the government debt-to-GDP ratio is forecast to fall from 52.4% of GDP in 2018 to 44.6% in 2022. Based on the Commission 2019 spring forecast, the structural balance is set to decrease slightly from a surplus of 0.8% of GDP in 2018 to 0.7% in 2019 and reach 0.2% by 2020, above the medium-term budgetary objective. Lastly, general government debt is forecast to remain on a stable downward trend.

The Netherlands can rely on qualified professionals with strong technical and digital skills that boost the country's innovative capacity and productivity growth. Nevertheless, the country should continue on this path and further invest in training, including in new digital skills, and to promote flexible upskilling and reskilling opportunities. The Netherlands should focus these investments in training those at the margins of the labour market, so as to boost their employability and create an inclusive environment.

Vast levels of household indebtedness are one of the key challenges in the Netherlands, with rigidities and distortive incentives that built up over decades. This, in turn, distorts housing finances and sectoral savings patterns. Since 2012, the government has implemented a series of measures that partly addressed the situation. The government also announced an accelerated reduction in mortgage interest tax deductibility. However, this law will only be effective from 2020 onwards. Despite these efforts, the tax relief on mortgage payments will remain generous and will continue to result in a substantial debt bias for households.

Regarding taxation, the Netherlands still needs to take action to fight against aggressive tax planning in order to make tax systems fairer and more efficient. The country has already adopted some measures to counter this situation, but the high level of dividend, royalty and interest payments made via the Netherlands suggests that the country's tax rules continue to be used by companies that engage in aggressive tax planning. In addition, the absence of withholding taxes on outbound payments, i.e. from EU residents to third country residents, encourages this behaviour and may lead to some payments avoiding tax altogether.

Finally, despite a well-functioning labour market, with low unemployment and growth in employment, some groups continue to face important challenges. However, the recent employment growth has mainly been due to temporary employment and self-employment. Thus, the government has been focusing on solutions to make it easier to hire permanent employees and make flexible contracts more rigid. In addition, the country should focus on fostering equal opportunities as people with a migrant background and women are often left at the margins of the labour market.

Economic  
Outlook

Research and  
Innovation

Housing  
Market

Tax system

Labour Market

<sup>145</sup> COM(2019) 519 final, Council Recommendation on the 2019 National Reform Programme of the Netherlands and delivering a Council opinion on the 2019 Stability Programme of France, Brussels, 5.6.2019. Accessed on 27 September 2019.

### 3.20.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in the Netherlands since 2017. The information originates from the Digital Government factsheet of the Netherlands.<sup>146</sup>

#### Political Communications

In July 2018, the government published a new Digital Government Agenda, which is connected to the broader Dutch Digitalisation Strategy. The value driven digital government agenda is aimed at making optimal use of digitalisation, and at the same safeguarding public values, like autonomy of the individual citizen, and promoting inclusion.

#### Legislation

The Digital Government Law (*wet Digitale Overheid*) was sent for adoption to Parliament in June 2018. The proposed law has as objective to ensure a safe login for the Dutch citizens and businesses to the (semi) government entities. The law also arranges the competence to appoint mandatory standards.

#### Governance

Political responsibility for digital government in the Netherlands lies with the State Secretary for the Interior and Kingdom Relations. Sectorial ministers are responsible for ICT in their domains.

#### Infrastructure

In preparation of a National Application Programme Interface (API) strategy several activities were started including the formation of a national API alliance which drafted a National API strategy (currently in consultation), and an API platform is being developed. An API Platform was started by Geonovum, in cooperation with the Bureau Standardisation Forum, Chamber of Commerce, VNG Realisation and the Land Registry. Given the development towards a digital society where many digital services must be able to work together easily, the Dutch government benefits from Knowledge Platform APIs which jointly looks at strategic and tactical issues related to the development and use of APIs outside and within the government.

### 3.20.3 Country Specific Recommendations

The CSR for the Netherlands<sup>147</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>148</sup>

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<sup>146</sup> Digital Government Factsheet 2019, the Netherlands. Accessed on 27 September 2019.

<sup>147</sup> COM (2019) 519 final, Council Recommendation on the 2019 National Reform Programme of the Netherlands and delivering a Council opinion on the 2019 Stability Programme of the Netherlands, Brussels, 5.6.2019. Accessed on 27 September 2019.

<sup>148</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on the Netherlands to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit the Netherlands. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

## Thematic Objective 2

### *Recommendations*

The CSR issued for the Netherlands makes no recommendation of the need to intervene in the field of TO2.

### *Recitals*

Recital 15 and recommendation 2 encourage the Netherlands to strengthen and upgrade its skills knowledge, notably its digital ones. This would enhance its innovative capacity and productivity growth. The Netherlands should particularly focus on making these skills available to everyone, especially those on the margins of the labour market. In doing so, the country would foster equal opportunities and inclusivity, which remain important challenges.

### *Opportunities*

The CSR issued for the Netherlands does not describe needs that can be linked to opportunities to intervene regarding TO2.

## Thematic Objective 11

### *Recommendations*

The CSR issued for the Netherlands makes no recommendation of the need to intervene in the field of TO11.

### *Recitals*

The CSR issued for the Netherlands makes no specific mention in the recitals of the need to intervene regarding TO11.

### *Opportunities*

Recital 12 and recommendation 1 urge the Netherlands to address the challenges of the tax system that facilitate aggressive tax planning. In particular, the country should focus on countering the problems related to outbound payments. It could be the opportunity to implement eTax solutions so as to handle all financial and administrative processes through one single IT platform. This would harmonise all the procedures and limit tax evasion.

### *3.20.4 National Reform Programme*

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in the Netherlands' NRP.<sup>149</sup>

## Thematic Objective 2

- **Implementation of fast fixed-connection broadband internet for all:** To remain a top leader in the digitalisation of industry, the Netherlands have drafted a Digital Connectivity

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<sup>149</sup> The Netherlands National Reform Programme 2019. Accessed on 14 October 2019.

Action Plan. Its aim is to set out guidelines for the government to achieve its objective of granting access to fast fixed-connection broadband internet to all Dutch people by 2030.

#### **Thematic Objective 11**

The Netherlands' NRP makes no specific reference to measures related to the TO11.

#### ***3.20.5 Operational Programmes***

A thorough evaluation of the Netherlands' national OPs for the 2014-2020 financing period has revealed that there are no initiatives under TO2 and TO11 that would fall under the scope of this study.

## 3.21 Poland

### 3.21.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Poland's CSR of 2019.<sup>150</sup>

Poland is currently in the preventive arm of the Stability and Growth Pact. In the 2019 Convergence Programme, the government expects a small deterioration of the headline deficit of 0.4% of GDP in 2018 to 0.6% in 2020. It also plans a deficit of 1.7% of GDP for 2019, which should however turn into a surplus of 0.2% by 2020. The Programme also expects a decrease in the general government debt-to-GDP ratio from 48.9% of GDP in 2018 to 40.6% by 2022.

Over recent years, Poland's public spending increased as a share of GDP. In addition, in the near future, Poland's public finances will face pressures for higher spending, in particular due to population ageing. Hence, the need for new tools to strengthen expenditure management are strongly needed. While Poland's fiscal framework is generally strong, the country is the only member state without an independent fiscal council.

In recent years, the performance of the Polish labour market has been strong and employment rates continued to increase. In addition, unemployment rates have, after many years of decline, stabilised at a historical low of below 4% in 2018. Nevertheless, some groups, particularly the low-skilled or persons with disabilities, are poorly represented in the labour force. Additionally, while measures were set out in 2017, in an attempt to address the labour market segmentation, the Polish share of temporary contracts still remains one of the highest in the Union.

To boost future growth prospects, Poland needs to invest in a quality education and training system, taking a life-long perspective. Both pupils and adults need to be equipped with adequate skills and competences to find employment in a rapidly changing labour market. The participation of Polish adults in education and training is amongst the lowest in the Union, leading to weaknesses in literacy, numerical and digital skills. Despite recent reforms in vocational and higher education, sufficient and effective coordination of adult learning are still lagging behind.

As the unstable regulatory framework and other administrative barriers impede the expansion of firms in Poland, the country's investment activity and productivity remain low. Indeed, legal certainty and trust in the quality and predictability of regulatory, tax and other policies and institutions are important factors for the investment environment. However, for the moment, the Commission still considers that Poland could be at risk of a serious breach of the rule of law. Thus, the country should focus on setting up an effective dialogue with all stakeholders to find measures to improve the quality of legislation and thus contribute to the stability of the business and justice environments.

Economic  
Outlook

Public  
spending

Labour Market

Education

Administrative  
and regulatory  
barriers

<sup>150</sup> COM (2019) 521 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Poland and delivering a Council opinion on the 2019 Convergence Programme of Poland, Brussels, 5.6.2019. Accessed on 26 September 2019.

### 3.21.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in Poland since 2018. The information originates from the Digital Government factsheet of Poland.<sup>151</sup>

#### **Political Communications**

In 2018, the Polish Ministry of Digital Affairs published guidelines to prepare and share data for re-use. Then, the same Ministry elaborated open data standards to ensure higher quality of data were provided by the public administration. Open data may now be reused for research or business purposes. Opening public data makes the activities of public administration more transparent and allows civic control over these activities.

#### **Legislation**

In 2018, the Polish government also adopted various legislations intended to create a more digital environment. In fact, it endorsed an Act on a national cyber security system. Its purpose is to ensure cyber security at the national level, including uninterrupted provision of essential services and digital services, by achieving an appropriate level of security involving information systems used to provide these services, and by providing incident handling. In addition, the government also amended the Act on trust services and electronic identification. The Act was first approved in 2014, but the amendment increased the availability of electronic services in Poland through a national node. This is an organisational and technical solution that integrates at a single point all ICT systems in which public online services are made available, with various electronic identification systems used to confirm the identity of users of online services.

#### **Governance**

As a consequence of Poland's new Rules of Procedure, the Ministry of Digital Affairs has been reshaped. The Department of Systems Maintenance and Development was divided into two separate units, namely Department of Systems Maintenance and Department of Systems Development while the latter also absorbed the tasks of the Department of State Infrastructure, which has been disassembled. The State Information Architecture was also created with three processes: Management of Digital Administration Development, Architecture Assurance and Principles and Standards Management.

#### **Infrastructure**

On top of internal adjustments, the Ministry of Digital Affairs also launched the RP Portal, a single website for all government institutions. The intent is to have a one-stop shop for citizens and business interacting with public administrations. between the citizens and companies on the one hand and the government on the other. While the RP Portal serves as a single point of contact with the government, Poland also set out the Electronic Platform of Public Administration Services. This system allows public institutions to provide administrative services to the public via electronic communications channels. The portal will enable citizens and enterprises to manage their administrative procedures and official matters over the internet without repeatedly having to fill out the same information. Moreover, the

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<sup>151</sup> Digital Government Factsheet 2019, Poland. Accessed on 26 September 2019.

Polish government also adopted an open data portal (Dane.gov.pl) to offer access to public data from various categories such as education, the environment, budget and finance, culture, security, etc. Some other initiatives were also put in place including a Registry of Sexual Crimes, an mCitizen mobile application which is designed as a container for mobile documents and an Electronic court payment system, which allows the users to pay court fees electronically.

## **Services**

In 2018, several services for citizens were implemented in Poland. These included a Patient's Internet Account (IKP), where every citizen now has online access to personal health information, including received e-Prescriptions, e-Referrals and the benefits provided. In addition, Polish citizens with disabilities and Polish citizens living abroad can now submit an application for voting by correspondence, which was not possible before.

### **3.21.3 Country Specific Recommendations**

The CSR for Poland<sup>152</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>153</sup>

## **Thematic Objective 2**

### *Recommendations*

The CSR for Poland makes no recommendation of the need to intervene in the field of TO2.

### *Recitals*

Recital 13 and recommendation 2 highlight the need to equip both children and adults with the necessary skills, especially digital ones, so as to foster their employability in the rapidly changing labour market. Poland should focus on enhancing the use and bettering the quality of ICT tools for Polish citizens, so as to boost their market accessibility.

### *Opportunities*

Recital 15 points out the problematic effectiveness of and access to the Polish healthcare services. In fact, in 2017, the country's public healthcare expenditure only totalled 4.7% of GDP, which is well below the EU average of 7% of GDP. In addition, the numbers of practicing doctors and nurses relative to the population size are among the lowest in the Union. These challenges could be tackled by putting in place eHealth measures so as to increase and improve the overall efficiency of the Polish health sector.

Recommendation 3 urges the country to strengthen the innovative capacity of its economy, which is currently lagging behind. In fact, Poland's economic structure continues to rely too much on low-tech sectors. While some measures have already been taken to improve the situation, the country should

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<sup>152</sup>COM(2019) 521 final, Council Recommendation on the 2019 National Reform Programme of Poland and delivering a Council opinion on the 2019 Stability Programme of Poland, Brussels, 5.6.2019. Accessed on 26 September 2019.

<sup>153</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Poland to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Poland. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

focus its future investments on developing new technologies so as to deliver faster and more efficient services.

## **Thematic Objective 11**

### *Recommendations*

The CSR for Poland makes no recommendation of the need to intervene in the field of TO11.

### *Recitals*

The CSR issued for Poland makes no specific mention in the recitals of the need to intervene regarding TO11.

### *Opportunities*

The CSR for Poland suggests, in recital 18, to strengthen the role of social and public consultations, as a tool to improve the quality of legislation and increase the predictability of the regulatory environment. In addition, the implementation of eJustice measures would substantially help to minimise the administrative burden resulting from frequent changes in the law, increase investment and promote sustainable economic growth in the long-term.

## **3.21.4 National Reform Programme**

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Poland's NRP.<sup>154</sup>

## **Thematic Objective 2**

- **Introduction of the registered electronic delivery service:** The Polish Ministry of Digitalisation introduced a new service allowing for the electronic delivery of correspondence with legal effect: the eDelivery service. It can be applied to all administrative processes requiring delivery and it should reduce the costs linked to the process of traditional correspondence as well as accelerate the overall procedures. All citizens and entrepreneurs will have access to it and will thus be able to engage in an electronic communication with the entities of the public sector. The scope is to enable a quick and responsive communication with all public entities.
- **Development of new digital services in the healthcare sector:** In order to improve the quality and effectiveness of medical services and the reduction of public expenditures on healthcare, the Polish government adopted various new measures. These include the “eBlood project”, which intends to apply ICT tools to improve the quality of public blood services and develop a new blood treatment supervision. Another project aims at expanding the electronic medical documentation systems, to improve citizens' access to medical data and enhance the effectiveness of the treatments through the implementation of eServices for patients, such as eRegistration, eAnalyses, eOrders, etc.

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<sup>154</sup> Poland National Reform Programme 2019. Accessed on 17 October 2019.



- **Enhancement of protection of industrial property rights:** Within the framework of the Electronic Service Platform project, the Polish Patent Office developed a strategy for the eNotice system, that would automatically notify businesses on the expiration of the protection period of their intellectual and property rights.
- **New provisions for stimulating business activities through digital means:** Poland put in place new digital provisions aimed at facilitating and stimulating the business activity of its enterprises. These include the possibility to store employee and payroll files online in electronic format and to use electronic signatures.
- **Enhancement of workers' digital skills:** Poland also launched the Future Industry Platform whose role is to enhance Polish entrepreneurs' competitiveness through their digital transformation. It aims to reinforce their knowledge and skills in terms of automation, artificial intelligence, ICT technologies and other digital competences.

#### Thematic Objective 11

- **Full digitalisation of public procurement procedures:** One of the main points of the Polish Strategy for Responsible Development aims at increasing the effectiveness of public procurement. For this purpose, the Ministry of Digitalisation is working on the implementation of an eProcurement platform which will be an effective digitalised system offering eServices that will facilitate and shorten public procurement procedures for the clients. The platform also intends to facilitate access to information regarding all procurement procedures, thus significantly diminishing the cost and time of preparation of the documents.
- **Development of the electronic invoicing platform for public finances:** To complement the digitalisation of public procurement, the Polish Ministry of Entrepreneurship and Technology is currently developing an electronic invoicing platform for public finances. Its aim is to carry out the implementation of electronic invoices by the public administration, which is obligatory based on Directive 2014/55/EU on electronic invoicing. The platform will significantly increase transparency and promote the participation of Polish entrepreneurs in public procurement procedures across the EU.

#### 3.21.5 Operational Programmes

For the funding period 2014-2020, two OPs of Poland are specifically dealing with themes related to TO2 and TO11. The OP 'Knowledge, Education and Development'<sup>155</sup> focusses on key challenges in the fields of employment, social inclusion, health, education and public administration. The OP 'Digital Poland'<sup>156</sup> sets out the deployment of fast broadband networks; the improvement of citizen's digital competences and the development of eServices as main objectives.

#### Thematic Objective 2

- **Enhancement of digital literacy in education:** To develop the key competences of students to enter the labour market, OP 'Knowledge Education Development' indicates attention

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<sup>155</sup> Poland Knowledge Education Growth Operational Programme. Accessed on 9 December 2019.

<sup>156</sup> Operational Programme Digital Poland. Accessed on 9 December 2019.

dedicated to ICT skills. They will be strengthened by using e-books and developing e-learning materials that accompany the existing e-textbooks.

- **Creation of eServices:** The Polish government sets out its ambition in OP 'Digital Poland' to make electronic means available for public sector information and services. In this respect, new services will be made electronic and the functionality and e-maturity of existing services will be improved. This includes establishing the government Cloud services, common eService platforms and IT security policies. Furthermore, a common platform of public administration eServices will be set up as well as interoperable public registers.
- **Development of digital literacy for citizens:** To enable all citizens to benefit from the wider use of ICT in social and economic life, Poland plans in OP 'Digital Poland' to provide the citizens with tailored mechanisms to acquire and increase digital competences. This includes computer and internet skills but also ability to use the internet access and online services, public eServices in particular.
- **Development of security standards:** OP 'Digital Poland' points out that, to prevent and counteract fraud and corruption in the area of ICT, the Polish government will use the experience from the 2007-2013 Remedial Action Plan and develop, based on this, standards to prevent fraud and corruption.
- **Implementation of eInclusion measures:** Poland indicated in OP 'Digital Poland' it will implement measures in the field of digital competences to ensure eInclusion will be provided at the national level. A forum will be set up for cooperation to programme and implement the measures and solutions as well as exchange knowledge and information on digital competences. Furthermore, guidelines, good practices and recommendations on development of digital competences will be drafted.

#### **Thematic Objective 11**

- **Development of eProcurement:** According to OP 'Knowledge Education Development', Poland will conduct trainings and workshops for authorities that focus on the use of electronic tools for procurements. Furthermore, the website of the Public Procurement Office will be equipped with electronic tools.
- **Establishment of broadband networks:** Poland will support activities that enable the largest possible access to broadband networks of at least 30 Mbps bandwidth. Solutions that enable further improvement of bandwidth will be promoted as OP 'Digital Poland' set out.
- **Digital training of public administration staff:** Poland plans in OP 'Digital Poland' to train the workers that need to deliver specific public eServices. The aim is to provide them with the competences needed to ensure an efficient use of the instruments put in place for the informatisation of government services.
- **Establishment of an Open Data system:** To provide digital availability of the public sector information, Poland said in OP 'Digital Poland' it will improve the quality of data; make information available online with the use of professional tools, especially programming interfaces; ensure electronic online access to national registries; build infrastructure to store shared information and set up a security and standardisation system for the use of this data.

## 3.22 Portugal

### 3.22.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Portugal's CSR of 2019.<sup>157</sup>

Portugal is in the preventive arm of the Stability and Growth Pact. The country is currently experiencing macroeconomic imbalances in a context of low productivity growth. Hence the CSR stresses the need for measures to tackle large stocks of net external liabilities, private and public debt and a high share of non-performing loans. The government expects to attain a headline deficit of 0.2% of GDP in 2019, a surplus of 0.3% in 2020 and a further improvement to a 0.7% of GDP by 2022. The medium-term budgetary objective is planned to be achieved in 2020 and the general government debt-to-GDP ratio is forecasted to reach 118.6% in 2019, 115.2% in 2020 and 103.7% in 2022. The budgetary impact of wildfires occurred in 2017 (about 0.04% of GDP) was significant but sustainability would not be compromised as a temporary deviation from the adjustment path was allowed.

Sustainable fiscal consolidation via structural improvement in public finances still needs to be achieved through stronger revenue collection and expenditure controls. For this purpose, efforts regarding effective enforcement of the commitment control law, strict and timely presentation of the budget, continued spending review and rationalisation efforts are key. Increasing the net incomes of state-owned companies and reducing their debt would help to make Portuguese public finances more sustainable as well. Concerning pensions and healthcare, new measures have been taken, such as the launch of a new programme to address hospital arrears, but more efforts are still needed.

The labour market stills under ongoing implementation of some measures to decrease segmentation and precariousness, but the proportion of temporary workers exceeds the EU average. However, fewer people are at risk of poverty or social exclusion. Income inequality decreases progressively but remains high and the low effectiveness of social transfers could be severely tested in case of a future economic slowdown. Moreover, the low qualification level of workers is an obstacle to investment and productivity, particularly concerning digital skills. The low share of graduates in information and communication technologies, natural sciences, mathematics and statistics may hinder Portugal's productivity growth and capacity to innovation.

Reforms aimed at administrative simplification are insufficient, therefore administrative barriers continue to hinder investment and efficient allocation of resources. Shortcomings in planning and monitoring public procurement hinder competition as well. On another side, the justice system is becoming more efficient but continues to face challenges with lengthy proceedings and a high backlog of cases, especially in the administrative and tax courts.

Research and development are gradually improving in terms of investment but remains unsatisfactory. Increasing the shares of value-added in high-tech manufacturing, and in knowledge-intensive services as well as promoting managerial, financial and digital skills will be critical to enable firms to grow and boost their innovation capacity. Finally, the CSR for Portugal stresses the need to develop a

Economic  
Outlook

Fiscal  
Framework

Labour Market

Administrative  
and regulatory  
barriers

Research and  
Innovation

<sup>157</sup> COM (2019), 522 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Portugal and delivering a Council opinion on the 2019 Stability Programme of Portugal, Brussels, 5.6.2019. Accessed on 27 September 2019.

comprehensive and sustainable Iberian plan towards maritime and railway connections. Further measures are needed to anticipate the adverse effects of climate change, such as floods and forest fires.

### *3.22.2 Country Digital Government Outlook*

The following are some of the digital government highlights having occurred in Portugal since 2018. The information originates from the Digital Government Factsheet of Portugal.<sup>158</sup>

#### **Political Communications**

Portugal signed the Digital 9 (D9) charter in November 2018, thus integrating into the network of advanced digital nations that includes Canada, Estonia, Israel, Mexico, New Zealand, South Korea, United Kingdom and Uruguay. In signing this charter, Portugal committed itself to working towards the following principles: user needs; open standards; open source; open markets; open government; connectivity; teach children to code; assisted digital and commitment to share and learn.

#### **Legislation**

Law no. 46/2018 was adopted, which established the legal regime for the security of cyberspace, transposing Directive 2016/1148 of the European Parliament, and of the Council of 6 July 2016 on measures to ensure a common level of network and information security throughout the Union.

#### **Governance**

In 2018, Ms. Mariana Vieira da Silva took office as the Minister of the Presidency and of Administrative Modernisation. She is responsible for the modernisation of public administration and digital government.

#### **Infrastructure**

The ePortugal portal, launched in February 2019, replaced the Citizen Portal as the main channel for accessing digital services offered by the public administration. It is the central repository for all services dedicated to citizens and companies, and in addition a directory of addresses, websites and mobile applications of the Public Administration. ePortugal is dynamic and adaptable to each user, offering several customisation options and a reserved area that allows each user to access different information regarding their relationship with the Public Administration. It has developed a strong focus on accessibility and usability, providing innovative support mechanisms such as the chatbot SIGMA and the possibility of taking digital queue tickets for onsite public services through the Citizen Map.

#### **Services**

The Mobile Medical Electronic Prescription (PEM Mobile), launched in February 2019 by the Shared Services of the Ministry of Health (SPMS), is a mobile application that allows physicians to perform medical prescriptions using their smartphones. The PEM Mobile is a solution for in-home consultations or when the physician is away from the patient, allowing health professionals to issue medical prescriptions in a secure way. On another side, the Citizen Map – which provides geo-location and

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<sup>158</sup> Digital Government Factsheet 2019, Portugal. Accessed on 3 October 2019.

information for all Portuguese public services - is now available at [mapa.eportugal.gov.pt](http://mapa.eportugal.gov.pt), and a new standalone app will soon be launched. The new Social Security + Close mobile app launched in December 2018 provides an easier and simpler way for Citizens and Companies to access Social Security services wherever they are and whenever they want. This app is available for both Android and iOS and allows users to: see the amount to receive/the expected date of payment of social benefits, such as unemployment benefit, sickness benefit, maternity and paternity allowance; access the Social Security Direct message box; and synchronise the Social Security events calendar with the mobile device's calendar.

### 3.22.3 Country Specific Recommendations

The CSR issued for Portugal<sup>159</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>160</sup>

#### **Thematic Objective 2**

##### *Recommendations*

Recommendation 2 of the CSR for Portugal explains the need to increase the skills level of the adult population, in particular in the digital literacy field, by strengthening and broadening the coverage of the training component in adult qualification programmes. Recital 15 shows they are among the lowest in the Union, which impedes the countries innovation potential and competitiveness.

##### *Recitals*

The CSR for Portugal makes no specific mention in the recitals of the need to intervene regarding TO2.

##### *Opportunities*

The CSR's first recommendation mentions the need to enhance expenditure control, cost effectiveness and adequate budgeting. Despite the fact that some measures have been already implemented in the health sector, the further actions can be envisaged such as the use of eHealth tools. It could improve the functioning of the hospitals with a potential positive effect on their cost effectiveness.

In recital 19, the CSR for Portugal explains administrative barriers are impeding elements for investment and efficient allocation of resources. For instance, the administrative courts are facing long proceedings, a lack of transparency and corruption. Digital public services delivery could improve the proceedings and open data increase the transparency.

#### **Thematic Objective 11**

##### *Recommendations*

The CSR for Portugal makes no recommendation of the need to intervene in the field of TO11.

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<sup>159</sup>COM (2019), 522 final, Council Recommendation on the 2019 National Reform Programme of Portugal and delivering a Council opinion on the 2019 Stability Programme of Portugal, Brussels, 5.6.2019. Accessed on 27 September 2019.

<sup>160</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Portugal to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Portugal. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

### *Recitals*

The CSR for Portugal makes no specific mention in the recitals of the need to intervene regarding TO11.

### *Opportunities*

In recommendation 4, the CSR for Portugal encourages to increase the efficiency of administrative and tax court by decreasing the length of proceedings. A solution could be to implement eTax tools in the administration to improve these processes.

In recital 18, it is stressed that shortcomings in planning and monitoring public procurement are currently hindering competition. For this, it would be useful to promote and implement the use of an eProcurement solutions as it provides a comprehensive overview of all the phases of the awards.

## **3.22.4 National Reform Programme**

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Portugal's NRP.<sup>161</sup>

### **Thematic Objective 2**

- **Support the digitalisation of businesses:** Through the Programme Interface, the government aims at supporting entrepreneurship in emerging technological areas. Also noteworthy is the strengthening and capacity building of scientific and technological infrastructures, in particular the Technology Interface Centres, which will intensify the transfer of knowledge to the business sector and promote the internationalisation of knowledge.
- **Improvement of digital skills:** In Portugal, 45% of the population has little or no digital skills. To strengthen these skills of the population, the InCode2030 Programme had been put into place. The main objective of the Programme is to place Portugal in the group of most advanced European countries in terms of digital skills by 2030. In this regard, three major challenges need to be tackled: generalise digital literacy; encourage employability and training and professional expertise in digital technology; and increase participation in international networks of research and development and production of new knowledge in all areas associated with the digital transformation. The intent is to invest in enhancement of learning contexts and skill profiles, teaching resources associated with new technologies of information and communication that promote digital literacy will therefore be made available. Finally, European Structural and Investment Funds will also be allocated to promote digital skills among population.
- **Production of ICT-related teaching resources:** Among the many actions carried out in the education field, the most recent ones are the following: the creation of a Training Offer Portal as well as the launch of many trainings in digital literacy through the School Library Network; and the creation of a platform for the distribution of free textbooks and digital licenses to all 1<sup>st</sup> to 12<sup>th</sup> grade students nationwide.

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<sup>161</sup> Portugal National Reform Programme 2019. Accessed on 21 October 2019.

- **Investment in digital infrastructure:** An Action Plan for the Industry 4.0 will be developed based on the modern digital networks, so it can be appropriate for a strong dependence on the digital economy. In the context of establishing this digital infrastructure, the government will monitor the conditions for the development of a private investment programme to extend the digital networks by 2020. This would include investment in the expansion of optic fibre networks and 4G mobile networks.
- **Digitalisation of the culture sector:** The contents of libraries and other cultural institutions have been made available online through virtual spaces in order to foster social inclusion and strengthen literacies.
- **Geospatial portal to enhance the Cadastral Information System:** Within the domain of forest ownership, a pilot project was developed for the application of the Simplified Cadastral Information System, aimed at the immediate identification of the land structure and ownership of rustic and mixed buildings, including the georeferencing of properties and the special procedure of registration of rustic and mixed omitted buildings.
- **Development of eGovernment Portals to enhance competitiveness:** To strengthen both the competitiveness of the economy as well as the bond of trust between citizens, businesses and the state, the Simplex + Programme has been created. It includes the project One Stop Employment which aims to concentrate in a single portal all interactions of both unemployed citizens in their job search processes as well as employers hiring new workers.
- **Implementation of a Digital Court Service Area:** From November 2018, it is possible for any citizen to consult in the new Digital Court Services Area, at [tribunais.org.pt](http://tribunais.org.pt), their legal proceedings, whether they run in the judicial courts or in the administrative and tax courts.
- **Measures to foster eHealth solutions within the National Health system:** Given the good results of the dematerialised electronic revenues in the National Health System, the implementation of the electronic prescription of Complementary Diagnostic and Therapeutic Means is underway.

#### **Thematic Objective 11**

- **Enhancement of digital literacy and skills in the public sector:** Since 2019, the Programme Qualifica AP aims to respond to the specific qualification needs of the human resources of the different Public Administration bodies and services, enabling the creation of a model of continuous lifelong training, fundamental to meet the challenges of bureaucracy, digitalisation, and quality of public service. Moreover, to enhance professional training of public administration employees the Centre of Juridical Competences (JurisAPP) and the Centre of Digital Competences of Public Administration (TicAPP) were created.
- **Public administration ICT system revision:** To improve the human resources management of the Public Administration, a revision of the current State Organisation Information System (SIOE) is scheduled for 2019, through the SIOE + platform that presents itself as a unique resource management information system.

- **Implementation of eInvoice:** The digital issuance, transmission, reception and processing of invoices was established in 2019 in accordance with formats and rules defined by the European Commission.
- **Modernisation of the education system:** Several actions have been implemented to improve in a first place the teaching and learning environments as well as the information management systems. Moreover, curricular and pedagogical references oriented to the acquisition of competences have been developed. And, finally, strategies that foster digital literacy and inclusion have been designed and planned.

### 3.22.5 Operational Programmes

For the funding period 2014-2020, one OP of Portugal is specifically dealing with themes related to TO2 and TO11. The OP 'Competitiveness and Internationalisation'<sup>162</sup> focusses on a more competitive economy based on knowledge intensive activities; investment in tradable goods and services; strengthening the export orientation of Portuguese companies; improvement of transport and the increased efficiency of public services.

#### Thematic Objective 2

- **Facilitation of public services' delivery online:** The use of ICT by citizens and businesses will be promoted by the delivery of public services online. In particular, the implementation of information system for Portugal 2020 will be updated and improved to function as the promotor of simplification of regulation and easy access by using electronic forms.
- **Development of cybersecurity:** Portugal plans to adopt procedures and the security tools needed to ensure the effectiveness and efficiency of information systems. This aims to allow the establishment of access conditions to the insurance and differentiated information of user profiles.
- **Establishment of eInclusion:** The Portuguese government considers equal opportunities, non-discrimination and accessibility as crucial elements in the Portugal in 2020 programme. Therefore, it intends to minimise information and technical barriers by promoting digital literacy and, more particular, access to eGovernment to populations suffering from additional constraints.
- **Investment in new technologies and programming systems:** To support the scientific and technological research, Portugal will invest in infrastructures that include computer and programming systems as well as communication networks that promote digital open access to scientific resources, such as archives and scientific databases.
- **Creation of an eGovernment portal for citizens:** To promote the intensive use of ICT and increase efficiency and transparency in the provision of public service, Portugal plans to continue its modernisation effort though establishing more digital services. In particular, there will be the Citizen's Spaces and Citizen's Stores, which are new, more decentralised formats.

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<sup>162</sup> Portugal Competitiveness and Internationalisation Operational Programme. Accessed on 9 December 2019.



The Citizens Spaces provide various types of public services in a mediated way, including digital assistance.

- **Development of eHealth services and facilities:** Portugal will enable the use of eHealth facilities by supporting the creation of electronic appointment projects. Furthermore, it will modernise the health infrastructure already in place and extend this with the creation and use of platforms to share information among health services as well as between health services and public administration.

#### **Thematic Objective 11**

- **Set-up of a base register for prosecutors:** Portugal will create a base register for prosecutors. The system will enable them to store in a single base, all information available in the public administration of the beneficiary, significantly reducing the administrative burden on prosecutors, not holding specific visibility to users or own image.

## 3.23 Romania

### 3.23.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Romania's CSR of 2019.<sup>163</sup>

Romania is currently in the preventive arm of the Stability and Growth Pact. The country is expected to reach a headline deficit of 2,8% of GDP in 2019 with a gradual reduction thereafter to reach 2,0% of GDP by 2022. The medium-term budgetary objective, which is a structural deficit of 1% of GDP is not expected to be reached by 2021. The general government-debt-to-GDP ratio is expected to remain below 40% by 2022. However, the Council found that the country regularly ignores the provisions and recommendations of its national fiscal framework for the planning of its budget.

Tax compliance in Romania remains low, as the prevalence of cash payments permits tax evasion. The introduction of electronic cash registers connected to the tax administration's information technology system was put forward as a solution but is being implemented rather slowly.

Despite some tentative developments in recent years, poverty and income inequality persist and remain high in Romania. Regional disparities also significantly deepened. One in three Romanians is at risk of poverty, with vulnerable groups such as children, the Roma or people with disabilities being further exposed and affected. Social services continue to lack basic services for all and are unevenly spread across the country. The social index has not been updated since 2008 and has further deteriorated in relation to the minimum wage.

The Romanian labour market has increasingly been under pressure, as the unemployment rate continues to be very low (4,2% in 2018). In addition, the labour force suffers from a steady decline and from significant skills shortages. Women's activity rate is particularly low due to personal and family responsibilities. Furthermore, skills are not evolving in line with the needs of expanding economic sectors, with 81% of employers having difficulties filling job vacancies.

The healthcare system continues to face significant challenges such as low funding, ineffective use of public resources and lack of reforms. These impediments limit the effectiveness of the system and are a source of concern particularly for vulnerable groups of people and those living in rural areas, who have limited access to health services.

Investment in research and development is the lowest in the Union (0.5% of GDP). The country's innovative capacity is thus very limited and there are important skills shortages in the sector. In addition, Romania's digitalisation skills and capacities are limited and the country scores poorly on many components of the Digital Economy and Social Index.

Economic  
Outlook

Tax system

Social  
inclusion

Labour Market

Healthcare

Research and  
Innovation

<sup>163</sup> COM (2019), 523 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Romania and delivering a Council opinion on the 2019 Convergence Programme of Romania, Brussels, 5.6.2019. Accessed on 20 September 2019.

### 3.23.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in Romania since 2017. The information originates from the Digital Government factsheet of Romania.<sup>164</sup>

#### **Legislation**

In compliance with the eIDAS Regulation, Romania passed a specific law on eID and trust services for electronic transactions. The law establishes the legal regime of the electronic signature and of the law documents in electronic form, as well as the conditions for the provision of reliable services.

#### **Governance**

Romania has established the Digital Romania Council, an expert group whose chief aim is strengthening the development of information society.

#### **Infrastructure**

The Romania Virtual Payment Office (Ghiseul.ro) was upgraded with an access point eDelivery, which ensures the interconnection of the Payment Office with other information systems for data exchange. The platform allows citizens to make electronic payment of fines, taxes and other fiscal obligations via bank cards.

### 3.23.3 Country Specific Recommendations

The CSR for Romania<sup>165</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>166</sup>

#### **Thematic Objective 2**

##### *Recommendations*

In recommendation 3, the CSR for Romania urges the country to improve its digital skills which are necessary if the country wishes to foster its innovative skills and enhance its future competitiveness. eSkills will promote the creation of digital public services for all Romanians, improve the digital skills of all citizens and foster the digitalisation of businesses. Their use will also help Romania score higher on the components of the Digital Economy and Social Index.

##### *Recitals*

The CSR for Romania makes no specific mention in the recitals of the need to intervene regarding TO2.

##### *Opportunities*

As pointed out by recital 18, the healthcare system remains below Union standards due to problematic healthcare access, inefficient use of resources and a lack of doctors and nurses. To improve efficiency

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<sup>164</sup> Digital Government Factsheet 2019, Romania. Accessed on 20 September 2019.

<sup>165</sup> COM(2019), 523 final, Council Recommendation on the 2019 National Reform Programme of Romania and delivering a Council opinion on the 2019 Convergence Programme of Romania, Brussels, 5.6.2019. Accessed on 20 September 2019.

<sup>166</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Romania to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Romania. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

of the system, the country could deploy eHealth measures so as to improve both the management and communication across the hospitals. The barriers that hinder access to the services could also be lowered if patients are encouraged to use digital tools for their healthcare.

## **Thematic Objective 11**

### *Recommendations*

The CSR for Romania makes no specific mention in the recommendations of the need to intervene regarding TO11.

### *Recitals*

Tax compliance and collection remain a challenge for Romania, as mentioned in recommendation 1. Thus, in recital 9, the CSR urges the country to fasten its usage of electronic cash registers connected to the tax administration's IT system. Until now, the system has been progressing at a rather slow pace but the usage of eTax is essential in the fight against tax evasion, which continues to be an important challenge in the country.

### *Opportunities*

In recommendation 4, Romania is advised to improve the efficiency of its public procurement and to ensure the full and sustainable implementation of the national public procurement strategy. In this regard, the country could develop and implement eProcurement tools to ensure a faster, simpler and harmonised procurement process.

As mentioned in recital 23, Romania is faced with cumbersome administrative procedures and regulatory requirements. There is also a high fragmentation of responsibilities and resources which deeply affects the consistency and availability of the public services provided, particularly at the local level. One solution for this, would be to introduce an eGovernment measures so as to create a more coherent and systematic sharing of information amongst the various public services, thus preventing long delays or inconsistencies of the services.

## **3.23.4 National Reform Programme**

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Romania's NRP.<sup>167</sup>

## **Thematic Objective 2**

- **Digitalisation of the business environment:** To further develop and enhance the digitalisation of Romanian businesses, which the government considers of high importance, it plans to increase the use of eGovernment solutions to offer support to businesses. The system *Strengthening and Ensuring Interoperability of Electronic Systems Designed to eGovernment Services Type 2.0* was put into place to this end. It will focus on making the life events of citizens and business more sophisticated, develop a governmental cloud and social media communication and set up Open Data and Big Data measures.

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<sup>167</sup> Romania National Reform Programme 2019. Accessed 17 October 2019.

- **Online registration of enterprises:** In order to facilitate the registration of enterprises, the Romanian government put in place the ONRC portal online services, which is an integrated IT system designed to engender benefits for both citizens and businesses as well as the public administration.
- **Creation of the national cybersecurity system:** Romania adopted a new Law concerning the need to adopt measures for a higher common level of security of its networks and information systems. Thus, it set up a national cybersecurity system (SNSC) as a way of fighting against cyber threats and hacks.
- **Establishment of Romania's digital library:** In order to preserve its cultural, scientific and educational heritage, the country set up the project *eCulture: The Digital Library of Romania*. The project aims at digitalising Romania's cultural heritage through modern ICT tools and technologies, in order to safeguard, promote and ensure the national heritage is well-preserved for future generations. As an interdependent project, the eHeritage project was also developed, with the goal of developing a thorough database of all historical monuments across Romania using ICT tools.
- **Improvement of students' and teachers' skills:** The Ministry of Education recently implemented the project *Promoting and supporting excellence in education through the development of competences in information technology*, in cooperation with the government of Japan. The project intends to create optimal conditions for the training and development of high-school students, especially in the Math-IT class, by putting in place and operationalising 60 IT training centres for them. The further digitalisation of the education system will also be achieved through the national project *Modern Romania, Digital Romania*, which will provide tablets, computers, smart boards in classrooms, and other technologies for every school in the country. In addition, the government implemented the new project IT System for School Management in Pre-University Education, with the aim of developing students' digital skills prior to university.
- **Development of the eSocial welfare system:** The country wishes to develop a national social assistance system through the project *Developing and rendering inter-operational all social assistance databases and creating the eSocial welfare system*, as part of the Digital Agenda of Romania. By doing so, it hopes to establish the right to the minimum inclusion income through ICT tools.
- **Digitalisation of the health system:** In the health sector, projects are continuously put in place to provide patients and citizens with the best-quality digital services. The creation of the Electronic Health Record is a first step in this direction. Moreover, 102 centres now have access to telemedicine tools, which simplify and fasten all medical procedures.
- **Simplification of administrative burdens for citizens:** The Romanian government put in place a single platform, named Zero Bureaucracy, aimed at simplifying the administrative procedures applicable to citizens. This will be done through the provision of digitalised public services and the integration of these services with other similar ones, such as government cloud. The project also aims at facilitating the communication and interaction between the public entities and the Romanian citizens and businesses.

## Thematic Objective 11

- **Improvement of tax collection:** Romania further developed and enhanced its electronic system for payment and for checking taxpayers' situations, in order to improve its overall tax collection and fight against tax evasion. To do so, it put in place two services: The Virtual Private Space, which is a complex IT system that facilitates communication with taxpayers and helps simplifying the taxing procedures. The second service is PatrimVen which is a system that gathers, aggregates and makes available various information on the assets of taxable persons in Romania. The National Agency for Fiscal Administration also implemented electronic cash registers as a further measure to ensure tax compliance.
- **Creation of the eJustice portal:** The government operationalised an eJustice portal in order to increase the access of Romanian companies to information on partner companies from other Member States, which will deepen interconnections and facilitate interoperability.

### 3.23.5 Operational Programmes

For the funding period 2014-2020, two OPs of Romania are specifically dealing with themes related to TO2 and TO11. The OP 'Administrative Capacity'<sup>168</sup> focusses on improving the efficiency, the transparency and the accessibility of Romania's public administration and judicial system. The OP 'Competitiveness'<sup>169</sup> will address the challenges that stem from the low support for research and development and the under-developed ICT services and infrastructure.

## Thematic Objective 2

- **Promotion of Open Data practices:** The Romanian government described in OP 'Administrative Capacity' that it will invest in fostering the use of open data. More concretely, this will happen by improving the legal framework on freedom of information, developing the relevant standards for presentation data and increase the ability of civil society and businesses to use and integrate information generated by open data. Furthermore, OP 'Competitiveness' indicates that cloud interoperability and standardisation of government databases will be set out to increase quality of public services. As part of Romania's commitment in the Open Data initiative, an open Data portal will be functional and accessible from the pan-European portal.
- **Introduction of a Cybersecurity infrastructure:** Romania acknowledges in OP 'Competitiveness' cybersecurity infrastructure for electronic data networks and electronic communication services is a priority. Therefore, interventions are set out to increase security in networks/ ICT applications in order prevent cyberattacks. These interventions will be carried out in compliance with EU Directive/40/2013 on attacks against information systems and cybersecurity strategy the EU 2013. In addition, action is planned to increase the trust of citizens / businesses in terms of security operations in cyberspace.

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<sup>168</sup> Romania Administrative Capacity Operational Programme. Accessed on 9 December 2019.

<sup>169</sup> Romania Competitiveness Operational Programme. Accessed on 9 December 2019.

- **Establishment of a broadband network:** To contribute to digitalisation of education, Romania sets out in OP 'Competitiveness' it will connect schools in rural and small urban areas to high speed internet. The project has been started in the previous programming period and now enters into the phase of delivery, installation, testing and acceptance of equipment. The Romanian Digital Agenda does not only provide broadband infrastructure for schools but aims to develop basic broadband infrastructure throughout the country.
- **Adoption of new ICT teaching models:** The Romanian government plans in OP 'Competitiveness' to adopt teaching models for ICT with a particular focus on the enhancement of digital skills. In this respect, networks and platforms will be set up to facilitate knowledge exchange and the government will invest in the provision of infrastructure and equipment. Furthermore, a digital culture in teaching will be established.
- **Enforcement of inclusion:** Romania described in OP 'Competitiveness' its intentions to enhance the development of ICT in disadvantaged communities. Therefore, the POC PAPI programme plans to finance specific infrastructures such as computers, servers and internet access. The aim is to achieve digital literacy in vulnerable communities and, in this way, to combat exclusion.
- **Enhancement of the eHealth system:** As said in OP 'Competitiveness', the existing Romanian health information systems will be linked to an integrated eHealth system to increase the degree of interoperability. Furthermore, the healthcare system will be streamlined by accelerating the use of modern eHealth ICT tools.
- **Investments in eCulture:** Romania will ensure online accessibility of cultural elements by creating conditions for digitalisation and preservation of content, according to OP 'Competitiveness'. In addition, investments in eCulture will be made to make culture accessible to the general public on the one hand and to promote tourism on the other.

#### **Thematic Objective 11**

- **Development of eJustice:** Romania indicated in OP 'Administrative Capacity' it will continue its efforts on the development of eJustice. To do so, reliable access and real-time citizen information and documents recorded in registers will be provided. Furthermore, an upgrade of the IT systems support is planned, and IT solutions will be put in place for electronic filing of cases, e-files. These files will be granted improved access which will ensure a greater transparency of the judiciary.
- **Enhancement of the public administration through ICT means:** By creating an information society, Romania aims to increase the level of eGovernment services. This has been set out by OP 'Competitiveness'. The objective is to increase the efficiency of public administration by means of ICT as indicated in the Digital Agenda for Europe.
- **Development of an eGovernment and interoperability framework:** Romania will support interventions ensuring that the institutional and administrative capacity of public institutions of ICT management will be strengthened, as stated in OP 'Administrative Capacity'. Furthermore, to support the development of eGovernment, the administrative capacity, legislative common standards and interoperability will be guaranteed.

- **Creation of an eProcurement system:** To develop more transparency and accountability in the public procurement system, the use of electronic systems and support tools in Romania will be increased. This has been stated by the OP 'Administrative Capacity'.
- **Enhancement of electronic systems' interoperability:** To deal with the identified gaps of interoperability of electronic systems in public authorities, interventions will be put in place to establish end-to-end interoperability as part of the Government Enterprise Architecture. This corresponds with OP 'Competitiveness'. The aim of the project is to define a uniform set of standards used for ICT initiatives. Furthermore, the principles of eGovernance will be aligned with Directive 2013/37/EU on the promotion of re-using public sector documents.



## 3.24 Slovakia

### 3.24.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Slovakia's CSR of 2019.<sup>170</sup>

Slovakia is still in the preventive arm of the Stability and Growth pact. The Government plans an improvement of its headline balance from a deficit of 0,7% of GDP in 2018 to a balanced budget in 2019 and to then remain stable until 2022. The 2019 Stability Programme expects the government debt-to-GDP ratio to gradually decline from 47.5% in 2019 to 44.4% by 2022. The nominal growth rate of net primary government expenditure should not exceed 4.6%, corresponding to an annual structural adjustment of 0.3% for 2019. Slovakia is expected to comply with the debt rule in both 2019 and 2020.

Slovakian public finances face sustainability risks in the long term, particularly due to healthcare and pension expenditure which are driving up ageing costs. According to the Fiscal Sustainability Report, a cumulated improvement of 2.5 pps of GDP in the structural primary balance would be required to stabilise the debt-to-GDP ratio over the long term.

While some progress has been made in the fight against tax evasion, problems related to tax compliance remain a challenge for Slovakia. In 2016, the VAT compliance gap was more than twice the EU average. However, the Third Action Plan is expected to bring positive results. For example, the introduction of electronic tax returns will most likely reduce any administrative burden on taxpayers.

The Slovakian labour market has undergone positive developments due to increased employment, leading to historically low levels of unemployment. Nevertheless, the long-term unemployment rates are still among the highest in the Union, particularly affecting the low-skilled, young people and Roma. In addition, skilled labour shortages are still reported and severe regional disparities in the labour market persist, especially in three regions of eastern Slovakia where higher unemployment is continuously reported.

The country implemented some reforms aimed at improving the cost-effectiveness of the healthcare system. However, the degree of implementation differs across care areas. Hence, more should be done to further increase efficiency and better-value care in Slovakia, by strategically reallocating resources between the different care areas.

Despite government efforts, heavy administrative and regulatory burdens continue to persist in the Slovak business environment. These hamper on future investments and innovation, particularly for small- and medium-sized enterprises. However, these challenges should be addressed in the new Slovakian "Better Regulation Strategy" (RIA2020) and with the strengthening of its Better Regulation Centre. In addition, the government is substantially reforming public procurement practices so as to simplify the procedures and reduce transaction costs.



<sup>170</sup> COM(2019), 525 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Slovakia and delivering a Council opinion on the 2019 Stability Programme of Slovakia, Brussels, 5.6.2019. Accessed on 30 September 2019.

### 3.24.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in Slovakia since 2017. The information originates from the Digital Government factsheet of Slovakia.<sup>171</sup>

#### Political Communications

Slovakia launched a Digital Transformation Strategy 2019-2022. Its Action Plan provided an official strategy to define specific policies and priorities with regard to the ongoing digital transformation of the economy and society.

#### Legislation

By amending the Act on government, the delivery of official documents, online payments for electronic services and simplified authorisation of electronic documents has been introduced. This implies that electronic submissions can be signed using an eID card without qualified electronic signature, the so-called one click signature.

#### Infrastructure

In 2018, Slovakia implemented a new portal, [oversi.sk](https://oversi.sk), that allows for the verification and exchange of four types of documents between government authorities: the cadastral map, the commercial register, the criminal record and land register. In addition, the Slovakian Financial Administrator also introduced a new project to facilitate the online connection of all cashiers to the eKasa financial management portal. It was part of a range of measures to combat tax fraud. From 1 May 2019, all new facilities and new cash registers were required to be connected to the system.

#### Services

The Slovakian government introduced a digital service in September 2018 called OVER SI. Based on the Central Data Integrated Platform, it was set up in response to the Government's Stop to Bureaucracy initiative. In due course, more than 16 000 public administration clerks performing duties at different domains were registered in order to provide themselves with the requested evidence (in the first phase evidence came from business registers (companies, self-employed), from cadastre and from criminal register). By the end of 2019, another batch of 11 sources of evidence was expected to be made available via the OVER SI.

### 3.24.3 Country Specific Recommendations

The CSR for Slovakia<sup>172</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>173</sup>

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<sup>171</sup> Digital Government Factsheet 2019, Slovakia. Accessed on 20 September 2019.

<sup>172</sup> COM(2019), 525 final, Council Recommendation on the 2019 National Reform Programme of Slovakia and delivering a Council opinion on the 2019 Stability Programme of Slovakia, Brussels, 5.6.2019. Accessed on 30 September 2019.

<sup>173</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Slovakia to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Slovakia. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

## **Thematic Objective 2**

### *Recommendations*

In recommendation 3, the Commission urges Slovakia to focus its future investments on improving its healthcare services and solutions through new research and innovative tools. The use of eHealth could improve the access and quality of care that is currently lagging behind in the country.

### *Recitals*

The CSR for Slovakia makes no specific mention in the recitals of the need to intervene regarding TO2.

### *Opportunities*

In recital 12, the CSR mentions the need for Slovakia to implement new measures to foster equity and inclusivity, as these have fallen short of expectations. Recommendation 2 also urges the country to promote the integration of disadvantaged groups, in particular Roma. This could be an opportunity for the country to introduce and implement eInclusion measures, so as to overcome exclusion and improve employment opportunities for all, through the use of ICT tools.

## **Thematic Objective 11**

### *Recommendations*

The CSR for Slovakia makes no specific mention in the recommendations of the need to intervene regarding TO11.

### *Recitals*

In recital 10, the Commission urges Slovakia to continue with the implementation of electronic tax returns. The use of eTax would be beneficial for the country as it would reduce the administrative burden placed on the taxpayers, ensure a better harmonisation of all financial administration processes and continue the fight against tax evasion which is still a prominent challenge for the country.

### *Opportunities*

Slovakia's public administration continues to show inefficiencies and bottlenecks due to poor inter-ministerial and inter-governmental cooperation according to recital 20. Here, the solution could be to put in place an internal eGovernment platform so as to ensure a coherent sharing of information amongst the various public services. This would enhance both cooperation and communication. In addition, these portals would also serve to lessen the administrative and regulatory burdens, that continue to affect investment and innovation in Slovakia, as mentioned in recital 18.

Slovakia's judicial system continues to face significant challenges, particularly linked to its contested independence. In fact, despite some recent improvements, recommendation 4 urges the country to strengthen and improve the overall effectiveness of the system. This could be done through the deployment of eJustice measures so as to make the legal system more accessible and transparent.

### 3.24.4 National Reform Programme

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Slovakia's NRP.<sup>174</sup>

#### Thematic Objective 2

- **Implementation of eHealth and electronic healthcare services:** Slovakia has been putting in place some eHealth measures since 2018, with the creation of online health documentations and electronic appointment planning. However, it aims to further expand this sector by setting up electronic examinations, personalised treatments and by putting in place eLabs, or electronic laboratories.
- **Reduction of the administrative burden for businesses and citizens:** Further digital services have been put in place in order to reduce the administrative burdens affecting citizens and business operations. This is gradually being achieved through the implementation of the anti-bureaucracy law, which will allow legal entities and individuals to submit online their certificates of tax arrears, social and health insurance documents, and various other certificates.
- **New regulation to facilitate registration of businesses:** The Department of Justice will take specific measures towards the improvement of the business register aimed at reducing the administrative and regulatory burdens that currently impede on businesses and courts when registering a business organisation. The regulation will also standardise fees and improve electronic services for business operators.
- **Implementation of new eGovernment measures:** The Slovak government aims at extending and simplifying the use of electronic services such as eID and electronic boxes. It also amended a previous act on eGovernment which intends to migrate all Slovak eServices to a cloud platform as a way of improving the management of the national IT and facilitate access to these measures to all citizens.
- **Enhancement of digital skills in education:** Slovakia also developed a digital transformation vision for the education sector. Indeed, the Slovak Action plan of digital transformation for 2019-2022 contains measures to enhance digital skills in schools, in order to encourage the development of the digital economy and the future of the labour market.

#### Thematic Objective 11

- **Implementation of the electronic invoicing system:** The country has put in place the electronic invoicing system, which will make the transactions between the public and private entities faster and less burdensome.
- **Implementation of electronic cash registers:** Slovakia has started the implementation of the eKasa system, the country's electronic cash register. This tool will ensure a fairer competition between taxpayers, improve control activities and thus facilitate the fight against

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<sup>174</sup> Slovakia National Reform Programme 2019. Accessed on 18 October 2019.

tax evasion. In addition, it will help business operators in the reduction of costs and administrative burdens.

- **Full electronisation of public procurement:** Slovakia recently implemented the full electronisation of its public procurement procedures. eProcurement is intended to accelerate proceedings and improve the efficiency and transparency of procurement procedures.

### 3.24.5 Operational Programmes

For the funding period 2014-2020, two OPs of Slovakia are specifically dealing with themes related to TO2 and TO11. The OP 'Effective Public Administration'<sup>175</sup> focusses on reducing regulatory and administrative burdens as well as promoting high standards of transparency, integrity and accountability in the Slovak public administration. The OP 'Integrated Infrastructure'<sup>176</sup> has as main objectives to establish sustainable mobility; foster economic growth; improve the business environment and develop an information society.

#### Thematic Objective 2

- **Promotion of eParticipation:** To provide all citizens an equal chance to participate in public affairs, modern technologies will be used by Slovakia to establish eDemocracy means. This is established in OP 'Effective Public Administration'. The goal is to raise the number of respondents the traditional systems have and focus on civil and human rights.
- **Modernisation of the judicial education system:** OP 'Effective Public Administration' set out that, to prepare the judges, prosecutors and other employees of the judicial system, trainings will be developed to enhance their digital skills. Slovakia will set in place these trainings, so these employees can efficiently use the new electronic court records.
- **Provision of an inclusive digital education:** Slovakia aims in 'Integrated Infrastructure' to have its eServices used by all citizens. Therefore, additional efforts will be made to include the disadvantaged groups. To this end, assistance and infrastructure availability will be established in order to increase their benefits of participation in the digital market.
- **Establishment of eServices for the citizens:** To provide digital services to its citizens, according to OP 'Integrated Infrastructure', Slovakia will put in place the actions needed to ensure eCommerce, eID, eCulture and eCustom services. The main goal is to stimulate citizens and businesses to use more digital tools.
- **Creation of broadband network:** Slovakia intends, based on OP 'Integrated Infrastructure', to build broadband infrastructure throughout the country, including rural areas. This is to support the digital single market and the Digital agenda for Europe, ensuring a 100% coverage of high-speed internet offer 30 Mbit/s.
- **Ensure cybersecurity for citizens:** As the digital activities of citizens increase, Slovakia sets out in OP 'Integrated Infrastructure' to proceed in the light of the measures contained in the

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<sup>175</sup> Slovakia Effective Public Administration Operational Programme. Accessed on 9 December 2019.

<sup>176</sup> Slovakia Integrated Infrastructure Operational Programme. Accessed on 9 December 2019.

EU Cyber Security Strategy presented in February 2013. In particular, risk management measures will be implemented. The goal is to improve confidence in digital space and increase awareness on cyberattacks.

#### **Thematic Objective 11**

- **Development of eJustice:** Slovakia supports in OP 'Effective Public Administration' the development of eJustice by introduction electronic court records and electronic exchange of information to provide more efficient administrations within the judicial system.
- **Establishment of an eGovernment cloud service to ensure interoperability between the various government departments:** Slovakia plans in OP 'Integrated Infrastructure' to link the use of eGovernment to the identified life events of citizens. These events can be delivered electronically by the citizens which will simplify and automate the process of serving citizens. The implemented life situations will be linked to eServices delivered by various government departments. The interoperability will be provided by establishing eGovernment Cloud services.
- **Establishment of a security system for the exchange of data within the public administration:** To provide secure data exchange within public administration, Slovakia set out in OP 'Integrated Infrastructure' to develop clear rules that establish a security system that meet the highest requirements.
- **Establishment of eInvoicing:** Slovakia set out in OP 'Effective Public Administration' that it will not only put in place the conditions for the introduction of measures on eInvoicing but also to transpose the related EU directives.

## 3.25 Slovenia

### 3.25.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Slovenia's CSR of 2019.<sup>177</sup>

Based on the 2019 Stability Programme, the headline surplus is expected to increase to 0.9% of GDP in 2019 and to 1.2% of GDP in 2021. Therefore, the medium-term budgetary objective, which has been changed to a structural deficit of 0.25% of GDP from 2020, is planned to be achieved in 2021. According to the Programme, the general government debt-to GDP ratio is projected to fall to 65.4% of GDP in 2019 and to 54.7% of GDP in 2022. Slovenia is forecast to comply with the debt rule in 2019 and 2020 even if it needs to stand ready to take further measures to comply with the Stability and Growth Pact as of 2020.

Slovenia is urged to continue in its efforts to reform the healthcare system and to face, as many other EU countries, an ageing population and an increase in the long-term care expenditures. A strategy is being drafted; however, it remains unclear how the envisaged measures will improve cost-effectiveness, accessibility and cost of care. Concerning healthcare public procurement, it is plausible that improved coordination measures will take place.

The national reform programme 2019-2020 mentions the possibility of an overhaul of the pension system to support the sustainability of it. The main challenges the country needs to address in this field are: extending working lives and providing better opportunities for exploiting the human resources of older workers, adjusting the statutory age and promoting later retirement, addressing career paths and reducing poverty risks amongst the elders.

The labour market is gradually progressing in terms of employment, but Slovenia faces challenges in particular for low-skilled and older workers. Their employment rates remain amongst the lower in the EU. While the 2013 labour market reform clearly helped some vulnerable groups, temporary employment stills an issue. Moreover, signs of labour shortages are emerging in several sectors of the economy which may hinder industrial transformation and smart specialisation. Hence, developing digital skills in the future workforce is highly recommended.

Slovenia's business environment remains hindered by a high level of administrative burden, for instance in the area of tax compliance, but also due to restrictive regulation on access to and exercise of regulated professions, which influences negatively in the inflow of investment. The CSR for Slovenia stresses the necessity to further eliminate inefficiencies in public administration. Finally, public procurement procedures need to be more efficient and transparent, and anti-corruption reforms should be fully implemented.

In what binds to research and innovation, there is a lack of coherence in several supporting measures that hinders cooperation between science and business and the creation of innovative companies. In addition, Slovenia's slow digital transformation limits productivity growth. The programming of EU



<sup>177</sup> COM (2019) 423 final, Council Recommendation on the 2019 National Reform Programme of Slovenia and delivering a Council opinion on the 2019 Stability Programme of Slovenia, Brussels, 5.6.2019. Accessed on 19 September 2019.

funds for the period 2021-2027 may help address some of the gaps identified but implementing a strong administrative capacity for the management of these funds is also an important factor to take into consideration.

### *3.25.2 Country Digital Government Outlook*

The following are some of the digital government highlights having occurred in Slovenia since 2018. The information originates from the Digital Government Factsheet of Slovenia.<sup>178</sup>

#### **Political Communications**

In the context of the Slovenian Public Administration Development Strategy 2015-2020, which also covers digital government strategy, the Government has adopted an action plan every two years. In 2018, the new Semantic Interoperability Implementation Strategy was prepared. In the field of emerging technologies, an action plan for the preparation of the basis for enhanced implementation of blockchain technologies and building the corresponding environment for the regulation of crypto currencies in relevant regulatory areas, was adopted.

#### **Legislation**

Following Directive (EU) 2016/1148 (NIS Directive), the Act regulated measures to achieve a high level of network and information security in the Republic of Slovenia, which was essential for the smooth functioning of the state in all security conditions. It provided essential services for the preservation of key social and economic activities and regulated the provision of cyber defence in the Republic of Slovenia.

#### **Governance**

The Ministry of Public Administration is the one in charge of Digital Government Governance. Rudi Medved was appointed the new Minister of Public Administration. He was assisted by Mojca Ramšak Pešec and Leon Behin as the State Secretaries for the Ministry of Public Administration. In terms of Digital Government, the IT Directorate of the Ministry, led by Mihael Krišelj as Director-General, played the central role.

#### **Infrastructure**

The Ministry of Public Administration provides central platforms for authentication and trust services. SI-PASS the central authentication and eSignature service, offers the possibility to verify electronic identities in one place and enables remote eSignature according to eIDAS requirements. The system has already been integrated into most important eGovernment portals. In 2018, a new service, smsPASS, was launched, to enable the use of mobile devices for authentication and eSignature through SI-PASS services. At present, this functionality is enabled for citizens using the main state eGovernment portal.

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<sup>178</sup> Digital Government Factsheet 2019, Slovenia. Accessed on 1 October 2019.



## Services

As of 1 April 2018, the implementation of mandatory eSubmission tenders in the Slovenian public procurement system was put in place. This included access to electronic services for simpler and faster implementation of public procurement procedures. Moreover, the State government portal eUprava, which is managed by the Ministry of Public Administration, is offering and developing eServices for citizens. In 2018, two new important services were launched. Slovenian drivers now have access to their driving record and traffic penalties, and there is an eApplication for organ donations in case of death.

### 3.25.3 Country Specific Recommendations

The CSR for Slovenia<sup>179</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>180</sup>

#### Thematic Objective 2

##### *Recommendations*

In recommendation 1, Slovenia is called on to increase the employability of its low-skilled and older workers through lifelong learning and especially through better digital literacy. Indeed, this solution might tackle labour shortages in certain fields and help workers meet the requirements of the labour market.

##### *Recitals*

The CSR for Slovenia makes no specific mention in the recitals of the need to intervene regarding TO2.

##### *Opportunities*

In recital 17, the CSR for Slovenia stresses the slow digital transformation of small and medium-sized enterprises, as well as their low innovation capacity. A solution could be to set up a strategy on the digitalisation of businesses and invest further in science and business cooperation.

#### Thematic Objective 11

##### *Recommendations*

The CSR for Slovenia makes no recommendation of the need to intervene in the field of TO11.

##### *Recitals*

The CSR for Slovenia makes no specific mention in the recitals of the need to intervene regarding TO11.

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<sup>179</sup> COM (2019) 423 final, Council Recommendation on the 2019 National Reform Programme of Slovenia and delivering a Council opinion on the 2019 Stability Programme of Slovenia, Brussels, 5.6.2019. Accessed on 19 September 2019.

<sup>180</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Slovenia to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Slovenia. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

## *Opportunities*

In recital 15, public procurement in Slovenia is defined as inefficient and non-transparent. To help overcome these issues, the introduction of eProcurement solutions may be beneficial.

### *3.25.4 National Reform Programme*

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Slovenia's NRP.<sup>181</sup>

#### **Thematic Objective 2**

- **Measures in acquiring new competencies:** In 2019, the Slovenian government will begin implementing a new project designed for people threatened with the loss of their job. Among others, it will be intended for temporary employees and people whose employment is threatened due to technological changes. The main goal is to provide continuing development of career paths and acquiring the appropriate skills for re-entering the labour market rapidly.
- **Measures to increase the participation of adults in lifelong learning:** Due to demand in the labour market, adult education programmes will aim to acquire basic and vocational skills with an emphasis on information and communication technologies.
- **Modern business environment development:** In order to develop a modern business environment, the government will require measures aimed at the informatisation of procedures and the simplicity of meeting the obligation of payment of public duties. This will be appropriately provided for through the introduction of mobile apps for various groups of taxpayers and through the upgrading of the tax and custom IT systems.
- **Establishment of a digital platform for citizens, the public sector and the business sector:** A digital platform will be built to establish a development environment for start-ups, researchers, college students, secondary-school students, private individuals, non-governmental organisations and public institutions. These actors, with the use of a shared development-oriented IT infrastructure and in connection with national data lakes, will be able to develop new innovative, integrated, fully functional, user friendly e-services, information and telecommunications solutions.
- **Launch of the central website of the public administration for citizens:** In 2019 the government plans to migrate to a centralised website informational content from 200 existing web pages on the gov.si website. Users will have easy one-site access to comprehensive information on the public administration and its services, which will be published on self-service portals.
- **Enhancement of tertiary education through digital skills:** The government commits to promote the training of higher education teaching staff and other professionals in order to introduce innovative and more transparent forms of teaching, with an emphasis on the use of ICT and a transition to digital education.

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<sup>181</sup> Slovenia National Reform Programme 2019. Accessed on 9 October 2019.

- **Allocation of funds for forestry technology:** Slovenia has allocated more than 21% of the funds from the Rural Development Programme 2014-2020 for increasing competitiveness, of which EUR 266 million for measures to support investments in physical assets and in forestry technology among others.
- **Measures for covering white spots with broadband internet access:** These measures are carried out in a decentralised manner. They are currently in the implementation phase but with slighter delays.

#### Thematic Objective 11

- **Measures to enhance the tax system:** The country is aiming at simplifying administrative procedures and improving the efficiency of the collection of public duties. For this purpose, it is envisaged to increase the level of digitalisation and activities aimed at preventing abuse and tax avoidance.
- **Digital literacy improvement in the public sector:** A new competence model for the public employees will be introduced in 2019 and 2020. In order to enhance the level of qualifications of civil servants, improve the efficiency, work quality and personal development of employees, a special focus will be made on trainings aiming at increasing digital literacy.
- **Measures to enhance the payment system in the public sector:** Since Slovenia will implement a new Public Sector Salary System Act, the government will ensure the transparency of the pay system and all types of payments by using and upgrading the information system supporting the publication of salaries.
- **Establishment of a digital platform for citizens, the public sector and the business sector:** This measure links the objective of the Public Administration Development Strategy 2018-2019. It will consist in building a cloud ecosystem made up of the national computing cloud (NCC) on one side, and the development and innovation cloud (DIC) on the other. The NCC was established in 2015 and is part of the computer infrastructure for the state administration.
- **Digitalisation and centralisation of public procurement:** In 2018 an online public procurement system was introduced, which brought increased transparency for public openings. The eFile system was also upgraded and, additionally, individual modules of the existing system were combined into an integrated one.
- **Introduction of online operations in the judiciary system:** This measure aims at improving the efficiency of the Slovenian courts and the judiciary as a whole, reducing court backlogs and thus provide legal protection and equality before the courts. The Act amending the Criminal Procedure Act provides the possibility of submitting applications for the issuance of criminal record checks in electronic format into the eJustice information system and the possibility of sending criminal records checks to a secure electronic mailbox.
- **Measure to increase the level of qualification of judicial employees:** In 2019 Slovenia will, among other activities, carry out an improvement of the information system and operating procedures of the state attorney's office and state prosecutor's office, expand the Penal

Enforcement Administration' information system, upgrade the information system for notaries, and introduce a pilot project of online trainings in prison.

### 3.25.5 Operational Programmes

For the funding period 2014-2020, one OP of Slovenia is specifically dealing with themes related to TO2 and TO11. The OP 'Implementation of the European Cohesion'<sup>182</sup> focusses on dealing with employment rates, people at risk of poverty or social inclusion, strengthening research and development efforts and more efficient use of energy sources.

#### Thematic Objective 2

- **Improvement of the internet access:** To move towards a digital society, Slovenia plans to provide a powerful network infrastructure for electronic communications, which must ensure high-quality Internet access for all and high speeds for the use of demanding interactive multimedia e-services, over the top content, etc. Furthermore, the broadband infrastructure in rural areas will be set up to enable a more balanced regional development.
- **Enhancement of eServices for citizens:** Slovenia found its eServices for citizens are not at the same level of the other Member States. Therefore, it intends to establish actions that will facilitate the use of digital services provided by public administration to citizens. This will include efforts towards digitalisation of the entire process, the one-stop shop concept and a single editorial policy. Furthermore, the digital channels that offer public services to end-users will be made enabled for foreigners.
- **Improvement of eLearning methods:** Slovenia intends to improve its efforts to strengthen the eSkills in education. As a first step, the ICT infrastructure in the education field will be enforced and updated. Afterwards, the focus can be oriented towards digital learning for both students and teachers.
- **Promotion of Open Data in the public sector:** Slovenia finds that open data of the public sector can enhance innovation in society, therefore, it intends to open up the state-owned computing cloud and make certain data available for businesses and citizens, making it a good basis for the development of new services and products.

#### Thematic Objective 11

- **Development of eJustice:** To foster a more performant judiciary system, Slovenia will invest in digitalising its justice system. The actions will include identification of the missing information solutions in the judiciary will be carried out first, followed by providing additional e-services, creating a web portal and digitalisation of files.
- **Establishment of ICT infrastructure in the public administration:** Slovenia will develop the technical and semantic interoperability as well as the building blocks, applications, data records and open data publishing systems to be compliant with the Data Reuse Directive.

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<sup>182</sup> Slovenia Operational Programme for the Implementation of the EU Cohesion Policy in the period 2014-2020. Accessed on 9 December 2019.

Furthermore, it will invest in the necessities to deliver eServices, single contact points, ePayments, eArchives and eSignatures to move towards an eSociety. This will also include a government cloud and a new single information and communication platform.

- **Enhancement of the eProcurement system:** Slovenia intends to upgrade the information system for eProcurement with additional modules for the publication of contracts and the transparency of the entire public procurement procedure and calls for tenders.

## 3.26 Spain

### 3.26.1 Socio-economic outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Spain's CSR of 2019.<sup>183</sup>

According to the CSR, Spain seems to be experiencing macroeconomic imbalances due to a large stock of internal and external debt, combined to a high unemployment rate and a weak productivity growth. The country is now in the corrective arm of the Stability and Growth Pact, which aims to correct the excessive deficit by 2019. The government balance has improved by a 0.5 percentual point since last year and it is expected to reach a balanced budget in 2022. However, the medium-term budgetary objective is not planned to be reached over the time horizon of the Programme due to a risk of deviation from the recommended adjustments stressed by the Commission.

In order to improve the fiscal framework, Spain has implemented some actions to deploy the preventive and corrective tools set out in the Stability Law. Nevertheless, the country has made no plans to establish the automaticity of several fiscal mechanisms and a review of the Stability Law's expenditure rule. Spain is still encouraged by the Council to improve its public procurement policy framework. In this regard, a new legislation was adopted in 2017; however, it needs to be complemented with a new governance structure and control mechanisms.

Despite a sustained fall, the unemployment rate of Spain remains above the European Union average, particularly affecting young and low-skilled people. Moreover, the still widespread use of temporary contracts results in weak incentives for both workers and employers to invest in training. This in turn represents a risk for productivity growth. As in the previous year, the CSR points out the need to ensure better profiling and matching of jobseekers with employers' needs, thus creating quality employment.

People at risk of poverty and social exclusion in Spain remain above the European Union average and so does the income inequality. In order to attain inclusive growth, Spain is encouraged to keep investing in social inclusion policies and social infrastructure measures. For instance, the child poverty rate remains high due to low impact of social transfers, and low effectiveness of family benefits, among other factors.

Regarding the pension system, action is needed to address both the main challenge of the adequacy of future retirees' incomes and the length and completeness of their working careers in a context of high unemployment and widespread use of temporary contracts and part-time employment.

Spain's innovation performance and productivity growth are slowed down by due to low levels of investment in research and development, both in the private and the public sector, as well as by skills mismatches. The CSR stresses the need to boost entrepreneurship, digitalisation of firms, and strengthen the cooperation between regions through the implementation of an effective national innovation strategy.



<sup>183</sup> COM (2019), 509 final, Recommendation for a Council Recommendation on the 2019 National Reform Programme of Spain and delivering a Council opinion on the 2019 Stability Programme of Spain, Brussels, 5.6.2019. Accessed on 17 September 2019.

Concerning the business environment, two main challenges arise. The first one is the regulatory fragmentation in the business environment due to the partial implementation of the Law on Market Unity. It keeps the productivity growth restrained. Hence, the CSR strongly recommends establishing common standards. The second one is related to the general lack of innovation capacity of Spanish firms.



### *3.26.2 Country Digital Government Outlook*

The following are some of the digital government highlights having occurred in Spain since 2018. The information originates from the Digital Government Factsheet of Spain.<sup>184</sup>

#### **Political Communications**

Four main communications were made by the Spanish government. First, the General Secretary for Digital Administration developed a new strategic reference according with European policies in the field of digital government and ICT (standards policy, interoperability, building blocks, cloud computing, blockchain and DLTs, artificial intelligence, big data and other emerging trends). The Secretary of State for Digital Advance started a new Digital Strategy for what is called an Intelligent Spain, which, based on the results obtained in the current Digital Agenda for Spain, updated its content and addressed the new challenges that have arisen in recent years. Regarding cybersecurity, a new version of the National Cybersecurity Strategy was published. This strategy took into consideration the last changes in the technological landscape and included provision for the creation of a National Cybersecurity Forum to foster collaboration between public and private entities. Additionally, the Central Administration is currently developing the Fourth National Action Plan (2019-2021), taking into account contributions from public administrations, citizens and other agents of civil society. Finally, in March 2019, the Ministry for Science, Innovation and Universities published a Spanish RDI Strategy on Artificial Intelligence.

#### **Governance**

The General Secretary for Digital Administration (acronym SGAD), is the governing body under the authority of the Secretary of State of Civil Service responsible for the direction, coordination and execution of the powers attributed to the Ministry of Territorial Policy and Civil Service in terms of digital administration, rationalisation of information technologies and communications in the field of the General Administration of the State and its Public Organisms. It oversees the operation of the Common ICT Services. In June, the Royal Decree 355/2018, of 6 June 2018 on Restructuration of Ministries, was released. This Royal Decree developed the basic structure of the ministerial departments. The General Secretary of Digital Administration now depends on the Ministry of Territorial Policy and Civil Service.

#### **Infrastructure**

In February 2019, the service for eInvoicing FAcE incorporated the European invoice formats UBL 2.1 and CII (Cross Industry Invoice) in accordance with Directive 2014/55/EU. Improvements in FAcE were developed in collaboration with public and private organisations in the frame of the Project CEF-

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<sup>184</sup> Digital Government Factsheet 2019, Spain. Accessed on 30 September 2019.

Telecom EUROFACE. Administration providers can use either the native format Facturae, or European formats UBL 2.1 and CII, to submit invoices electronically and track them through the portal, knowing at all times their status of process. In April 2019, the recommended Scheme of Common Metadata applicable to electronic administrative documents was approved. Public eServices provided by four Spanish local and regional administrations (Junta de Extremadura, Diputación de Ciudad Real, Diputación de València and Ayuntamiento de Rivas Vaciamadrid) worked under the EID4Spain project to connect to the Spanish eIDAS node via CL@VE 2.0, in order to enable cross-border authentication in line with the eIDAS Regulation.

## **Services**

Significant progress was reported in the area of health. Since January 2019, the Department of Health of the Generalitat of Catalonia launched a new service that made it possible for interoperable reports of its population to be accessible in the rest of the National Health System (NHS). This made possible for Catalan medical professionals to access such reports from other autonomous communities. With the activation of this service in Catalonia, an important milestone was achieved with the completion of the implementation map of interoperable clinical information. This meant that 94.64% of the population was now covered by the National Health System.

### **3.26.3 Country Specific Recommendations**

The CSR for Spain<sup>185</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>186</sup>

## **Thematic Objective 2**

### *Recommendations*

In recommendation 2, Spain is encouraged to foster synergies between education and businesses in order to develop skills and qualifications relevant for the Spanish labour market, in particular regarding information and communication technologies.

### *Recitals*

Recital 16 stresses the need to improve Spain's innovation performance within the private sector. In order to achieve this, Spain is encouraged to foster entrepreneurship and start-ups, as well as help them in their digitalisation efforts. In this regard the CSR refers to the potential of strengthening national-regional coordination on the innovation strategies, with a special mention to the need to improve digital skills, both in the education system and in the labour market.

### *Opportunities*

In the context of employment, recital 12 presents the need to implement profiling tools to better match jobseekers with employers' needs. A solution could be to set up and raise awareness on an

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<sup>185</sup> COM (2019) 509 final, Council Recommendation on the 2019 National Reform Programme of Spain and delivering a Council opinion on the 2019 Stability Programme of Spain, Brussels, 5.6.2019. Accessed on 27 September 2019.

<sup>186</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Spain to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Spain. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.



eGovernment portal for businesses and citizens where the employers and jobseekers can meet. This could therefore enhance cooperation with the employers, as also stressed in recommendation 2.

### **Thematic Objective 11**

#### *Recommendations*

The CSR for Spain makes no specific mention in the recommendations of the need to intervene regarding TO11.

#### *Recitals*

The CSR for Spain makes no specific mention in the recitals of the need to intervene regarding TO11.

#### *Opportunities*

Concerning procurement, recommendation 1 encourages Spain to take measures to strengthen the fiscal and public procurement frameworks at all levels of government. The digitalisation of the procurement system could help in this regard by increasing transparency and efficiency.

About recommendation 4, the CSR stresses the need to keep improving cooperation between administrations. Hence, interoperability solutions could be implemented to enhance interactions among organisations by helping them sharing information and the exchange of data.

### **3.26.4 National Reform Programme**

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Spain's NRP.<sup>187</sup>

### **Thematic Objective 2**

- **Development of digital skills and ICT use in education:** The Agenda for Change is a strategy set up by the government which plans an extensive and deep educational reform. The teachers will be trained, and the educational community will be digitalised. It also insists on the development of digital skills for students at all stages of education. In universities, skills will be particularly reinforced in areas such as cybersecurity, collaborative and advanced robotics, Big Data and data analysis, 2D and 3D manufacturing, extended reality and virtual reality and connectivity, among others.
- **Measures to reduce the digital gap among workers:** The Strategy Spain Entrepreneurial Nation envisages the launch of several training programmes to strengthen STEM skills and abilities to reduce the digital gap among workers. This also aims at promoting the role and presence of women in STEM matters, collaboration projects and public-private partnerships to extend the training to both employed and unemployed people.
- **Measure to increase public investment in technological companies:** The Programme Cervera was set up in 2018 to finance innovation in small and medium-sized enterprises and technology centres and to encourage the transfer of knowledge. This is in addition to the

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<sup>187</sup> Spain National Reform Programme 2019. Accessed 14 October 2019.

actions of the Centre for Industrial Technological Development and the venture capital company INNVIERTE, which will boost public co-investment in technology-based companies.

- **Measures fostering investment in key infrastructure and new technologies:** The Agenda for Change committed to produce specific programmes to encourage investments in disruptive information and communication technologies with high tractor potential, such as the processing of large volumes of data, biometrics and digital identity, blockchain, Artificial Intelligence or the Internet of Things.
- **Deployment of ICT infrastructure nationwide:** To integrate all citizens into the digital era, the Spanish government will invest in the creation of high capacity networks as well as lead the implementation of the 5G mobile technology. (PEBA-NGA). With the New Generation Broadband Extension Programme, 93.5% of the population is expected to benefit from very high-speed broadband by June 2021.
- **Implementation of a single base registry for citizens:** Since 2018 a single register was established. It will allow a citizen to submit an application to any administrative register. Moreover, the single notification system will make all notifications concerning a person available at a single access point. Additionally, in 2020 it is expected that the citizen folder will become a reality in the national and regional administrations. Citizens and companies, with a single identification and without prior registration, will be able to consult all their data held by the administration, as well as their notifications and registers, without having to go to each of the services individually.
- **Portal to promote and enhance cooperation among entrepreneurs in Melilla:** The portal [melillaorienta.es](http://melillaorienta.es) is a free network promoted by the local government that puts in contact counsellors, companies and candidates.
- **Law for the digital transformation of the financial sector:** To ensure that the financial authorities have adequate instruments to optimally continue fulfilling their functions of supervision and regulation in the new digital context and, at the same time, facilitate the adoption of new technologies in the sector, the Council of Ministers reported on 22 February 2019 the Draft Law for the digital transformation of the financial system. It creates a sandbox, under the management of supervisors and with maximum security guarantees, to foster technological innovations and digitalisation in the financial sector.

#### Thematic Objective 11

- **Production of an action plan for technological talent attraction:** A programme will be developed to attract and retain technological and entrepreneurial talent of both national and international profiles, with a special focus on female talent.
- **Adoption of an eProcurement system:** The progressive adoption of electronic tendering will contribute to providing greater agility, security and transparency in public procurement procedures.
- **Modernisation of the Justice administration:** The implementation of the Digital Justice project has been completed so that all the orders and instances of the courts of Extremadura,

Castilla-La Mancha, Castilla y León, Región de Murcia, Islas Baleares and Ceuta y Melilla can now work in electronic format.

- **Digital transformation of administration:** The Administration's Digitalisation Plan 2020 will incorporate measures aimed at reducing the digital gap in the use of Electronic Administration, through the development of universal, quality, open, efficient, flexible and inclusive electronic public services. Measures will be introduced to implement the principle of reuse of public information established by the European regulation.

### 3.26.5 Operational Programmes

For the funding period 2014-2020, two OPs of Spain are specifically dealing with themes related to TO2 and TO11. The OP, 'Sustainable Growth'<sup>188</sup> focusses on anticipating and adapting to global changes in the fields of energy, urban development, water and transport. The OP 'Intelligent Growth'<sup>189</sup> sets out actions that aim to contribute to the improvement of the competitiveness of the Spanish economy to promote smart growth supported by ICT and to tackle the needs of SMEs.

#### Thematic Objective 2

- **Promotion of ICT in urban development strategies to bridge the digital divide:** Spain sets out in OP 'Sustainable Growth' to complement promotion of ICT in urban development strategies with deploying technologies for bridging the digital divide. In particular, the issue of digital gender will be addressed through promoting access to public services to disadvantaged groups. Furthermore, Spain will improve digital literacy by ensuring ICT is made on an equal basis, taking into account the gender perspective in the use and content of ICT.
- **Establishment of an ultrafast internet connectivity for educational and training centres:** Spain indicated in OP 'Intelligent Growth' to put in practice ultrafast internet connectivity for educational centres. This will help to create both an educational network on the one hand and modernise the teaching and learning processes on the other.
- **Enhancement of eCommerce:** In OP 'Intelligent Growth' Spain set out as one of the main programmed actions to ensure implementation of ICT by SMEs, so they can implement, develop and improve eCommerce.
- **Development of the eHealth system:** While Spain declares its eHealth system is very well evolved, nevertheless efforts for improvement will be made. In OP 'Intelligent Growth', it is said investments will be made to use ICT in the management of chronic pathologies as well as deploying telemedicine and telecare projects. Furthermore, applications will be established to inform patients and foster their participation and collaboration in decision-making. Additionally, the integration of the information systems of the National Health System will be completed and the implementation of the Interoperable Electronic Recipe in the entire National Health System will be finalised.

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<sup>188</sup> Spain Sustainable Growth Operational Programme. Accessed on 9 December 2019.

<sup>189</sup> Spain Intelligent Growth Operational Programme. Accessed on 9 December 2019.

- **Foster eLearning and ICT tools in schools:** In its Digital Agenda, mentioned in OP 'Intelligent Growth', Spain plans to boost the use of ICT tools in schools with the aim of enhancing the digital skills of its students. In order to benefit from these infrastructures, contents and technological services, a common frame of reference for teaching, as well as several guidelines and standards for the use of Educational ICTs, will be created.

#### **Thematic Objective 11**

- **Promotion of ICT in urban development strategies through the creation of a local eGovernment:** Spain declares in OP 'Sustainable Growth' it will promote ICT in urban development strategies through the creation of local eGovernment. Therefore, the public services in cities will be modernised and the technological project to introduce ICT will be put in place. Part of this strategy includes the promotion of an Open Government through the publication of data.

## 3.27 Sweden

### 3.27.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in Sweden's CSR of 2019.<sup>190</sup>

Sweden is in the preventive arm of the Stability and Growth Pact. According to the 2019 Convergence Programme, the government aims to achieve a surplus of 0.6% of GDP in 2019 and to meet the medium-term budgetary objective, based on a structural deficit of 1% of GDP throughout the programme period. Additionally, the debt-to-GDP ratio is expected to fall to 34.5% in 2019 and to continue declining to 28.2% in 2022. Sound public finances and a stable economic growth are considered the main drivers behind the declining general debt-to-GDP ratio. Lastly, according to the Commission 2019 spring forecast, the structural balance is forecast to register a surplus of 9.5% of GDP in 2019 and 0.6% in 2020.

Household debt levels in Sweden are continuously rising. In fact, household debt grew by 5.5% in 2018, reaching about 88% of GDP and 186% of disposable income, which is among the highest in the EU. This was mainly caused by higher mortgage borrowing linked to higher house prices, along with structural distortions favouring mortgage-financed property purchases. To relieve the situation, Sweden implemented several macro-prudential measures, including a gradual limitation of the tax deductibility of mortgage interest payments and increases in recurrent property taxes. However, despite this, little progress has been registered.

Sweden can count on an advanced and developed economy. However, the country is experiencing labour shortages of highly skilled workers, especially in fields like education, construction and information and communication technologies. The country should invest in specialised human capital to support future research and investment, as well as digitalisation. So far, the educational outcomes have slightly improved, but there is still a large and increasing educational performance gap between different social groups. Further efforts should be made to integrate non-EU migrants, low-skilled workers and women into the labour market.

Sweden should continue to invest in transport infrastructure as a way of improving its labour mobility, regional cohesion and housing market. In addition, it could foster Sweden's long-term productivity growth. The government recently announced considerable investments in the transport infrastructure to upgrade the different transport modes, particularly railway and road. The 2018-2019 plan includes major investments to develop the railway system, promoting the switch in goods transport from roads to railways, thus helping the reduction of CO<sub>2</sub> emissions.

Sweden should also focus on preventing money laundering, which continues to be an important challenge for the country and its companies. In 2017, it further consolidated its anti-money laundering framework, but challenges remain, and the country still needs to adopt additional measures and guidelines on how to strengthen supervision in this area.



<sup>190</sup> COM (2019) 527 final, Council Recommendation on the 2019 National Reform Programme of Sweden and delivering a Council opinion on the 2019 Stability Programme of Sweden, Brussels, 5.6.2019. Accessed on 23 September 2019.

### 3.27.2 Country Digital Government outlook

The following are some of the digital government highlights having occurred in Sweden since 2018. The information originates from the Digital Government Factsheet of Sweden.<sup>191</sup>

#### **Political Communications**

In June 2017, the Swedish government presented the first National Cyber Security Strategy for the country. The strategy was then supplemented with an appendix in July 2018 which included an overview of ongoing and completed measures initiated by the government in 2017-2018. In this timeframe, there were approximately 50 ongoing or completed measures initiated by the government to implement the strategy. At the beginning of March 2019, seven government agencies with responsibilities in the field of cyber security also presented a joint action plan to implement the strategy at the agency level. The joint action plan contains 77 of the most important measures that is scheduled to begin implementation in 2019.

#### **Legislation**

In 2018, the Swedish government adopted the Law on electronic invoices as a result of public procurement, which decided that, as of April 2019, all purchases in the public sector would be invoiced electronically. This means that all providers to the public sector must send eInvoices and that agencies, municipalities, county councils and regions must be able to receive eInvoices.

#### **Governance**

Following the government reshuffle in January 2019, the Ministry of Infrastructure was established and the responsibility for digitalisation is now coordinated within the Ministry, with support from the unit of Digital Government.

#### **Infrastructure**

In May 2018, two government assignments were issued, focusing on establishing the foundation for a more standardised and interoperable national approach to base registries and information exchange. Several key stakeholders are involved in the assignments, including some of the larger government agencies and the new Agency for Digital Government (DIGG) has the responsibility to coordinate work. The assignments will be reported to the government in 2019.

#### **Services**

The [verksam.se](https://www.verksam.se) portal provides a comprehensive single-point for entrepreneurs and enterprises to access relevant and official eServices and information from three public authorities: the Swedish Companies Registration Office (*Bolagsverket*); the Swedish Tax Agency (*Skatteverket*); and the Swedish Agency for Economic and Regional Growth (*Tillväxtverket*).

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<sup>191</sup> Digital Government Factsheet 2019, Sweden. Accessed on 30 September 2019.

### 3.27.3 Country Specific Recommendations

The CSR for Sweden<sup>192</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>193</sup>

#### Thematic Objective 2

##### *Recommendations*

The CSR for Sweden makes no recommendation of the need to intervene in the field of TO2.

##### *Recitals*

In recital 8, the CSR urges Sweden to invest in education and skills, particularly digital ones. This would help the country address its challenges linked to labour shortages. The country strongly needs highly skilled workers that can keep up with the pace of the country's advances in the economy.

##### *Opportunities*

The CSR for Sweden does not describe needs that can be linked to opportunities to intervene regarding TO2.

#### Thematic Objective 11

There are no recommendations, recitals or opportunities linked to TO11 in the CSR for Sweden.

### 3.27.4 National Reform Programme

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in Sweden's NRP.<sup>194</sup>

#### Thematic Objective 2

- **Digitalisation of SMEs in the county of Kronoberg:** As part of the Digital SME project, the Smart and Innovative Automation in Manufacturing project was created. Its objective is knowledge and digital skills transfer to bolster the level of innovation and competitiveness of SMEs in the county of Kronoberg. This, in turn, will improve and increase the sustainability of the overall Swedish manufacturing system, through higher flexible and innovative automation and digitalisation.

#### Thematic Objective 11

- **Digitalisation in the field of (public) housing:** The government has proposed amendments to the Planning and Building Act in order to promote digital developments in the housing market. This new act should enable the government, or any designated agency, to create and

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<sup>192</sup> COM (2019) 527 final, Council Recommendation on the 2019 National Reform Programme of Sweden and delivering a Council opinion on the 2019 Stability Programme of Sweden, Brussels, 5.6.2019. Accessed on 23 September 2019.

<sup>193</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on Sweden to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit Sweden. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

<sup>194</sup> Sweden National Reform Programme 2019. Accessed on 19 October 2019.

issue digital base maps, electronic development plans and plan provisions, which can then be easily exchanged online between different urban and rural entities.

#### *3.27.5 Operational Programmes*

A thorough evaluation of Sweden's national OPs for the 2014-2020 financing period has revealed that there are no initiatives planned under TO2 and TO11 that would fall under the scope of this study.



## 3.28 United Kingdom

### 3.28.1 Socio-economic Outlook

The following information originates from the socio-economic overview which introduces the recommendations set in UK's CSR of 2019.<sup>195</sup>

The government expects the headline deficit to increase from 1.2% of GDP in 2018-2019 to 1.4% of GDP in 2019-2020, and then fall to 1.1% of GDP in 2020-2021. According to the Convergence Programme, the government debt-to-GDP ratio is expected to fall from 85.5% from 2018-2019 to 83.3% in 2019-2020 and to 82.9% of GDP in 2020-2021.

Research and development investments in the UK have been below EU average in the past decade, around 1.7% of GDP. Moreover, they seem to be concentrated on a very limited share of companies in certain regions. Both these factors are leading to a relatively low and stagnant labour productivity.

The UK continues to suffer from insufficient supply of housing, especially in geographical areas of high economic growth. As a consequence, house prices and rents are high, showing signs of overvaluation. Home ownership for young people remains therefore low. In order to address this issue, the government is putting in place various initiatives to boost housing supply, despite the tight regulation of the land market, which limits the available land.

Given the growing capacity pressure in road, rail and aviation networks, the UK needs to modernise and expand its infrastructure. This, however, needs to be done reducing the greenhouse emissions, as well as project costs.

The UK's labour market is characterised by a high proportion of low-skilled employees, which contributes to high levels of in-work poverty. To address skill shortages, the government could provide better education and training for basic and technical skills.

### 3.28.2 Country Digital Government Outlook

The following are some of the digital government highlights having occurred in the UK since 2018. The information originates from the Digital Government factsheet of the UK.<sup>196</sup>

#### Political Communications

The government's Digital Charter was published on 25 January 2018. It set the direction for the UK to become the best place to start and grow a digital business as well as the safest place in the world to be online. The Charter brought together a broad, ongoing programme, which will evolve as technology changes. Current priorities include online harms, liability, data and artificial intelligence ethics and innovation, disinformation and cybersecurity.



<sup>195</sup> COM(2019) 528 final, Council Recommendation on the 2019 National Reform Programme of the United Kingdom and delivering a Council opinion on the 2018-2019 Stability Programme of the United Kingdom, Brussels, 5.6.2018. Accessed on 20 September 2019.

<sup>196</sup> Digital Government Factsheet 2019, The United Kingdom. Accessed on 20 September 2019.

## **Governance**

On 19 February 2019, the Department of Health and Social Care (DHSC) announced the creation of NHSX, a joint unit between DHSC, the National Health Service (NHS) England and NHS Improvement, for digital data and technology.

## **Infrastructure**

In March 2018, the data.gov.uk site was re-designed and the Find open data service was launched. It aimed to help people to find and use open government data and supporting government publishers to maintain data.

## **Services for citizens and businesses**

In 2018, HM Revenue & Customs took a major step forward toward the eventual goal of introducing the Making Tax Digital for VAT. This digital service is a key part of the government's plans to make it easier for individuals and businesses to get their taxes right and stay on top of their financial affairs.

### **3.28.3 Country Specific Recommendations**

The CSR for the UK<sup>197</sup> is analysed according to TO2 and TO11. Furthermore, for each TO there is a subdivision into recommendations, recitals and opportunities.<sup>198</sup>

#### **Thematic Objective 2**

##### *Recommendations*

The CSR for the UK makes no recommendation of the need to intervene in the field of TO2.

##### *Recitals*

The CSR for the UK makes no specific mention in the recitals of the need to intervene regarding TO2.

##### *Opportunities*

In recital 12, in order to decrease the high proportion of low-skilled workers, the UK is called on to “to improve the effectiveness of the education and training systems in basic and technical skills”. In this regard, the use of digital tools for training may be beneficial in addressing this problem.

#### **Thematic Objective 11**

There are no recommendations, recitals or opportunities linked to TO11 in the CSR for the UK.

### **3.28.4 National Reform Programme**

The following links to TO2 and TO11 highlight the main priorities and planned measures in the digital government domain identified in the UK's NRP.<sup>199</sup>

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<sup>197</sup> COM(2019) 528 final, Council Recommendation on the 2019 National Reform Programme of the United Kingdom and delivering a Council opinion on the 2018-2019 Stability Programme of the United Kingdom, Brussels, 5.6.2018. Accessed on 20 September 2019.

<sup>198</sup> Firstly, the recommendations are stemming from the European Commission, directly calling on the United Kingdom to take action in domains related to digital. Secondly, the recitals are suggestions relating to digital solutions that can benefit the United Kingdom. Thirdly, opportunities are issues brought up by the Commission that imply a possible digital solution.

<sup>199</sup> United Kingdom National Reform Programme 2019. Accessed on 27 September 2019.

## Thematic Objective 2

- **Reduction in the current digital skills gap among the adult population:** Around 1.2 million UK citizens are considered to be digitally under-skilled persons. As in the future digital skills will be increasingly required in the labour market in all sectors, the UK is committed to close this digital skills gap. Its Digital Strategy aims to provide digital under-skilled adults with free-of-charge specific basic digital skills trainings. These will be delivered through the introduction of a national entitlement to basic digital skills courses from 2020.
- **Development of an education and training system for the needs of tomorrow:** Along the same lines, the Employability Plan of Wales aims to develop an education and training system adequate to the changing needs of the market, with a focus on automation, artificial intelligence and digitalisation.
- **Transformation of manufacturing through digitally enabled technologies:** As part of the Industrial Strategy Challenge Fund, the government intends to support the transformation of the manufacturing sector and make it 'smarter', This will be achieved through the use of digitally enabled technologies.
- **Development of Digital security by design concept:** Digital security is another key point addressed by the government through the Industrial Strategy Challenge Fund. The aim is to update the digital computing infrastructure and make it more secure through hardware innovation. These investments are expected to have positive effects especially for businesses, who will be able to spend less on cybersecurity.
- **Creation of a Digital Catapult Regional Centre in Belfast:** The government has established a network of so-called Catapult Centres with the aim to commercialise new and emerging technologies. An example comes from Belfast, where a Digital Catapult Regional Centre has been created with the aim to increase the commitment by industry to invest in innovative solutions to support productivity and competitiveness.

## Thematic Objective 11

- **Increased public spending in digital infrastructure:** The government of the UK is planning to increase its spending in infrastructure. This includes the financing, through the National Productivity Investment Fund, of next-generation digital infrastructure and intra-city transport. For instance, £740 million will be devoted to the setup of digital infrastructure and the mobilisation of the market to develop full-fibre broadband networks and 5G capacity.
- **Continuation of GovTech Catalyst Fund:** The GovTech Catalyst Fund, launched in 2018 as a way to support the uptake of new digital technologies within the public sector, continues until 2021. The final aim is to give the government cutting edge solutions to deliver more efficient public services.
- **Creation of a digital spatial catalogue of public sector land assets:** Given UK's house shortages, land availability is a key issue which often impedes an increase in the housing supply. In an effort to make land re-use easier, Northern Ireland is carrying on the 'Public Land for Housing' project, with the aim of creating a digital spatial catalogues of public sector land assets, which could be potentially re-use for housing purposes

### *3.28.5 Operational Programmes*

A thorough evaluation of the UK's national OPs for the 2014-2020 financing period has revealed that there are no initiatives planned under TO2 and TO11 that would fall under the scope of this study.

## 4. Findings synthesis and analysis

This chapter describes the main challenges (RQ3) still faced by the EU Member States in the context of TO2 and TO11, as well as the main elements common (RQ2) across the EU, based on the CSRs, NRPs and OPs analysed. It provides an analysis of the key findings per Member State that were previously presented in chapter 3. The remaining of this chapter is organised as follows:

- **Section 4.1 Socio-economic Outlook**, outlining the main socio-economic recurring challenges that were identified in the European countries;
- **Section 4.2 Digital Government Outlook**, summarising the main accomplishments related to the digitalisation of public administrations and provision of digital public services;
- **Section 4.3 Country Specific Recommendations – Key findings**, mapping the different recommendations according to TO2 and TO11;
- **Section 4.4 National Reform Programmes – Key findings**, providing an overview of Member States' digital government reform priorities, also mapped according to TO2 and TO11;
- **Section 4.5 Operational Programmes – Key findings**, giving an overview of the Member States' funding priorities related to the digital government field in relation with TO2 and TO11.

### 4.1 Socio-economic Outlook

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A detailed analysis carried out of the 2019 Country Specific Recommendations of the 28 Member States resulted in the identification of 14 recurrent themes of socio-economic challenges. These range from issues in the private sector such as businesses and public cooperation, through the legislative and justice systems in Member States, to other public matters such as education and healthcare provision. **Table 1** below provides an overview of the main socio-economic challenges pointed out in the CSRs per Member State, along with the frequency of occurrence of the challenges.

Table 1. Socio-economic challenges of EU Member States according to the CSRs

Socio-economic Challenges	AT	BE	BG	HR	CY	CZ	DK	EE	FI	FR	DE	GR	HU	IE	IT	LV	LT	LU	MT	NL	PL	PT	RO	SK	SI	ES	SE	UK	Tot.
Labour market	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	28
Research and Innovation			✓	✓		✓	✓	✓		✓			✓	✓	✓	✓				✓		✓	✓		✓	✓		✓	16
Tax system		✓			✓					✓	✓		✓	✓			✓	✓	✓	✓			✓	✓			✓		13
Healthcare	✓		✓		✓							✓	✓	✓		✓	✓		✓				✓	✓	✓				12
Public spending		✓							✓	✓	✓	✓				✓	✓		✓		✓								9
Administrative and regulatory barriers			✓	✓	✓	✓									✓						✓	✓		✓	✓				9
Fiscal Framework	✓			✓									✓		✓	✓						✓		✓		✓			8
Social inclusion			✓					✓					✓				✓	✓						✓			✓		8
Education		✓		✓	✓	✓					✓								✓		✓								7
Business environment	✓	✓		✓			✓				✓																✓		6
Housing Market							✓		✓									✓		✓							✓	✓	6
Pension system	✓				✓												✓		✓					✓	✓				6
Justice system				✓			✓					✓	✓						✓										5
Mobility							✓																				✓	✓	3
Tot.	5	5	5	6	6	5	5	4	3	4	5	4	7	4	5	6	4	5	5	5	4	4	5	5	5	6	4	4	

Source: Analysis performed by Wavestone, Oct 2019.

The remaining section consists of a short explanation of the identified socio-economic challenges in different thematic areas. These explanations are based on a general overview of the socio-economic situation in all EU Member States, as well as a country example that best reflects the challenge.

- Administrative and Regulatory Barriers:** The performance of public administrations is a concern throughout the European Union. Challenges include, for example, transparency and corruption in the public sector system; weak regulatory quality and low efficiency of public administrations and administrative and regulatory barriers that impede the establishment of new businesses. For instance, the Czech government continues to face challenges regarding the improvement of transparency and efficiency of public procurement and preventing corruption. This leads to inefficiencies in the public service provision.
- Business Environment:** The growth of a country in terms of productivity is important for its economic performance. There are several factors that are significant to consider and to overcome, especially the lack of competition amongst firms in various sectors leading to high prices. In Belgium, for instance, there is a low productivity growth in the information and communication technologies sector, construction and health due to skills mismatches and a reduced job mobility.
- Education:** Since education serves as the foundation for the future labour market, the issues that various European countries face given skills shortages and skills mismatches need to be tackled. Furthermore, the lack of opportunities at an early age also affect higher education graduates and later the ineffectiveness of the labour market. This is, for example, a problem in Croatia where important socio-economic disparities, especially across regions, impact the level of educational attainment in the country. To overcome this, the government recently created the Regional Centres of Competences, whose aim is to improve the quality of vocational education and training for all regions.

- **Fiscal Framework:** Defined as comprising all arrangements that underlie the conduct of budgetary policies of general government,<sup>200</sup> the fiscal frameworks of Member States can be described as complex and needing several improvements. For instance, in Portugal, sustainable fiscal consolidation via structural improvement in public finances still needs to be achieved through stronger revenue collection and expenditure controls.
- **Healthcare:** The provision of healthcare services is an issue in several countries, especially amongst those who joined the European Union after 2004. There are issues such as challenging access to service provision, lack of efficiency, shortages, corruption and long-term problems that all European countries may have to face because of the ageing population. Bulgaria's healthcare services are being compromised given the low level of public spending and an uneven distribution of limited resources. Health insurance is not available for all and moreover, there is a shortage of nurses and doctors, as they are leaving the country.
- **Housing Market:** Challenges concerning the housing market vary from matters such as high prices to high household debt accumulation by owners. This socio-economic problem is the most recurrent in Northern Member States in general, such as Luxembourg. The latter sees a bottleneck because of lack of incentives for private owners to sell land meeting fast employment and population growth. There is a significant mismatch between supply and demand in the Luxembourgish housing market which may affect negatively the country's attractiveness.
- **Justice System:** The judiciary is often affected in a negative way throughout Europe due to limited transparency, low quality of legislation and corruption in the system due to negative external influence. An example of this is the expression of concerns in the CSR for Hungary regarding the attempts to prevent and prosecute corruption, as it appears to have increased over the past years. Judicial independence seems to be gradually compromised and a wider use of eProcurement in order to increase efficiency and transparency is recommended.
- **Labour Market:** All 28 EU Member States face challenges in the labour market. The recurrent problems are the following: gender pay gap; high unemployment rate; lack of integration in the workforce; labour and skills shortages; long-term unemployment; not enough diverse economy; lack of participation in the labour force and in some countries even reduction of the labour force.
- **Mobility:** Transport activity across European countries is high and set to continue growing. This is good for passengers and trade but puts pressure on the transport network as well as the environment. Given their key economic role and their inter-relation with various policy areas, transportation, and mobility in general, are more and more seen as relevant socio-economic challenges in different countries. In this regard, governments are increasingly putting efforts to be able to progressively switch to a clean, competitive and connected

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<sup>200</sup> European Commission (2012). *Fiscal frameworks across Member States* in European Economy Occasional Papers 91. Accessed on 10 December 2019.

mobility.<sup>201</sup> Therefore, some countries such as Denmark are investing in sustainable transport infrastructure networks, particularly in urban areas.

- **Pension System:** Five countries face challenges in their pension system provision. These challenges are mostly related to the long-term problems that will appear, for example the rising pension expenditure due to the ageing population across Europe; boosting the coverage of the supplementary pension schemes where national pension plans are limited; and facing the risks of old-age poverty. Lithuania for example, is one of these countries where there is a challenge regarding the decline in employment. This may negatively impact pension adequacy as pension benefits would not be able to keep up with wage growth. The pension benefit ratio is expected to continue its steady decline, although it is already one of the lowest in the Union.
- **Public Spending:** Countries' public expenditure is oriented towards goods and services. Any increase in public spending is expected to benefit citizens and businesses who will receive better provisions. The trends of government spending that were analysed in 2018 are increase in costs of pensions, health and long-term care, i.e. old-age related expenditures, as well as strengthening the corruption prevention framework in various countries. In the example of France, the level of public expenditure remains the highest in the EU. Despite a renewed fiscal consolidation strategy, expenditure on healthcare has steadily increased over time. Concrete actions need to be taken to reduce the expenditure-to-GDP ratio by 2022 and tackle sustainability challenges.
- **Research and Innovation:** European countries are constantly evolving and in order to be models of best practice, governments must invest in research & development and innovation. This could be efficiently done through cooperation between the private sector, public sector and academia. Estonia for instance has a moderate performance on research, technology and innovation, which negatively impacts its productivity growth. Only 0.61% of GDP is dedicated towards business research and development, about half the EU average.
- **Social Inclusion:** Individuals and groups, especially the vulnerable ones, should be included in all aspects of society. In Eastern and Southern Europe, a sensitive topic is the high risk of poverty and income inequalities. For example, Latvia faces challenges on delivering social protection and inclusion principles, as poverty risk among the elders and the people with disabilities is high, and benefits do not keep pace with wage growth. Consequently, further investments are required to address social exclusion.
- **Tax System:** The most common macroeconomic challenges associated to tax in the analysis of the 2019 CSRs are tax evasion, a low level of compliance and the complexity of some tax systems. This is the case in the German tax system which is characterised by its intricacy. It leads to inefficiency and distortions on decision-making. The corporate tax system is also complex, burdening the government with high tax administration costs as well as distorting the level and location of investments.

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<sup>201</sup> European Commission (2019). *Transport in the European Union – current trends and issues*. Accessed on 8 November 2019.



The identified themes of challenges range between the private and public sectors. The most recurrent challenge that Member States face pertains to the labour market field, while research and innovation, tax system and healthcare emerge as common challenges as well.

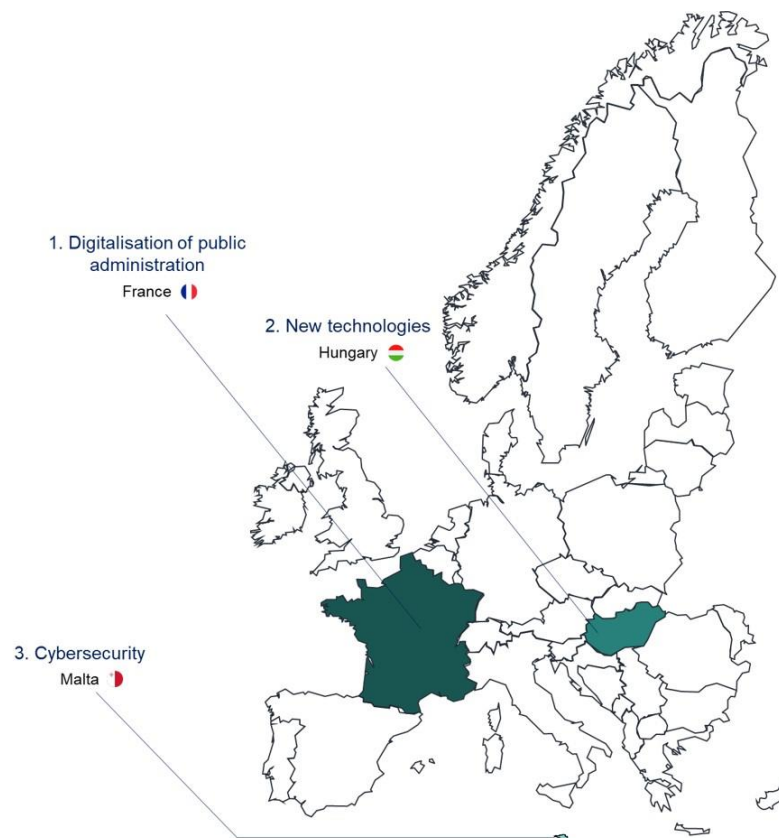
## 4.2 Digital Government Outlook

The following section provides a factual summary of the most recent developments regarding digital government of the 28 Member States covered by the scope in the study. The information collected is based on the Digital Government Factsheets 2019.<sup>202</sup> The logic of thematic division thus follows the logic of the factsheets (i.e. political communications, legislation, governance, infrastructure and services for citizens and businesses). The most recurring themes are explained and highlighted, accompanied by various country examples.

### 4.2.1 Political communications

In the context of this study, political communications on digital government are those communications (e.g. eGovernment Action Plans, Digital Agenda, Digital Government Strategies) which aim to set the long-term direction and scope that governments want to pursue in the field of digital government. In general, the main aims of the digital strategies put forward by the different governments are to harness the potential of ICT technologies in different sectors, foster the digital transformation of the public administration and provide high-quality digital public services to its citizens.

**Figure 6. Digital government outlook: Political communications**



Source: Analysis performed by Wavestone, Nov 2019.

Notes: Based on the main digital government highlights of the 2019 Digital Government Factsheets, the map represents the top three themes regarding recently implemented political communications.

<sup>202</sup> Joinup (2019). Digital Government Factsheets and Infographics. Accessed on 9 October 2019.

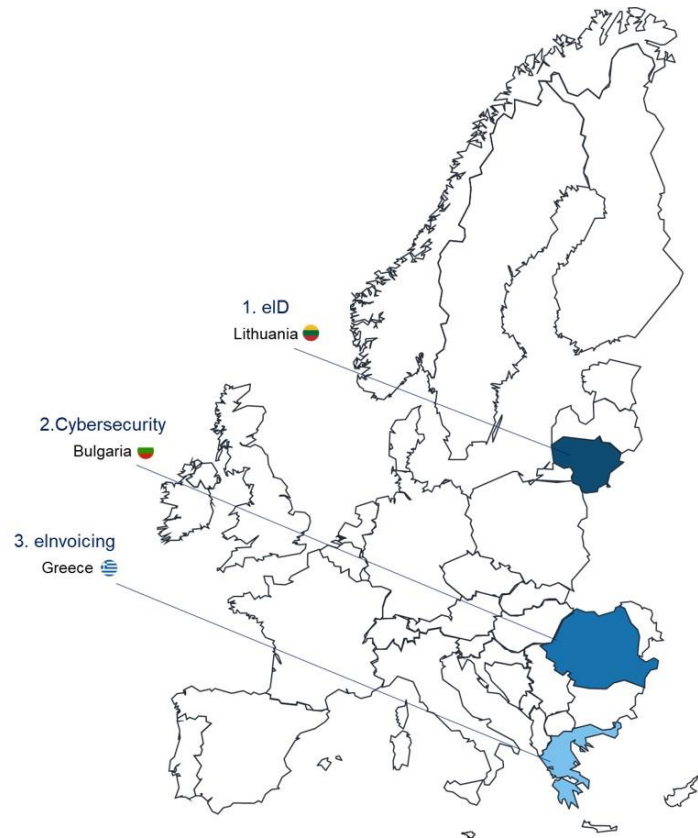
Based on the main digital government highlights collected through the Digital Government Factsheets 2019, 26 Member States out of 28 have put in place at least one political communication in the digital government domain since 2018. As shown in **Figure 6**, the three most recurring themes when it comes to recently implemented political communications in the digital government domain are:

- **Digitalisation of the Public Administration:** Some countries are explicitly focusing their efforts on the modernisation and digitalisation of their public sector and public administration. This is for instance the case of France, who recently revealed its Techgouv roadmap. This project is meant to accelerate the digital transformation of public services. Its main goal is to ensure that the government seizes every opportunity to reconcile the public administration with the citizens and industries, through the deployment of new technologies and digital services, in order to better serve the population's needs.
- **Deployment and utilisation of New Technologies:** In recent years, member states have gradually been focusing their investments on the deployment of emerging technologies such as Artificial Intelligence, Blockchain and the Internet of Things. This is for example the case of Hungary, who recently established its Artificial Intelligence Coalition, made up of various public and private organisations, including universities, technology companies and state entities. Its goal is to put in place a framework for cooperation in order to bring Hungary at the forefront of Europe in the field of digitalisation.
- **Cybersecurity:** Concerns about the protection of user data and cyber-attacks to governmental portals have greatly increased in recent years. This is leading more and more countries to adopt strategies specifically tackling this issue. For instance, Malta recently launched the National Cybersecurity Awareness and Education Campaign, which serves as a framework for the protection of information systems and networks in both the private and public sectors.

#### 4.2.2 *Legislation*

In this study, legislation can be defined as all changes to a country's legal framework related to digital government. This includes the adoption of amendments, decrees, acts, law or equivalent. It also relates to the creation of specific legal frameworks and the transposition of EU regulations into national law.

Figure 7. Digital government outlook: Legislation



Source: Analysis performed by Wavestone, Nov 2019.

Notes: Based on the main digital government highlights of the 2019 Digital Government Factsheets, the map represents the top three themes regarding recently implemented legislative changes.

Based on the main digital government highlights collected through the Digital Government Factsheets 2019 and as shown in **Figure 7**, 25 Member States out of 28 have put in place at least one legislative reform. Three of the most recurring changes to legislation took place in the following domains:

- **eID:** The legislative changes related to eID can be seen in the context of the eIDAS regulation. The Electronic Identification and Trust Services (eIDAS) Regulation creates a new system for the performance of secure electronic interactions across the EU between businesses, citizens and public authorities. It aims to improve trust in EU-wide electronic transactions and to increase the effectiveness of public and private online services and e-commerce. It applies to electronic identification schemes notified to the European Commission by Member States; trust service providers based in the EU; and it removes existing barriers to the use of eID in the EU. Lithuania, for instance, has adopted several pieces of legislation relating to eID and Trust services. One of them is the Law on Electronic Identification and Trust Services for Electronic Transactions, which ensures the compliance of Lithuania's national legal framework with the eIDAS Regulation. Its aim is the creation of a legal basis for the effective operation of electronic identification, so as to ensure the best possible protection of its citizens' interests.
- **Cybersecurity:** As previously mentioned, there are mounting concerns in the EU regarding the protection of user data and cyber-attacks and hacks, which have greatly increased in recent years. This is leading countries to adopt specific laws tackling this issue. This is the case of Bulgaria, for example, who adopted the Cybersecurity Act in 2018, in order to set up

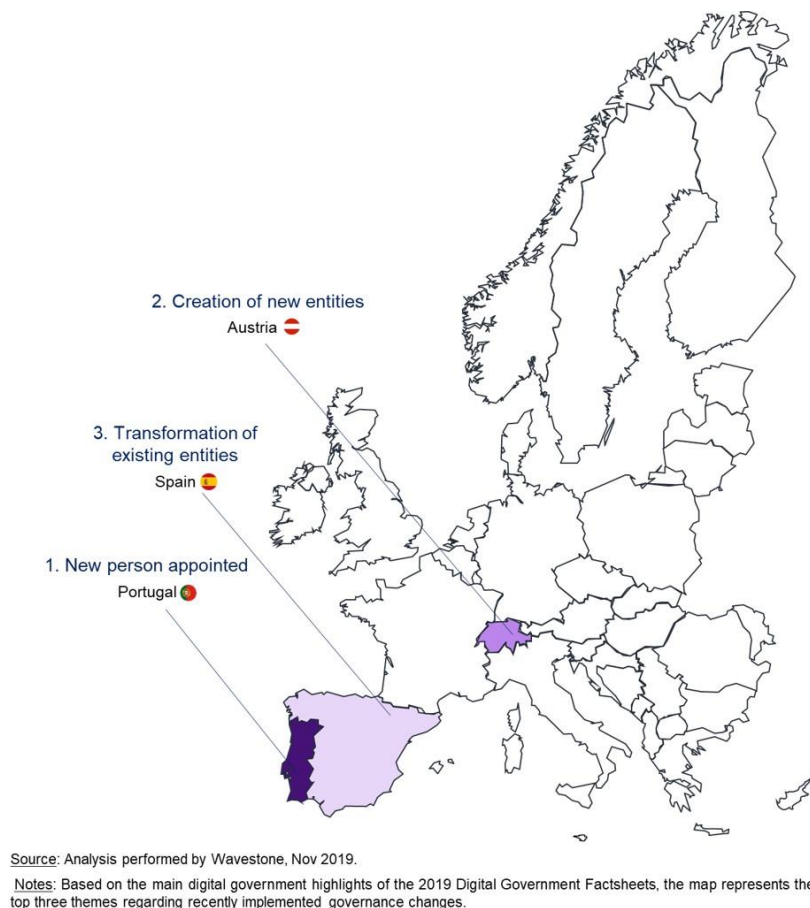
and implement measures for a high common level of security of network and information systems in the country.

- **eInvoicing:** The digital issuance, transmission, reception and processing of invoices has been implemented by various member states. It facilitates their tracking and reduces the risks of tax evasion. As of January 2019, it became mandatory to issue eInvoices for both business to business and business to customer transactions. In fact, Greece recently transposed and adopted a new law on the issuing of electronic invoices in the context of public procurement, in accordance with the provisions of the European Directive.

### 4.2.3 Governance

The governance includes, in the scope of this study, the creation of new entities, the transformation of existing entities and the hand-over of tasks from an existing entity to another entity related to digital governance. Only changes related to the organisational structure of a government were taken into account. This implies that changes in government positions were not considered.

**Figure 8. Digital government outlook: Governance**



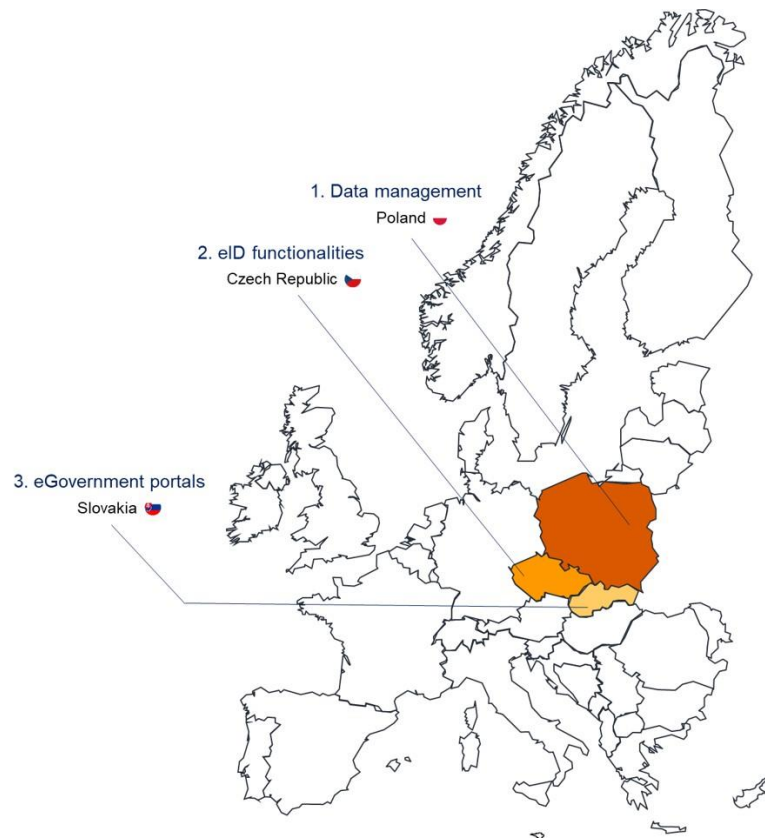
Based on the main digital government highlights collected through the Digital Government Factsheets 2019 and as shown in **Figure 8**, 15 Member States out of 28 have put in place at least one organisational change related to the entity responsible for digital government. The following examples illustrate the three different types of organisational change that occurred in the Member States. In Portugal, a new person was appointed as Minister of the Presidency and Administrative Modernisation,

which is the Minister responsible for the modernisation of public entities and digital government. An example of a new entity that was created is the Digitalisation Agency of the Austrian Federal Government. The Agency particularly focuses on supporting SMEs by providing expertise and know-how in the fields of innovation, digitalisation and networking. The third type of organisational change is the transformation of an existing entity, of which an example occurred in Spain. There, the General Secretary of Digital Administration now depends on the Ministry of Economic Affairs and Digital Transformation.

#### 4.2.4 Infrastructure

For this study, infrastructure can be understood as the provision of tools and facilities by the government which are needed for (the execution of elements related to) the implementation of digital government initiatives.

**Figure 9. Digital government outlook: Infrastructure**



Source: Analysis performed by Wavestone, Nov 2019.

Notes: Based on the main digital government highlights of the 2019 Digital Government Factsheets, the map represents the top three themes regarding recently implemented infrastructural changes.

Based on the main digital government highlights collected through the Digital Government Factsheets 2019 and as shown in **Figure 9**, all 28 Member States have put in place at least one infrastructure change supporting the delivery of public services. Three of the most recurring tools to establish an infrastructure corresponding to digital governance are:

- **Data management:** For the scope of this study, infrastructure tools related to data management cover actions that include creating open-data systems, setting up base registers, or putting databases into place. For example, in 2018, Poland put in place the Open Data

Portal, which aims to offer its citizens free and open access to various types of public data including education, the environment, budget and finance, culture and security, among others.

- **eID functionalities:** eID functionalities refers to measures related to the introduction of new forms of authentication, the introduction of a new security framework or the update of an existing one. The Member States put in practice these infrastructures to be compliant with the eIDAS regulation. As an example, the Czech Republic launched the eIDAS node in September 2018 under the name CZ. PEPS.
- **eGovernment portals:** Various Member States established portals to ensure their constituents can consult eGovernment services. These portals enable the provision of specific government services once citizens and businesses access the dedicated website. In 2018, Slovakia, for example, put in place a new portal, named *oversi.sk*, for the verification and exchange of four types of official documents between government authorities. These include the cadastral map, the commercial register, the criminal record and the land register.

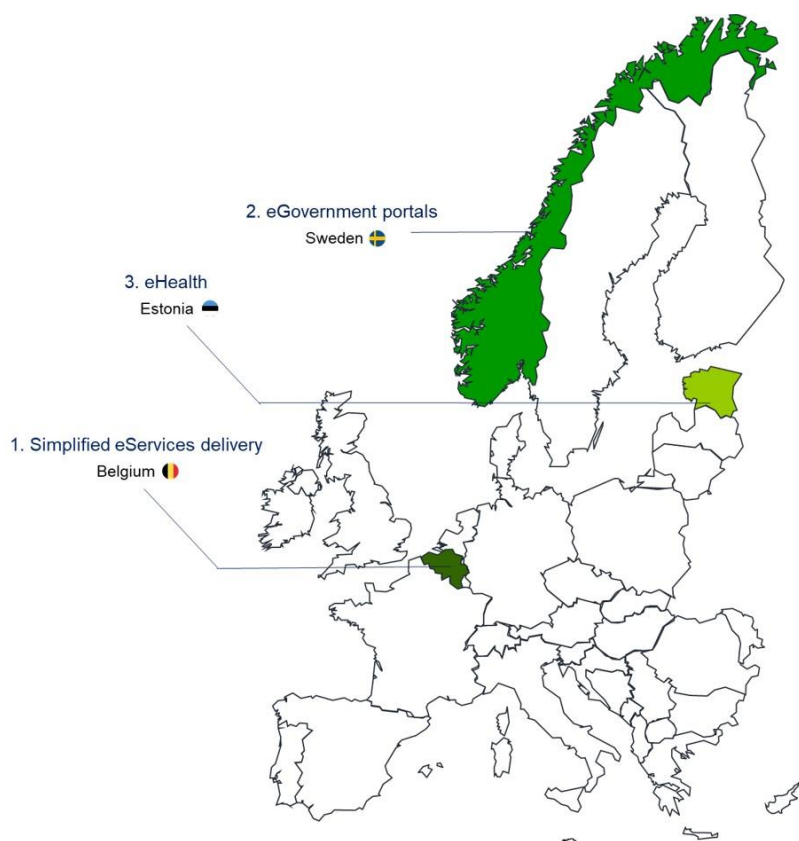
#### 4.2.5 *Services for citizens and businesses*

Digital services refer to the application of business and technical expertise to enable organisations in the creation, management and optimisation of or access to information and business processes<sup>203</sup>. In the case of digital public services, the government is usually providing its citizens with different services that are accessible through digital or online means. From the citizens' perspective, therefore, this type of service is delivered through online channels.

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<sup>203</sup> Definition adapted from: Gartner IT Glossary (2019). *IT Services*. Accessed on 9 December 2019.

Figure 10. Digital government outlook: Services for citizens and businesses



Source: Analysis performed by Wavestone, Nov 2019.

Notes: Based on the main digital government highlights of the 2019 Digital Government Factsheets, the map represents the top three themes regarding recently implemented services for citizens and businesses.

Based on the main digital government highlights collected through the Digital Government Factsheets 2019 and as shown in **Figure 10**, 26 Member States out of 28 have introduced at least one new digital public service since 2018. We have recognised three main themes when it comes to the provision of digital public services:

- **Simplified eServices delivery:** The simplification and improvement of eService delivery for both businesses and citizens emerge as one of the main concerns for most member states. In Belgium, several new public services were launched in 2018 and were made available to citizens through online platforms or applications. These new digital measures are meant to facilitate the life of everyday citizens by granting them a direct online access to health records, employment files, pension files, among others.
- **eGovernment Portals:** In line with the introduction of eGovernment portals for citizens, more and more countries are creating eGovernment portals dedicated to businesses, in an effort to improve the digital interaction between the public administration and the private sector. This is the case of Sweden, who set up an online portal in 2018, allowing entrepreneurs and enterprises to access official eServices and all the relevant information from various public authorities, including the Swedish Tax Agency and the Companies Registration Office.
- **eHealth:** eHealth refers to tools and services that use ICTs to improve all aspects of health and lifestyle such as diagnosis, treatment and monitoring. eHealth solutions also contribute to access to healthcare from distant regions, enhance the cooperation among the health sector,



and improve the quality of healthcare services.<sup>204</sup> Within the framework of Estonia's digital register, citizens can now book their ambulatory and medical appointments online, view their medical bills and records online. This allows for more flexibility and rapidity in the interactions between health providers and citizens.

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<sup>204</sup> European Commission (n.d.). *eHealth: Digital health and care*. Accessed on 9 December 2019.

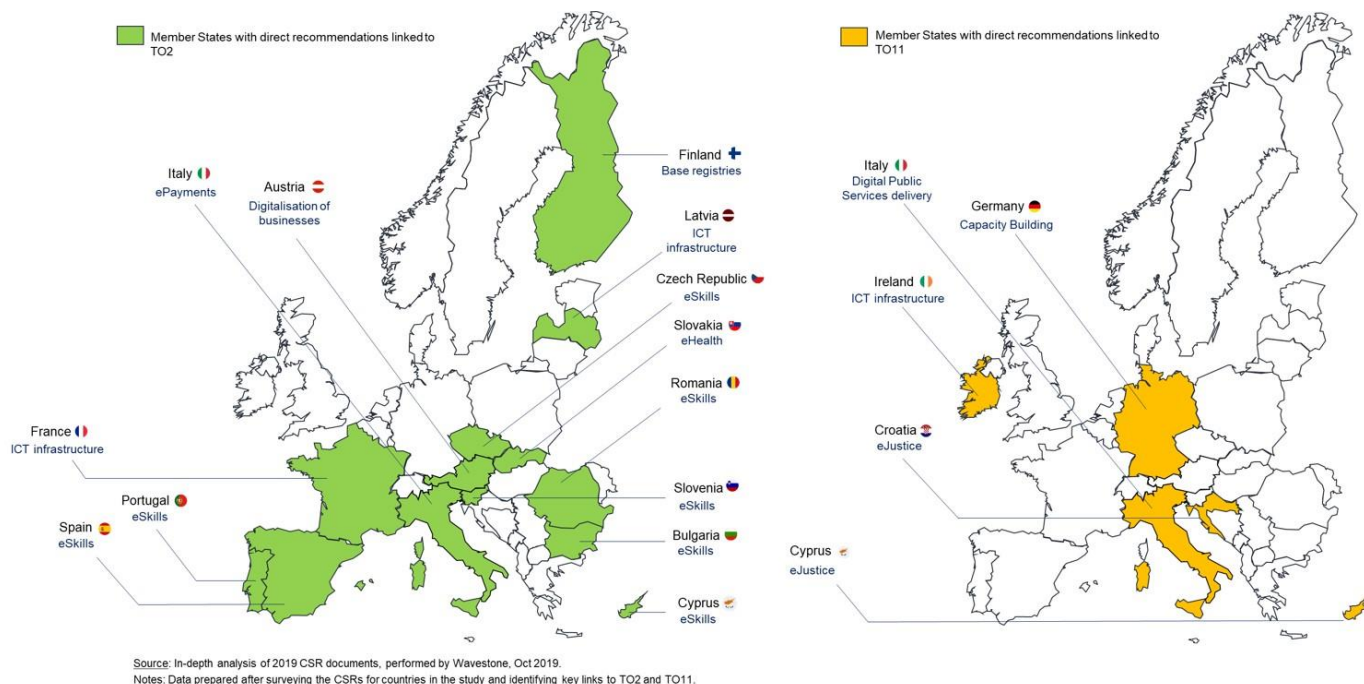
### 4.3 Country Specific Recommendations - Key findings

Every year, the European Semester exercise is carried out. It is an annual monitoring process with the goal to ensure economic convergence and stability throughout the European Union. After assessing all EU governments' plans, the Commission presents each country with CSRs where guidance is provided towards boosting jobs and growth as well as maintaining stable public finances.

This study analyses the CSRs for each country in light of TO2 and TO11. TO2, on the one hand, targets enhancing access to, and use and quality of Information and Communication Technologies (ICT). TO11, on the other hand, aspires to enhance institutional capacity of public authorities and stakeholders and efficient public administration. In chapter 3, the TOs identified in the CSRs are divided into three categories: recommendations, recitals and opportunities: (I) the **recommendations** stem from the European Commission, directly calling on the country at hand to take action in domains related to digital; (II) the **recitals** are suggestions relating to digital solutions that can address a current challenge faced by the country; (III) **opportunities** are issues brought up by the Commission that can be possibly solved or alleviated thanks to a digital solution, identified by the authors of this study.

**Figure 11** shows two maps. The first one illustrates the 13 countries that received direct recommendations linked to TO2 in the digital government domain from the European Commission in 2019, as well as their corresponding themes. While the second map lays out the 5 countries that received direct recommendations linked to TO11 in the digital government domain from the European Commission in 2019, as well as their corresponding themes.

**Figure 11. Member States receiving a country-specific recommendation**



As can be seen from the figure above, in 2019, Member States received more recommendations related to TO2 than those related to TO11. Regarding TO2, the majority of recommendations, meaning

eight instances out of 14, were related to eSkills (Bulgaria, Cyprus, Czech Republic, Italy, Portugal, Romania, Slovenia and Spain). Two recommendations dealt with ICT Infrastructure (France and Latvia). Lastly, one recommendation regarded ePayments (Italy), one is linked to Base Registries (Finland), one is related to Digitalisation of Businesses (Austria) and one deals with eHealth (Slovakia). As for TO11, two recommendations deal with eJustice (Croatia and Cyprus), one with Capacity Building (Germany), one with ICT infrastructure (Ireland), and lastly one is related to Digital Public Services Delivery (Italy).

Our analysis depicts all the themes that have been identified in the 2019 CSRs for the 28 Member States. While analysing the CSRs, relevant themes other than *recommendations* were identified in the document's recitals section (classified as *recitals*) since they represent actual challenges present in the Member State that are likely to be solved with the help of ICT tools. More general possibilities for the application of ICT tools identified throughout the whole document were also included as *opportunities* in the digital government domain. The identified themes are further clustered as falling under TO2, TO11 or, given the high interdependency of the two TO, potentially falling under both, based on the specific case. **Table 2** below provides an initial overview of all countries and themes identified, followed by explanations and examples, as well as overview of the main thematic trends related to TO2 and TO11 is presented. When considering TO2 and TO11 together, the top three topics addressed in the 2019 CSRs appear to be eSkills (26 instances), eHealth (15 instances) and eTax (11 instances).

Table 2. 2019 CSRs thematic overview

Themes	AT	BE	BG	HR	CY	CZ	DK	EE	FI	FR	DE	GR	HU	IE	IT	LV	LT	LU	MT	NL	PL	PT	RO	SK	SI	ES	SE	UK	Tot.
eSkills																												26	
eHealth																												15	
eTax																												11	
eJustice																												10	
eProcurement																												8	
Digitalisation of businesses																												6	
ICT infrastructure																												6	
eGovernment and Interoperability framework																												4	
Digital Public Services delivery																												3	
eLearning																												3	
Capacity Building																												2	
ePayment																												2	
eGovernment portal																												2	
eInclusion																												2	
New technologies																												2	
Base registries																												1	
eInvoicing																												1	
	4	4	7	3	5	3	2	1	5	4	4	5	5	5	6	3	3	1	4	2	4	5	5	5	3	4	1	1	

Source: Analysis performed by Wavestone, Oct 2019.

Legend: 📋 Recommendation 🔍 Recital 💡 Opportunity 🟢 T02 🟡 T011

## Thematic Objective 2

- **Digitalisation of Businesses:** The private sector's digitalisation enhances the country's economic performance, companies' growth and visibility of SMEs, while ensuring competition. Cooperation between the private and public sector towards digitalisation is also an important aspect in the economy towards supporting innovation and the use of new technologies.<sup>205</sup> This year, Austria received a recommendation from the Commission to focus its future investments on deepening and spreading digitalisation and the use of digital tools, particularly in the business sector. This will help Austrian companies deliver faster and more efficient services to its citizens.
- **eGovernment portal:** More and more countries are now setting up eGovernment portals for citizens and businesses in order to facilitate the use of government services through electronic means. The use of these portals would improve the digital interaction between governments and businesses as well as between governments and citizens. In Spain, an opportunity was identified for the creation of this double-oriented portal in the context of employment. In fact, the country's CSR pointed out to the need for improving and tailoring profiling tools to better match jobseekers with employers' needs. By setting up an eGovernment portal, accessible to both citizens and businesses, would facilitate the job-searching and employer-seeking procedures.
- **ePayment:** ePayment is the possibility to make payments for goods and services online. It is available on all types of devices, i.e. computers, smartphones and tablets. It is a widely used means in the private sector by banks and is currently being developed in the public sector as well.<sup>206</sup> The use of ePayment was recommended to Italy by the Commission in an effort to fight against corruption and tax evasion. In the case of Italy, the mandatory use of ePayments should be complemented by lower legal thresholds for cash payments.
- **eInclusion:** eInclusion policies aim at reducing gaps in ICT usage. Governments can organise teaching sessions for example, to promote the use of ICT and allow all citizens to participate in the many aspects of information society. This will also benefit people's employment opportunities, cohesion, quality of life and the country's digital economy performance.<sup>207</sup> In 2018, an opportunity was established for Slovakia to implement eInclusion measures so as to foster equity and inclusivity, which are greatly lacking behind in the country compared to European standards.

## Thematic Objective 11

- **Capacity Building through ICT:** Capacity building through ICT is the long-term process of facilitating knowledge acquisition and deliver appropriate tools to individuals about a particular sector. The aim is for civil servants to acquire appropriate skills to successfully perform their required functions.<sup>208</sup> This year, for example, the Commission recommended that Germany

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<sup>205</sup> European Commission (n.d.). *Digitising European Industry*. Accessed on 9 December 2019.

<sup>206</sup> Definition adapted from: Collins Dictionary (n.d.). *e-Payments Definition*. Accessed on 9 December 2019.

<sup>207</sup> European Commission (2006). *Riga Ministerial Declaration on ICT for an Inclusive Society*. Accessed on 9 December 2019.

<sup>208</sup> International Telecommunication Union (ITU) (2003). *Presentation World Summit on the Information Society PrepCom II – Geneva Roundtable 5 – Feb 19, 2003*. Accessed on 9 December 2019.

focus its investment-related economic policy on innovation and digitalisation, with a particularly strong focus on high capacity broadband.

- **eGovernment and Interoperability Framework:** An eGovernment and Interoperability Framework refers to commonly agreed approaches with a two-fold goal: to establish the use of ICT tools in public administration on the one hand and provide the delivery of public services in an interoperable manner on the other. This should ensure interaction between citizens and businesses and public administrations or between public administrations internally, taking place through effective digital services.<sup>209</sup> In 2018, the Commission stressed the need for Cyprus to improve the functioning of its public administration as well as the overall governance of its local entities. Thus, it identified an opportunity for the country to boost the usage of eGovernment services, which are already in place but not fully functional yet. By setting up these measures, a smoother communication between the various public entities would be ensured as well as faster solutions to administrative procedures.
- **eInvoicing:** Electronic invoicing is the exchange of an electronic invoice document between a supplier and a buyer. An electronic invoice is an invoice that has been issued, transmitted and received in a structured data format which allows for its automatic and electronic processing.<sup>210</sup> In Italy, eInvoicing has been made mandatory for all commercial transactions with final consumers, starting from 2019. The use of eInvoicing is mentioned in the CSRs as a measure to fight against tax evasion and ensure a better tax compliance.
- **eJustice:** The eJustice approach uses ICT to improve citizens' access to justice and to make legal action more effective. It also contributes to making the judicial system more accessible and transparent.<sup>211</sup> This year once more, the Commission recommended for Croatia to implement eJustice measures. These would significantly reduce the duration of the courts' proceedings and make the processes faster and more effective
- **eTax:** Taxation becomes easier, faster and more efficient through digitalisation. eTax measures enhance the quality of public administration services, making the tax collection process more uniform.<sup>212</sup> In the Netherlands, for example, an opportunity to improve tax efficiency has been uncovered. In fact, by putting in place a single IT platform for all financial and administrative processes, the country would greatly limit tax evasion and harmonise all of its tax procedures.
- **eProcurement:** eProcurement entails more than merely the use of electronic tools. It rethinks the pre-award and post-award phases to simplify participation and improve the management for the public sector. The integration of data-based approaches is facilitated at various stages of the procurement process. The aim is to address the lack of transparent public procurement processes and improve the competitiveness and transparency of many Member States.<sup>213</sup>

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<sup>209</sup> COM (2017) 134 final, Annex to the Communication from the Commission of the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the European Interoperability Framework – Implementation Strategy, Brussels, 23.3.2017.

<sup>210</sup> European Commission (n.d.). *What is eInvoicing*. Accessed on 9 December 2019.

<sup>211</sup> COM (2008)329 final, Communication from the Commission to the Council, the European Parliament and the European Economic and Social Committee on Towards a European e-Justice Strategy, Brussels, 30.5.2008.

<sup>212</sup> Definition adapted from: Collins Dictionary (n.d.). *Definition e-Taxes*. Accessed on 9 December 2019.

<sup>213</sup> European Commission (n.d.). *E-procurement*. Accessed on 9 December 2019.

The CSR for Portugal stressed that current problems in the planning and monitoring of public procurement are hindering the country's competitive advantages. Thus, this would be an opportunity for Portugal to promote the use of eProcurement solutions.

## Thematic Objectives 2 and 11

- **eLearning:** eLearning encompasses a broad range of knowledge transferred through digital technologies, sometimes as a complement to traditional education channels. The use of ICT tools is especially powerful for reaching individuals with no access to traditional education and training, either because they live in remote areas or because of their socioeconomic situation or special needs<sup>214</sup>. For instance, as Austria needs to raise its levels of basic skills for disadvantaged groups, the CSR for the country recommends promoting eLearning solutions to help citizens into accessing education through ICTs.
- **eSkills:** eSkills relate to the knowledge of applying and developing ICT and infrastructure. Users, i.e. citizens, need to possess the capabilities to use various technologies. For this reason, digital education starts from an early age in several countries. Practitioners, in both the front and back offices of public administrations also need to have profound digital literacy. Quality and new technologies will only enhance if people constantly learn and evolve.<sup>215</sup> Romania's population greatly lacks basic but necessary digital skills that could enhance its future competitiveness. Hence, the Commission recommended it to develop the use of eSkills that could promote the creation of digital public services for all and at the same time, foster the digitalisation of Romanian businesses.
- **ICT Infrastructure:** ICT infrastructure embodies the system of hardware, software, facilities and service components that support the delivery of business systems and IT-enabled processes. The appropriate ICT infrastructure is a necessity to support the introduction or expansion of eGovernment and interoperability services.<sup>216</sup> The most recurrent infrastructure that is needed in countries is broadband and fibre connectivity. In Latvia for example, the Commission strongly encourages the country to concentrate its investment-related economic policy on innovation, with a particular focus on digital infrastructure.
- **eHealth:** eHealth refers to tools and services that use ICTs to improve all aspects of health and lifestyle such as diagnosis, treatment and monitoring. eHealth solutions also contribute to access to healthcare from distant regions, enhance the cooperation among the health sector, and improve the quality of healthcare services.<sup>217</sup> In Hungary for example, an opportunity was identified to enhance the efficiency of the healthcare system through the implementation of eHealth measures. In fact, the use of ICT in healthcare would facilitate and speed up the work of medical staff and primary care takers.
- **Digital Public Services Delivery:** Public services are becoming more digital. Citizens and businesses can take care of not only purely administrative processes online, but also services in the health and education sectors for example. Digitalisation, automation and simplification

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<sup>214</sup> Eurostat (2016). *Glossary: E-Learning*. Accessed on 9 December 2019.

<sup>215</sup> Eurostat (2016). *Glossary: E-skills*. Accessed on 6 November 2019.

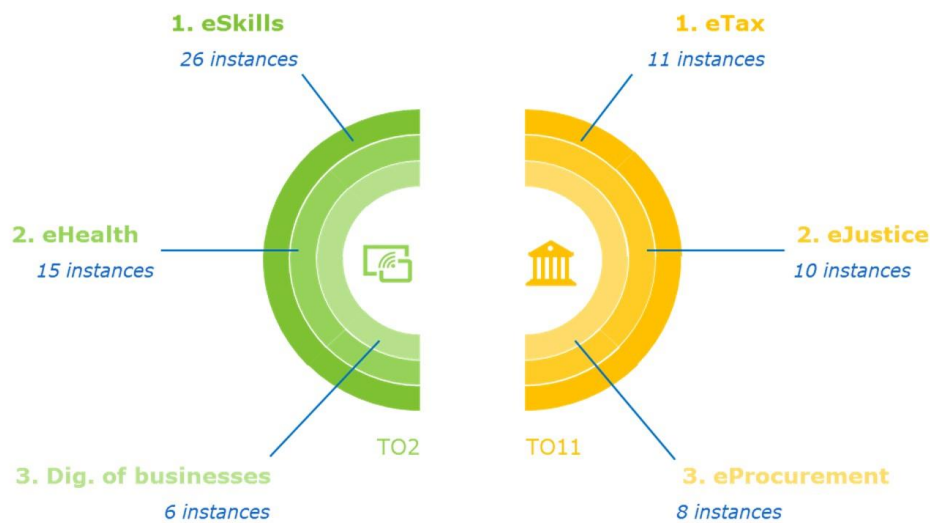
<sup>216</sup> Gartner IT Glossary (2019). *IT infrastructure*. Accessed on 6 November 2019.

<sup>217</sup> European Commission (n.d.). *eHealth: Digital health and care*. Accessed on 6 November 2019.

are important end-goals for governments.<sup>218</sup> The Commission strongly urged Bulgaria to improve its fiscal policy. This is an opportunity for the country to digitalise its tax administrative system and tax collection. In fact, by digitalising the delivery of its public services, Bulgaria could aim to improve its overall tax efficiency and compliance.

Overall, references to themes under TO2 emerged as more frequent (64 instances) than those related to TO11 (40 instances). As shown in **Figure 12**, the top three themes identified under TO2 are eSkills (26 instances), eHealth (15 instances) and Digitalisation of Businesses (6 instances), whereas the top three themes under TO11 are eTax (11 instances), eJustice (10 instances) and eProcurement (8 instances).

**Figure 12. Top three themes identified in the CSRs under TO2 and TO11**



Source: Analysis performed by Wavestone, Nov 2019.

Note: The figure represents the top three most recurrent themes identified under TO2 and under TO11.

From a country perspective, we identified an average of 3.5 references per country to issues falling under TO2 and TO11 in the 2019 CSRs, with Bulgaria scoring the most, with seven references, followed by Italy with six references. Then we found eight countries that scored five references (Cyprus, Greece, Hungary, Ireland, Portugal, Romania, Slovakia and Spain) and seven countries that scored four references (Austria, Belgium, Finland, France, Germany, Malta and Poland). It is also worth noting that, in 2019, Sweden was the only member state who did not receive a recommendation from the European Commission, and where no reference to opportunities related to the digital government domain was found in its CSR document.

<sup>218</sup> Definition adapted from: European Commission (2017). *eGovernment Benchmark 2017*. Accessed on 6 November 2019.



## 4.4 National Reform Programmes – Key findings

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NRPs are documents presented by all Member States' governments to the European Commission on a yearly basis. These documents contain existing and future policies that will be put in place in a wide range of socio-economic areas to boost jobs and growth and prevent or correct imbalances. In light of the European Semester process, they constitute concrete plans to comply with the EU's country-specific recommendations and general fiscal rules.

The content analysis of the NRPs of the Member States helped to establish how different reforms, carried out in the countries, tackle issues related to the use of ICT within the public administration to enhance digital government.

As shown in **Table 3** below, our analysis depicts all the themes that have been identified in the 2019 National Reform Programmes for the 28 Member States. The identified themes are clustered as falling under TO2, TO11 or, given the high interdependency of the two TO, potentially falling under both, based on the specific case. Table 3 below presents an overview of the identified themes, linked to TO2 and TO11 in the different Member States' NRPs. When considering TO2 and TO11 together, the top three topics addressed in the 2019 NRPs appear to be eSkills (33 instances), Digitalisation of businesses (25 instances) and ICT infrastructure (25 instances).

Table 3. 2019 NRPs thematic overview

Themes																													Tot.
eSkills	2	2	✓		✓	✓	2	✓	✓		✓		✓	✓	✓	2	✓	✓	✓		✓	2	✓		3	✓	✓	2	33
Digitalisation of businesses	✓	✓	✓		2				✓	✓	✓	✓	✓		✓			✓	✓		✓	✓	2	2		2	✓	✓	25
ICT infrastructure			2		✓	✓		2	✓		✓					2	✓	✓		✓		✓	✓		3	✓	✓	✓	25
eHealth	✓	✓	✓	✓	✓	✓		✓	✓		✓			✓	✓	✓	✓		✓		✓	✓	✓	✓					19
Digital Public Services delivery		✓	2			✓				2	2	✓			✓		✓				2	✓		✓	✓	✓		✓	18
eGovernment portal				2	2	2				✓		2				✓		3				✓	✓		✓	✓			17
Capacity Building	2	✓						2	2	2			✓					2				✓				✓			13
New technologies		✓			✓		✓				✓			✓	✓		✓	✓	2							✓	✓		12
eProcurement		✓	✓		✓	✓							✓		✓						✓	✓		✓	✓	✓			11
eGovernment and Interoperability framework	✓			✓	✓	3					✓		✓													✓	✓		10
eJustice		✓		✓	✓							✓			✓					✓			✓		2	✓	✓		10
eTax				✓	✓	✓												✓					✓		✓				6
Open Data			✓	✓	✓													✓	✓										5
eLearning				✓					✓	✓		✓											✓						5
Base registries			✓				✓																	✓			✓		4
eCulture			✓															✓				✓	✓						4
eInclusion								✓								✓							✓			✓			4
Cybersecurity		✓																					✓				✓		3
eID						✓									✓	✓													3
eInvoicing																					✓			✓					2
ePayment															✓														1
Geospatial portal																						✓							1
Tot.	7	9	12	8	13	15	3	8	7	7	9	4	7	3	9	11	7	11	5	1	7	13	10	8	15	12	2	8	

Source: Analysis performed by Wavestone, Oct 2019.

TO2

TO11

Source: Analysis performed by Wavestone, Oct 2019.

TO2 TO11

## Thematic Objective 2

- **eCulture:** New technology-based access to culture is expected to change both its production and dissemination. Culture is preserved and promoted through digital means, by increasing people's access to culture, offering them new ways to participate in cultural experiences and learn.<sup>219</sup> For instance, Portugal is making available online the contents of libraries and other cultural institutions through virtual spaces. This will foster social inclusion and strengthen literacies.
- **eGovernment Portal:** More and more countries are now setting up eGovernment portals for citizens and businesses in order to facilitate the use of government services through electronic means. The use of these portals would improve the digital interaction between governments and businesses as well as between governments and citizens. Luxembourg is one of the Member States that created an eGovernment Portal for both. Indeed, the one-stop shop Guichet.lu was completely redesigned and modernised and its use have grown rapidly in recent years. The portal simplifies the interaction between citizens or businesses and the public administration.
- **eID:** In the EU, eID services help both public and private service providers to extend the use of their online services to the citizens from other European countries.<sup>220</sup> This ensures citizens to use their national eID to access, in a secure way, the services of other Member States.<sup>221</sup> In Italy, the government has completed the design of the IT platform that will introduce the identity card for all in the upcoming months.
- **eInclusion:** eInclusion policies aim at reducing gaps in ICT usage. Governments can organise teaching sessions for example, to promote the use of ICT and allow all citizens to participate in the many aspects of information society. This will also benefit people's employment opportunities, cohesion, quality of life and the country's digital economy performance.<sup>222</sup> For instance, in Estonia a digital tool for businesses is envisaged to be created to help employers analysing the gender equality situation within their organisation and developing solutions to eliminate the inequalities identified.
- **Geospatial portal:** A geospatial portal provides the citizens with the means to search online for spatial data sets and data services. These portals play an important role in the sharing of geographic information for both individuals and administrations, as the organisation of the information into structured datasets combined with the use of data visualisation tools can lead to a better delivery of public services and to an increase in efficiency and interoperability<sup>223</sup>. In Portugal, a geospatial pilot project was developed within the domain of forest ownership to give a free public access to the country land structure information and provide a Simplified Cadastral Information System for the citizens.

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<sup>219</sup> Definition adapted from: Dictionnaire Sens Agent le Parisien (n.d.). *eCulture*. Accessed on 9 December 2019.

<sup>220</sup> European Commission (n.d.). *CEF Digital Home*. Accessed on 9 December 2019.

<sup>221</sup> European Commission (n.d.). *What is eID?* Accessed on 9 December 2019.

<sup>222</sup> European Commission (2006). *Riga Ministerial Declaration on ICT for an Inclusive Society*. Accessed on 6 November 2019.

<sup>223</sup> Definition adapted from: European Commission (n.d.). *INSPIRE Geoportal*. Accessed on 10 December 2019.

## Thematic Objective 11

- **Base Registries:** A base register is a trusted and authoritative source of information, which can and should be digitally reused by others, where one organisation is responsible and accountable for the collection, use, updating and preservation of information. Thus, a base register is a reliable source of basic information on data items such as people, companies, vehicles, licences, buildings, locations and roads.<sup>224</sup> In Slovakia, the country's electronic cash register, named eKasa, will help to ensure a fairer competition between taxpayers, improve control activities and facilitate the fight against tax evasion.
- **Capacity Building through ICT:** Capacity building through ICT is the long-term process of facilitating knowledge acquisition and deliver appropriate tools to individuals about a particular sector. The aim is for civil servants to acquire appropriate skills to successfully perform their required functions.<sup>225</sup> An example can be found in Estonia. There, the government is promoting a broader use of creative industries, ICT and other key technologies by setting up cross-domain implementation policies.
- **eInvoicing:** Electronic invoicing is the exchange of an electronic invoice document between a supplier and a buyer. An electronic invoice is an invoice that has been issued, transmitted and received in a structured data format which allows for its automatic and electronic processing.<sup>226</sup> An example of efforts regarding eInvoicing can be found in Poland where an electronic invoicing platform is being developed for public finances to complement the digitalisation of public procurement.
- **eGovernment and Interoperability Framework:** An eGovernment and Interoperability Framework refers to commonly agreed approaches with a two-fold goal: to establish the use of ICT tools in public administration on the one hand and provide the delivery of public services in an interoperable manner on the other. This should ensure interaction between citizens and businesses and public administrations or between public administrations internally, taking place through effective digital services.<sup>227</sup> Austria for example launched a flagship project in the public sector, the Digital Public Administration, which aims to lay the basis for cross-entity electronic administrative processes, thus allowing interoperability.
- **eJustice:** The eJustice approach uses ICT to improve citizens' access to justice and to make legal action more effective. It also contributes to making the judicial system more accessible and transparent.<sup>228</sup> For example, in Croatia, the government will improve the efficiency of its judicial system through further development of electronic communication between courts and

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<sup>224</sup> European Commission (2017). *Annex to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the Implementation Strategy of the European Interoperability Framework*. Accessed on 26 February 2020.

<sup>225</sup> International Telecommunication Union (ITU) (2003). *Presentation World Summit on the Information Society PrepCom II – Geneva Roundtable 5 – Feb 19, 2003*. Accessed on 9 December 2019.

<sup>226</sup> European Commission (n.d.). *What is eInvoicing*. Accessed on 9 December 2019.

<sup>227</sup> COM (2017) 134 final, Annex to the Communication from the Commission of the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the European Interoperability Framework – Implementation Strategy, Brussels, 23.3.2017.

<sup>228</sup> COM (2008)329 final, Communication from the Commission to the Council, the European Parliament and the European Economic and Social Committee on Towards a European e-Justice Strategy, Brussels, 30.5.2008.

the other participants of the proceedings. This will also lead to less administrative burden for courts.

- **ePayment:** ePayment is the possibility to make payments for goods and services online. It is available on all types of devices, i.e. computers, smartphones and tablets. It is a widely used means in the private sector by banks and is currently being developed in the public sector as well.<sup>229</sup> This year, for instance, Italy reinforced its use of ePayments in order to reduce cash payments and fight against tax evasion.
- **eProcurement:** eProcurement entails more than merely the use of electronic tools. It rethinks the pre-award and post-award phases to simplify participation and improve the management for the public sector. The integration of data-based approaches is facilitated at various stages of the procurement process. The aim is to address the lack of transparent public procurement processes and improve the competitiveness and transparency of many Member States.<sup>230</sup> For instance, in Belgium the 2019 action plan of the Innovative Public Procurement programme allocates 3% of Flemish public procurement expenditure to innovation in this area.

#### Thematic Objective 2 and 11

- **Cybersecurity:** As the risks on cyber-attacks have grown in recent years, concerns about the protection of user data have risen. This has led countries to enhance their cybersecurity systems. Cybersecurity entails all the measures that are taken to protect electronic data and counter the threat of criminal attacks and unauthorised use of data.<sup>231</sup> For instance, the United Kingdom government addresses this challenge through the Industrial Strategy Challenge Fund. The aim is to update the digital computing infrastructure and make it more secure through hardware innovation, having positive effects for businesses.
- **Digital Public Services Delivery:** Public services are becoming more digital. Citizens and businesses can take care of not only purely administrative processes online, but also services in the health and education sectors for example. Digitalisation, automation and simplification are important end-goals for governments.<sup>232</sup> As an example, there are the efforts made by Bulgaria. The country will implement an electronic labour exchange to help unemployed people.
- **Digitalisation of Businesses:** The private sector's digitalisation enhances the country's economic performance, companies' growth and visibility of SMEs, while ensuring competition. Cooperation between the private and public sector towards digitalisation is also an important aspect in the economy towards supporting innovation and the use of new technologies.<sup>233</sup> An example of digitalisation can be found in Cyprus where the government adopted a new set of digital solutions and cutting-edge technologies to digitalise its industries. The result is the creation of smart factories, digital innovation hubs and technology transfer centres.

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<sup>229</sup> Definition adapted from: Collins Dictionary (n.d.). *e-Payments Definition*. Accessed on 6 November 2019.

<sup>230</sup> European Commission (n.d.). *E-procurement*. Accessed on 9 December 2019.

<sup>231</sup> Oxford Dictionaries. (2019). *Cybersecurity*. Accessed on 9 December 2019.

<sup>232</sup> Definition adapted from: European Commission (2017). *eGovernment Benchmark 2017*. Accessed on 9 December 2019.

<sup>233</sup> European Commission (n.d.). *Digitising European Industry*. Accessed on 9 December 2019.

- **eHealth:** eHealth refers to tools and services that use ICTs to improve all aspects of health and lifestyle such as diagnosis, treatment and monitoring. eHealth solutions also contribute to access healthcare from distant regions, enhance the cooperation within the health sector, and improve the quality of healthcare services.<sup>234</sup> For example, Lithuania put in place the Electronic Health System to limit the administrative burden on healthcare professionals and enhance the transparency of the whole healthcare system. Moreover, the ePrescription functionality is being successfully used.
- **eLearning:** eLearning encompasses a broad range of knowledge transferred through digital technologies, sometimes as a complement to traditional education channels. The use of ICT tools is especially powerful for reaching individuals with no access to traditional education and training, either because they live in remote areas or because of their socioeconomic situation or special needs<sup>235</sup>. Romania for instance, keeps digitalising its education system through the national project *Modern Romania, Digital Romania*, which will provide tablets, computers, smart boards in classrooms, and other technologies for every school in the country.
- **eSkills:** eSkills relate to the knowledge of applying and developing ICT and infrastructure. Users, i.e. citizens, need to possess the capabilities to use various technologies. For this reason, digital education starts from an early age in several countries. Practitioners, in both the front and back offices of public administrations also need to have profound digital literacy. Quality and new technologies will only enhance if people constantly learn and evolve.<sup>236</sup> As an example, Malta has launched the new Digital Strategy which aims at transforming the country into a digitally enabled nation by empowering citizens with basic digital skills. This will allow them to take on new opportunities in the technology and digital sectors.
- **eTax:** Taxation becomes easier, faster and more efficient through digitalisation. eTax measures enhance the quality of public administration services, making the tax collection process more uniform.<sup>237</sup> For example, in Slovenia it is envisaged to increase the level of digitalisation and activities aimed at preventing abuse and tax avoidance.
- **ICT Infrastructure:** ICT infrastructure embodies the system of hardware, software, facilities and service components that support the delivery of business systems and IT-enabled processes. The appropriate ICT infrastructure is a necessity to support the introduction or expansion of eGovernment and interoperability services.<sup>238</sup> Luxembourg aims at enhancing the public transport network through the implementation of a near real time telematics system.
- **New Technologies:** New technologies cover the emerging technologies that influence public administration. They fall under the broad heading of IT (Information Technology). The term IT includes any technology, software, or hardware, used to transmit, store, and manipulate information in the form of data. Having a more efficient IT infrastructure equipped with new technologies allows public administration systems to get more work done faster and more

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<sup>234</sup> European Commission (n.d.). *eHealth: Digital health and care*. Accessed on 9 December 2019.

<sup>235</sup> Eurostat (2016). *Glossary: E-Learning*. Accessed on 13 November 2019.

<sup>236</sup> Eurostat (2016). *Glossary: E-skills*. Accessed on 9 December 2019.

<sup>237</sup> Definition adapted from: Collins Dictionary (n.d.). *e-Taxes*. Accessed on 9 December 2019.

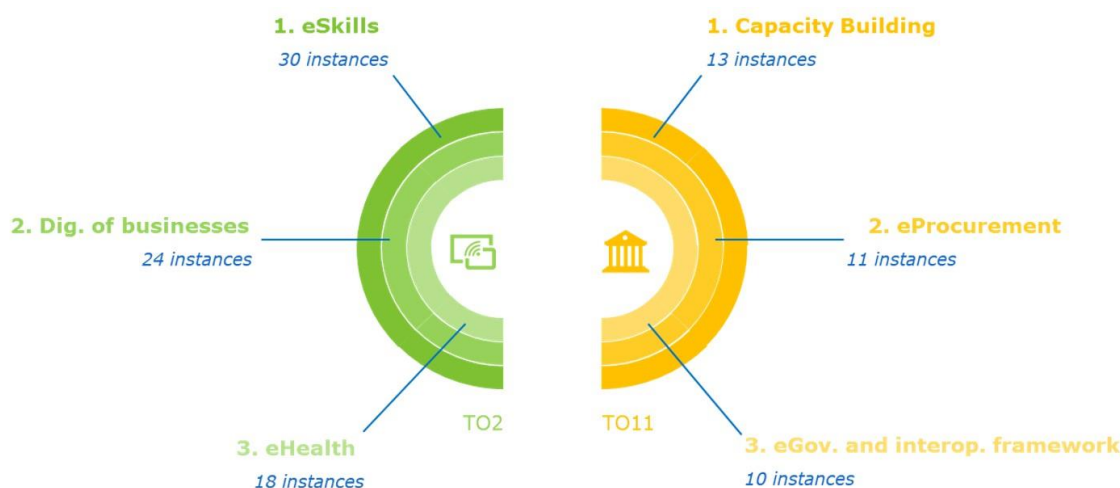
<sup>238</sup> Gartner IT Glossary (2019). *IT infrastructure*. Accessed on 9 December 2019.

securely, even when employees are on the go.<sup>239</sup> In Germany for example, a fund is being developed to support the adoption of new technologies such as blockchain, Internet of Things and Big Data by the academia and industry sectors.

- **Open Data:** Open data refers to the idea that all public data should be freely available for use and reuse by others, unless restrictions apply, such as for the protection of personal data, for example.<sup>240</sup> For instance, the government of Cyprus has created a new open data portal which was ranked first among 31 open data portals across Europe.

From the analysis of the countries' NRPs it emerged that references to themes under TO2 are significantly more frequent (158 instances) than those related to TO11 (73 instances). As shown in **Figure 13**, the top three themes identified under TO2 are eSkills (30 instances), Digitalisation of business (24 instances) and eHealth (18 instances), whereas the top three themes under TO11 are Capacity building (13 instances), eProcurement (11 instances) and eGovernment and Interoperability framework (10 instances).

**Figure 13. Top three themes identified in the NRPs under TO2 and TO11**



Source: Analysis performed by Wavestone, Nov 2019.

Note: The figure represents the top three most recurrent themes identified under TO2 and under TO11.

From a country perspective, we identified an average of 8.25 references per country to issues falling under TO2 and TO11 in the 2019 NRPs, with two countries scoring 15 references (Czech Republic and Slovenia), one country scoring 13 references (Cyprus) and one country scoring 12 instances (Bulgaria). It also worth to note that only one reference to reforms related to the digital government domain has been found in the NRP of the Netherlands.

<sup>239</sup> Definition adapted from Petroni, G. and Cloete, F. (2007). *New Technologies in Public Administration*. Accessed on 19 December 2019.

<sup>240</sup> COM (2017) 134 final, Annex to the Communication from the Commission of the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the European Interoperability Framework – Implementation Strategy, Brussels, 23.3.2017. Accessed on 26 February 2020.

## 4.5 Operational Programmes – Key findings

The OPs are detailed plans in which the Member States set out how money from the ESIF will be spent during the programming period 2014-2020. While many OPs are implemented on a regional level, the scope of this study focuses on the national OPs addressing themes related to TO2 and TO11. The overview of the OPs is organised in the same way as the NRPs, thus looking at funding priorities in the scope of TO2 and TO11.

The main purpose of the content analysis of the OPs is to offer an overview of the Member States' funding priorities in the field of digital government falling under ESIF TO2 and TO11.

Our analysis depicts all the themes that have been identified in the selected 2014-2020 Operational Programmes for the 28 Member States. The identified themes are clustered as falling under TO2, TO11 or, given the high interdependency of the two TOs, potentially falling under both, based on the specific case. **Table 4** below provides an overview of all countries and themes identified, followed by explanations and examples, as well as an overview of the main thematic trends related to TO2 and TO11 is presented. When considering TO2 and TO11 together, the top three topics addressed in the 2014-2020 OPs analysed appear to be ICT infrastructure (26 instances), Digital Public Services delivery (20 instances) and eSkills (11 instances).

Table 4. OPs thematic overview

Themes	AT	BE	BG	HR	CY	CZ	DK	EE	FI	FR	DE	GR	HU	IE	IT	LV	LT	LU	MT	NL	PL	PT	RO	SK	SI	ES	SE	UK	Tot.
ICT infrastructure	✓		✓	✓	✓	✓		✓				✓	✓		✓	✓	✓		✓		✓	✓	✓	✓	✓	✓	✓		26
Digital Public Services delivery			✓	✓	✓	✓		✓	✓			✓	✓		✓	✓	✓		✓			✓		✓	✓				20
eSkills		✓	✓		✓	✓			✓						✓	✓			✓		✓	✓			✓				11
eLearning				✓								✓	✓			✓	✓		✓		✓		✓		✓	✓			10
Digitalisation of businesses	✓		✓	✓		✓					✓						✓		✓				✓			✓			10
eHealth		✓	✓	✓	✓	✓										✓			✓			✓	✓			✓			9
eJustice		✓	✓		✓										✓	✓			✓					✓	✓	✓			9
eGovernment and Interoperability framework			✓					✓							✓			✓				✓	✓	✓		✓			8
eProcurement	✓		✓										✓				✓		✓		✓		✓		✓				8
Open Data			✓			✓									✓	✓	✓						✓		✓				7
Cybersecurity						✓											✓				✓	✓	✓	✓	✓	✓			7
eInclusion																✓			✓		✓	✓	✓	✓	✓	✓			7
Capacity Building	✓		✓										✓			✓								✓					5
eCulture			✓													✓							✓						3
New technologies							✓				✓																		2
eParticipation															✓										✓				2
eInvoicing															✓									✓					2
eGovernment portal			✓																		✓								2
eTax			✓																										1
Base registries																						✓							1
Tot.	4	/	9	14	5	10	/	3	3	/	/	6	4	/	8	14	8	/	11	/	10	7	13	10	7	7	/	/	

Source: Analysis performed by Wavestone, Oct 2019.

TOT2TOT11

Source: Analysis performed by Wavestone, Oct 2019.

Note: The number present in the table's cells represents the number of appearances of themes under TO2 when on the left and under TO11 when on the right. Only countries with OPs relating to TO2 and TO11 fall in the scope of the analysis.

TO2 TO11



## Thematic Objective 2

- **Digitalisation of Businesses:** The private sector's digitalisation enhances the country's economic performance, companies' growth, the visibility of SMEs and ensures competition. Cooperation between the private and public sector towards digitalisation are also an important aspect in the economy towards supporting innovation and the use of new technologies.<sup>241</sup> As example there are the Bulgarian micro enterprises, start-ups and SMEs which receive financing towards developing new and innovative ideas related to ICT, eCommerce and eServices.
- **eCulture:** New technology-based access to culture is expected to change both its production and dissemination. Culture is preserved and promoted through digital means and also increases people's access to culture, offering them new ways to participate in cultural experiences and learn.<sup>242</sup> Croatia, for example, will use ICT opportunities to promote cultural presence online such as the digitalisation of cultural resources and publication of digital collections.
- **eGovernment portal:** More and more countries are now setting up eGovernment portals for citizens and businesses in order to facilitate the use of government services through electronic means. The use of these portals would improve the digital interaction between governments and businesses as well as between governments and citizens. Sometimes it is a way for the government to enhance communication in a three-way approach, i.e. the public administration, private sector and citizens. Croatia, for instance, is establishing an eCitizen platform, an eBusiness platform as well as a one-stop shop to enhance communication with different stakeholders.
- **eInclusion:** eInclusion policies aim at reducing gaps in ICT usage. Governments can organise teaching sessions for example, to promote the use of ICT and allow all citizens to participate in the many aspects of information society. This will also benefit people's employment opportunities, cohesion, quality of life and the country's digital economy performance.<sup>243</sup> The Maltese government, for example, aims to eliminate all barriers to training and education, as well as provide further support measures to vulnerable groups and socially excluded persons.
- **eParticipation:** eParticipation is the term used to describe all forms of political participation involving digital media, stemming both from the governmental level and the citizens themselves. There are three levels: eInformation where information is made available online; eConsultation for government to take into consideration citizens' views; and Decision-making, directly involving citizens.<sup>244</sup> In Slovakia, for example, modern technologies are put in place to establish an eDemocracy and give citizens an equal chance to participate in public affairs.

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<sup>241</sup> European Commission (n.d.). *Digitising European Industry*. Accessed on 9 December 2019.

<sup>242</sup> Definition adapted from: Dictionnaire Sens Agent Le Parisien (n.d.). *eCulture*. Accessed on 9 December 2019.

<sup>243</sup> European Commission (2006). *Riga Ministerial Declaration on ICT for an Inclusive Society*. Accessed on 9 December 2019.

<sup>244</sup> UN E-Government Knowledgebase (2019). *E-Participation Index*. Accessed on 9 December 2019.

## Thematic Objective 11

- **Capacity Building through ICT:** Capacity building through ICT is the long-term process of facilitating knowledge acquisition and deliver appropriate tools to individuals about a particular sector. The aim is for civil servants to acquire appropriate skills to successfully perform their required functions.<sup>245</sup> Bulgaria for instance is making investments needed to increase the efficiency of public administration and public services at various levels. This includes transnational cooperation for the exchange of best practices and experience to enhance the skills, competences and knowledge of public administration employees in Bulgaria.
- **eGovernment and Interoperability Framework:** An eGovernment and Interoperability Framework refers to commonly agreed approaches with a two-fold goal: to establish the use of ICT tools in public administration on the one hand and provide the delivery of public services in an interoperable manner on the other. This should ensure interaction between citizens and businesses and public administrations or between public administrations internally, taking place through effective digital services.<sup>246</sup> An example of a Member State supporting institutional and administrative capacity through an eGovernment and Interoperability Framework is Romania. The country is establishing common legislative standards throughout its public sector as well as end-to-end interoperability interventions that help defining a uniform set of standards for ICT initiatives.
- **eInvoicing:** Electronic invoicing is the exchange of an electronic invoice document between a supplier and a buyer. An electronic invoice is an invoice that has been issued, transmitted and received in a structured data format which allows for its automatic and electronic processing.<sup>247</sup> An example on eInvoicing implementation is presented in the OP of Latvia, which is developing information and data services such as eInvoicing and eCommerce.
- **eJustice:** The eJustice approach uses ICT to improve citizens' access to justice and to make legal action more effective. It also contributes to making the judicial system more accessible and transparent.<sup>248</sup> The Italian government, for instance, is improving the efficiency and performance of judicial offices through computerisation and digitalisation of the offices to make proceedings and processes more efficient.
- **eProcurement:** eProcurement entails more than merely the use of electronic tools. It rethinks the pre-award and post-award phases to simplify participation and improve the management for the public sector. The integration of data-based approaches is facilitated at various stages of the procurement process. The aim is to address the lack of transparent public procurement processes and improve the competitiveness and transparency of many Member States.<sup>249</sup> For example, the use of eProcurement solutions in Hungary is still in development. An

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<sup>245</sup> International Telecommunication Union (ITU) (2003). *Presentation World Summit on the Information Society PrepCom II – Geneva Roundtable 5 – Feb 19, 2003*. Accessed on 9 December 2019.

<sup>246</sup> COM(2017) 134 final, Annex to the Communication from the Commission of the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the European Interoperability Framework – Implementation Strategy, Brussels, 23.3.2017.

<sup>247</sup> European Commission (n.d.). *What is eInvoicing*. Accessed on 9 December 2019.

<sup>248</sup> COM(2008)329 final, Communication from the Commission to the Council, the European Parliament and the European Economic and Social Committee on Towards a European e-Justice Strategy, Brussels, 30.5.2008.

<sup>249</sup> European Commission (n.d.). *E-procurement*. Accessed on 9 December 2019.

electronically structured system will increase transparency, uniform applications and lessen costs.

- **eTax:** Taxation becomes easier, faster and more efficient through digitalisation. eTax measures enhance the quality of public administration services, making the tax collection process more uniform.<sup>250</sup> This is the case in Croatia, where the tax administration's institutional framework aims to better engage with citizens.

## Thematic Objectives 2 and 11

- **Base Registries:** A base register is a trusted and authoritative source of information, which can and should be digitally reused by others, where one organisation is responsible and accountable for the collection, use, updating and preservation of information. Thus, a base register is a reliable sources of basic information on data items such as people, companies, vehicles, licences, buildings, locations and roads.<sup>251</sup> An example of such an initiative is Portugal's base register for prosecutors that will reduce administrative burden on them by storing all information in one system.
- **Cybersecurity:** As the risks on cyber-attacks have grown in recent years, concerns about the protection of user data have risen. This has led countries to enhance their cybersecurity systems. Cybersecurity entails all the measures that are taken to protect electronic data and counter the threat of criminal attacks and unauthorised use of data.<sup>252</sup> The Czech Republic is tackling its cybersecurity by adopting a new cybersecurity law. The law entails legislative clauses on implementing various security measures throughout the country such as electronic identification, authentication and authorisation processes.
- **Digital Public Services Delivery:** Public services are becoming more digital. Citizens and businesses can take care of not only purely administrative processes online, but also services in the health and education sectors for example. Digitalisation, automation and simplification are important end-goals for governments.<sup>253</sup> The Finnish government, for example, aims to enhance electronic communication between the government and the citizens. For that reason, unnecessary or duplicate data requests will be removed, and various processes will become fully automated.
- **eHealth:** eHealth refers to tools and services that use ICTs to improve all aspects of health and lifestyle such as diagnosis, treatment and monitoring. eHealth solutions also contribute to access to healthcare from distant regions, enhance the cooperation among the health sector, and improve the quality of healthcare services.<sup>254</sup> Cyprus, for example, is investing in the development of ICT in the health sector. Public hospitals and health centres will be connected through one data centre system where all patients' files will be digitalised.

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<sup>250</sup> Definition adapted from: Collins Dictionary (n.d.). *e-Taxes*. Accessed on 9 December 2019.

<sup>251</sup> COM (2017) 134 final, Annex to the Communication from the Commission of the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the European Interoperability Framework – Implementation Strategy, Brussels, 23.3.2017. Accessed on 26 February 2020.

<sup>252</sup> Oxford Dictionaries (2019). *Cybersecurity*. Accessed on 9 December 2019.

<sup>253</sup> Definition adapted from: European Commission (2017). *eGovernment Benchmark 2017*. Accessed on 9 December 2019.

<sup>254</sup> European Commission (n.d.). *eHealth: Digital health and care*. Accessed on 9 December 2019.

- **eSkills:** eSkills relate to the knowledge of applying and developing ICT and infrastructure. Users, i.e. citizens, need to possess the capabilities to use various technologies. For this reason, digital education starts from an early age in several countries. Practitioners, in both the front and back offices of public administrations also need to have profound digital literacy. Quality and new technologies will only enhance if people constantly learn and evolve.<sup>255</sup> Malta, for example, has taken steps to further invest and enhance the digital literacy and skills of its citizens which are deemed essential to ensure a more tailored access to employment prospects and a better social inclusion in the country. In addition, the Digital Malta Strategy also aims to foster digital and ICT activities within Maltese businesses and enterprises.
- **eLearning:** eLearning encompasses a broad range of knowledge transferred through digital technologies, sometimes as a complement to traditional education channels. The use of ICT tools is especially powerful for reaching individuals with no access to traditional education and training, either because they live in remote areas or because of their socioeconomic situation or special needs<sup>256</sup>. In Poland, for example, to develop students' digital and ICT skills, schools and training centres will be equipped with eBooks and new eLearning material to accompany the already existing eTextbooks.
- **ICT Infrastructure:** ICT infrastructure embodies the system of hardware, software, facilities and service components that support the delivery of business systems and IT-enabled processes. The appropriate ICT infrastructure is a necessity to support the introduction or expansion of eGovernment and interoperability services.<sup>257</sup> An example is the Estonian government that intends on covering the whole territory of the country with high-speed broadband infrastructure. This will benefit the development of eServices, productivity of citizens who will have the teleworking opportunity, healthcare facilities, as well as schools.
- **New Technologies:** New technologies cover the emerging technologies that influence public administration. They fall under the broad heading of IT (Information Technology). The term IT includes any technology, software, or hardware, used to transmit, store, and manipulate information in the form of data. Having a more efficient IT infrastructure equipped with new technologies allows public administration systems to get more work done faster and more securely, even when employees are on the go.<sup>258</sup> An example is the Greek government that aims to enhance technologies such as cloud computing, machine to machine transactions and contactless systems. The first important, however, is the adoption of relevant legislation.
- **Open Data:** Open data refers to the idea that all public data should be freely available for use and reuse by others, unless restrictions apply, such as for the protection of personal data, for example.<sup>259</sup> Slovenia is one of these countries, where the state is opening up the state-owned public cloud to make certain data available for businesses and citizens.

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<sup>255</sup> Eurostat (2016). *Glossary: E-skills*. Accessed on 9 December 2019.

<sup>256</sup> Eurostat (2016). *Glossary: E-Learning*. Accessed on 9 November 2019.

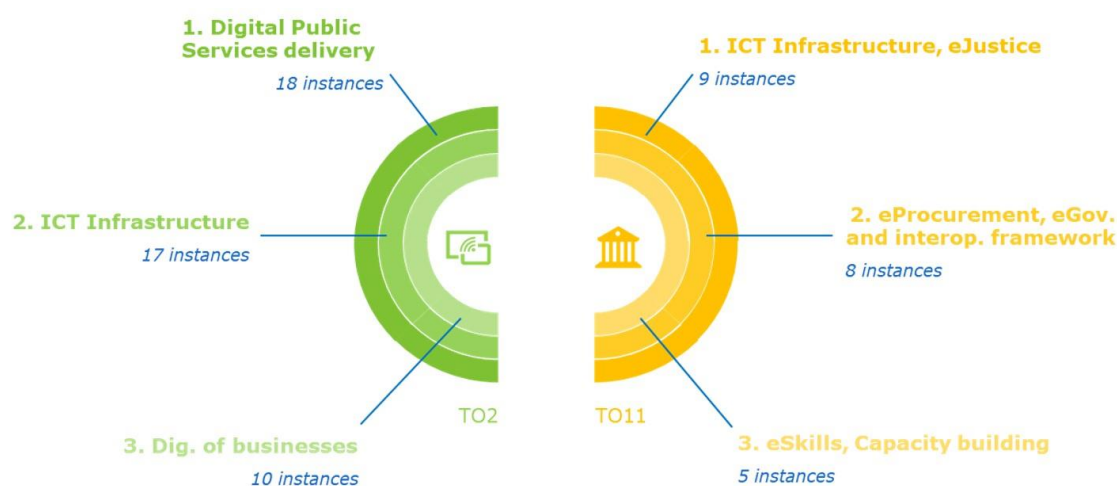
<sup>257</sup> Gartner IT Glossary (2019). *IT infrastructure*. Accessed on 9 December 2019.

<sup>258</sup> Definition adapted from Petroni, G. and Cloete, F. (2007). *New Technologies in Public Administration*. Accessed on 19 December 2019.

<sup>259</sup> COM (2017) 134 final, Annex to the Communication from the Commission of the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the European Interoperability Framework – Implementation Strategy, Brussels, 23.3.2017. Accessed on 26 February 2020.

From the analysis of the countries' OPs it emerged that references to themes under TO2 are significantly more frequent (96 instances) than those related to TO11 (54 instances). As shown in **Figure 14** the top three themes identified under TO2 are Digital Public Services Delivery (18 instances), ICT Infrastructure (17 instances) and Digitalisation of Businesses (10 instances), whereas the top three themes under TO11 are eJustice and ICT Infrastructure (9 instances), eProcurement and eGovernment and Interoperability framework (8 instances) and eSkills and Capacity building (5 instances).

**Figure 14. Top three themes identified in the OPs under TO2 and TO11**



Source: Analysis performed by Wavestone, Nov 2019.

Note: The figure represents the top three most recurrent themes identified under TO2 and under TO11.

From a country perspective, we identified an average of 5.3 references per country to issues falling under TO2 and TO11 in the 2014-2020 OPs, with one country scoring 14 references (Croatia), two countries scoring 13 references (Latvia and Romania) and one country scoring 11 references (Malta). It is worth further stressing that, out of the 28 EU Member States, the national Operational Programmes of 19 countries were considered for the analysis since they fall under the scope of ESIF TO2 or TO11. For nine countries (Belgium, Denmark, France, Germany, Ireland, Luxembourg, the Netherlands, Sweden and the United Kingdom) no national Operational Programmes fall under TO2 or TO11, therefore they are not mentioned in the scope of this analysis.

## 5. Conclusions and Recommendations

This chapter aims to answer RQ4 (Based on the finding of our analysis, how can the Commission better support Member States in their public administration digitalisation efforts, also in terms of synergies with other Commission initiatives?). It first presents a set of conclusions on how the European Semester documents address the topic of digital government, followed by the recommendations addressed to the ISA<sup>2</sup> programme and other Commission initiatives operating in the domain of digital government.

For the purpose of the study, an analysis of the European Semester documents, namely the 2019 CSRs, the 2019 NRPs, as well as the 2014 – 2020 national OPs financed through ESIF, covering all 28 EU Member States, was performed. Following the results of the content analysis, the study identifies relevant themes to the existing actions from the ISA<sup>2</sup> Programme<sup>260</sup> and current challenges faced by the Member States. Based on these, the study also proposes new actions and initiatives to better support the Member States in their digitalisation efforts. These are aligned with the themes put forward by the European Commission in the upcoming Digital Europe Programme for the period 2021-2027<sup>261</sup>, whose aim is to shape the digital transformation of Europe's society and economy.

The analysis reveals that 14 countries, namely Austria, Bulgaria, Croatia, Cyprus, Czech Republic, Finland, Germany, Ireland, Italy, Latvia, Portugal, Romania, Slovakia and Spain have at least one recommendation linked to TO2 or TO11 in their CSRs. This is a remarkable increase from 2018, where only 7 countries had received direct recommendations linked to TO2 or TO11. This indicates that the European Commission is encouraging Member States to increase the focus of their reform priorities on digitalisation in general, and on the enhancement of digital government in particular. These recommendations seem to be taken into consideration by the Member States as the top themes found in the CSRs are aligned with the top themes identified in the NRPs. These are eSkills, eHealth and Digitalisation of businesses. In addition, those recommendations continue to be aligned with the initiatives stemming from the OPs, despite having been defined in 2014. In particular, eSkills appears as a key recurring theme throughout all sets of documents, with Bulgaria, Cyprus, Czech Republic, Italy, Portugal, Romania, Slovenia and Spain receiving a specific recommendation on it from the European Commission in their CSRs. When analysing the measures relating to TO2 and TO11 in Member States' NRPs and OPs, some analogies have also been found. In both documents, priorities related to TO2 are largely mentioned, while priorities addressing TO11 are less present. Moreover, the most recurring theme identified in both NRPs and OPs is ICT infrastructure, along with eSkills, Digital public services delivery and the Digitalisation of businesses. Despite not being a top theme, it is worth noting that the number of mentions of New Technologies slightly increased both in the CSRs and the NRPs since last year. This depicts a clear synergy with the objectives put forward within the new Digital Europe Programme 2021-2027.

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<sup>260</sup> European Commission (2019). *About ISA<sup>2</sup>*. Accessed on 9 December 2019.

<sup>261</sup> COM/2018/434 final – 2018/0227 (COD), Proposal for a Regulation of the European Parliament and of the Council establishing the Digital Europe programme for the period 2021-2027.

◆ **Conclusion N°1** – Several Member States continue to put in place **strategies, action plans and frameworks** to enhance digital government and the efficiency of their public administrations. These measures lay down the guiding principle of important building blocks of digital government such as infrastructures, web portals and common standards.

**Recommendation N°1** - In line with the recommendations provided by the EIF and the principles outlined in the Digital Europe Programme for the period 2021-2027, the Interoperability Unit could provide trainings, expert advice and strategic information to support policy makers working on the development and/or implementation of digital strategies, action plans or frameworks to enhance digital government within their country.

Possible business opportunities:

- Serve as an **expertise centre** by providing fit for purpose support to Member States working on their digital government and interoperability strategies, action plans or frameworks. Such support can be granted as **advisory services** similarly to the Directorate-General for Structural Reform Support (DG REFORM), which provides support to Member States for their institutional, administrative and growth-enhancing reforms. Moreover, the expertise centre could also put in place a **digital tool** making available a list of Directorate-Generals holding specific expertise in this field, as well as internal experts from the European Commission in different policy fields to be consulted by the Member States that might require external expertise in specific policy areas. This digital tool could also support transnational cooperation for the exchange of practices and experience between public administrations to help increase the skills, competences and knowledge of their staff.
- Provide **on-site and online trainings** ensuring the understanding of the EIF and therefore facilitating the alignment of frameworks, action plans and strategies with the EIF recommendations. The provision of **on-site trainings** can be focused on those Member States lagging behind on the EIF implementation, which will be assessed in Q1 of 2020. While **online trainings** can be widely used in all Member States.
- Review the way the **ISA<sup>2</sup> portfolio** of reusable solutions and services is made **available to policy makers**. The catalogue of ISA<sup>2</sup> solutions should provide user centric views allowing policy makers to easily find solutions supporting the topics they are working on. The catalogue could take into account the themes identified in this report as main priorities for the Member States regarding digital government. Improving the way the ISA<sup>2</sup> catalogue of solutions<sup>262</sup> is provided, as well as leveraging the soon to be released EIF Toolbox, would further foster the re-use of existing solutions, such as European Interoperability Reference Architecture and Cartography tool (EIRA & CarTool)<sup>263</sup>, Core Vocabularies<sup>264</sup>, Re3gistry<sup>265</sup>, Trans European Services for Telematics between Administrations (TESTA)<sup>266</sup> and Common assessment method for standards and specifications (CAMMS)<sup>267</sup>. Information within the catalogue of solutions should be updated in an agile way and incorporate the

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<sup>262</sup> Further information available at: [https://ec.europa.eu/isa2/solutions\\_en](https://ec.europa.eu/isa2/solutions_en)

<sup>263</sup> Further information available at: [https://ec.europa.eu/isa2/solutions/eira\\_en](https://ec.europa.eu/isa2/solutions/eira_en)

<sup>264</sup> Further information available at: [https://ec.europa.eu/isa2/solutions/core-vocabularies\\_en](https://ec.europa.eu/isa2/solutions/core-vocabularies_en)

<sup>265</sup> Further information available at: [https://ec.europa.eu/isa2/solutions/re3gistry\\_en](https://ec.europa.eu/isa2/solutions/re3gistry_en)

<sup>266</sup> Further information available at: [https://ec.europa.eu/isa2/solutions/testa\\_en](https://ec.europa.eu/isa2/solutions/testa_en)

<sup>267</sup> Further information available at: [https://ec.europa.eu/isa2/solutions/camss\\_en](https://ec.europa.eu/isa2/solutions/camss_en)

findings of country intelligence work performed under NIFO, including, for example, the European Semester report<sup>268</sup>, Digital Government factsheets<sup>269</sup> and the monitoring of the EIF implementation<sup>270</sup>.

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<sup>268</sup> Further information available at: <https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/role-digital-government-european-semester>

<sup>269</sup> Further information available at: <https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/digital-government-factsheets>

<sup>270</sup> Further information available at: <https://joinup.ec.europa.eu/collection/nifo-national-interoperability-framework-observatory/eif-european-interoperability-framework-0>



◆ **Conclusion N°2** – *The enhancement of eSkills appears as a key priority across Europe. This refers mainly to three stakeholder groups: students, adults seeking a job and civil servants. The improvement of eSkills is being supported and complemented by the development of eLearning.*

**Recommendation N°2:** Digital skills are of increasing importance both in the public administration and in the labour market. As also stressed in the EIF<sup>271</sup> (recommendation 20), a lack of in-house skills represents a barrier to an efficient implementation of digital government. In this regard, the Interoperability Unit could further support Member States in the enhancement of their civil servants' digital skills, for a better use of technology (e.g. IT tools, platforms, etc.), so as to achieve better public services delivery. Steps have already been taken in this regard, with the introduction of the Interoperability Academy, both as on-site training and as an eLearning platform set up by the ISA<sup>2</sup> programme. The Interoperability Academy and the Sharing and Reuse training sessions enables public servants to follow training courses and thus improve their digital knowledge and skills. Moreover, further support could be given to national and subnational public administrations to support their actions aimed at increasing students' and adults' digital skills.

Possible business opportunities:

- Coordinate events such as the **Interoperability Academy Winter School**, which brings together students, public servants and businesses, with the aim of providing them with practical and theoretical insights on how to develop and implement interoperability solutions for digital public service offered to citizens, businesses and other public administrations.
- Organise events and **on-site trainings** to increase the **skills of public servants** on the use of technology (e.g. IT tools, platforms, etc.) and digital government-related topics.
- Develop an **online training material** that can be used by civil servants on an array of subjects related to interoperability and digital governments.
- Extend the focus of **trainings towards sub-national public administrations** (e.g. regions, cities) to facilitate the development of digital skills of the public servants responsible for the implementation of policies at local level.

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<sup>271</sup> European Commission (2017). *New European Interoperability Framework*. Accessed on 9 December 2019.

***Conclusion N°3** – Following the trend from the previous year, the modernisation and digitalisation of **specific sectors** like justice, tax and health are still considered as one of the main priorities by several Member States. Indeed, the Commission put in place specific recommendations on eTax and eJustice to which the countries are responding by building the foundations to be able to deliver these services.*

**Recommendation N°3** - The Interoperability Unit could collaborate more closely with policy DGs and their Agencies, creating synergies in all aspects related to digital government. Further attention should be given to the sectors identified as priorities by the Member States regarding digital government such as justice, tax, health, mobility and culture.

Possible business opportunities:

- Closely collaborate with policy DGs dealing with sector-specific digital government and interoperability issues at all stages of the EU policy cycle. The Interoperability Unit should **increase its collaboration with policy DGs** to ensure that sectorial initiatives are aligned with the EIF principles and leverage reusable ISA<sup>2</sup> solutions. The Unit could, for example, provide strategic advice and promote methods and services. Among these are: the legal interoperability screening, the ICT Impact Assessment guidelines<sup>272</sup> and supporting services in the ex-ante phase of the EU policy cycle; CAMSS<sup>273</sup> in the implementing action phase; the Interoperability Maturity Assessment of a Public Service (IMAPs)<sup>274</sup> in the assessment of the services' interoperability readiness; and NIFO<sup>275</sup> country (policy) intelligence and performance indicators in the ICT/digital government domain, in the monitoring and evaluation phase.
- Increase collaboration with the **Directorate-General for Structural Reform Support (DG REFORM)** providing expert advice on digital government, interoperability and implementation of digital policies relevant to the projects approved under the Structural Reform Support Programme (SRSP).
- Promote reusable solutions to sector-specific DGs to **increase efficiency and interoperability of sector-specific solutions** and systems. Examples of existing solutions are the Core Vocabularies<sup>276</sup> which are sector agnostic data models to represent life events, business events and public services; TESTA,<sup>277</sup> a data communication network service; and Open eTrustEx,<sup>278</sup> a secure file exchange platform.

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<sup>272</sup> Further information available at: [https://ec.europa.eu/isa2/actions/legal-interoperability\\_en](https://ec.europa.eu/isa2/actions/legal-interoperability_en)

<sup>273</sup> Further information available at: [https://ec.europa.eu/isa2/solutions/camss\\_en](https://ec.europa.eu/isa2/solutions/camss_en)

<sup>274</sup> Further information available at: [https://ec.europa.eu/isa2/solutions/imaps\\_en](https://ec.europa.eu/isa2/solutions/imaps_en)

<sup>275</sup> Further information available at: [https://ec.europa.eu/isa2/solutions/nifo\\_en](https://ec.europa.eu/isa2/solutions/nifo_en)

<sup>276</sup> Further information available at: [https://ec.europa.eu/isa2/solutions/core-vocabularies\\_en](https://ec.europa.eu/isa2/solutions/core-vocabularies_en)

<sup>277</sup> Further information available at: [https://ec.europa.eu/isa2/solutions/testa\\_en](https://ec.europa.eu/isa2/solutions/testa_en)

<sup>278</sup> Further information available at: [https://ec.europa.eu/isa2/solutions/open-e-trustex\\_en](https://ec.europa.eu/isa2/solutions/open-e-trustex_en)

◆ **Conclusion N°4** – A new main trend identified this year is the effort put by Member States in further encouraging the **digitalisation of the business sector**, particularly by providing support to SMEs. This is done by facilitating businesses' acquisition of ICT tools and the adoption of new technologies.

**Recommendation N°4** – As the Digital Europe Programme envisages to ensure a wide use of digital technologies across the economy and society, the Commission could offer support by raising awareness on the different funding and solutions available to SMEs.

Possible business opportunities:

- Increase participation to events where the target audience are businesses, SMEs and/or start-ups. Events such as the WebSummit<sup>279</sup> and GovTech summit<sup>280</sup> attended by the Interoperability Unit in 2019 are good examples to **promote reusable solutions** that can support the digital transformation of a large number of businesses.
- Promote ISA<sup>2</sup> solutions among EU initiatives focused on supporting the **digitalisation of businesses including SMEs**. The Interoperability Unit could raise awareness about initiatives such as the Digital Innovation Hubs<sup>281</sup> and the European Enterprise Network<sup>282</sup> that could disseminate the ISA<sup>2</sup> solutions towards a number of businesses including SMEs.
- Participate in initiatives promoting reusable solutions to **support the digitalisation of businesses**, especially SMEs. The Interoperability Unit, together with other units of DIGIT, should continue to work towards increasing awareness of reusable solutions produced at EU level. An example comes from the Digital Innovation Challenge for European SMEs and start-ups<sup>283</sup> launched by DIGIT in 2019 with the participation of the Interoperability Unit.

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<sup>279</sup> Further information available at: <https://websummit.com/>

<sup>280</sup> Further information available at: <https://govtechsummit.eu/>

<sup>281</sup> Further information available at: <https://ec.europa.eu/digital-single-market/en/digital-innovation-hubs>

<sup>282</sup> Further information available at: <https://een.ec.europa.eu/>

<sup>283</sup> Further information available at: <https://ec.europa.eu/cefdigital/wiki/display/CEFDIGITAL/digital+innovation+challenge>

***Conclusion N°5 – eProcurement** still figures among the key reform priorities of different Member States, especially with regard to transparency and corruption issues. Legislative and compliance efforts both at European and national level are still pursued.*

**Recommendation N°5** – Some European countries are still lagging behind in the efficient implementation of eProcurement despite the fact that one of the objectives of the eGovernment Action Plan<sup>284</sup> is to facilitate companies to bid for public procurement contracts electronically. Hence, the Interoperability Unit could collaborate with DG GROW in their efforts to support Member States who want to make a more efficient and effective use of eProcurement tools for both the public administration and businesses.

Possible business opportunities:

- Support DG GROW as **digital and interoperability expert** in all phases of the EU policy cycle (e.g. evaluations, impact assessments), regarding policies involving public procurement. An example is the upcoming evaluation of the eInvoicing Directive<sup>285</sup> and the new Digital Services Act<sup>286</sup>.
- Support DG GROW in investigating the possible use of new technologies and tools (e.g. Artificial Intelligence and blockchain) in **public procurement processes**.

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<sup>284</sup> Further information available at: <https://ec.europa.eu/digital-single-market/en/european-egovernment-action-plan-2016-2020>

<sup>285</sup> Further information available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32014L0055>

<sup>286</sup> Further information available at: <https://ec.europa.eu/digital-single-market/en/new-eu-rules-e-commerce>

# Annex 1. Definitions

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The definitions provided below are used for the CSRs, NRPs and OPs.

- **Base Registries:** A base register is a trusted and authoritative source of information, which can and should be digitally reused by others, where one organisation is responsible and accountable for the collection, use, updating and preservation of information. Thus, a base register is a reliable source of basic information on data items such as people, companies, vehicles, licences, buildings, locations and roads.<sup>287</sup>
- **Capacity Building through ICT:** Capacity building through ICT is the long-term process of facilitating knowledge acquisition and deliver appropriate tools to individuals about a particular sector. The aim is for civil servants to acquire appropriate skills to successfully perform their required functions.<sup>288</sup>
- **Cybersecurity:** As the risks on cyber-attacks have grown in recent years, concerns about the protection of user data have risen. This has led countries to enhance their cybersecurity systems. Cybersecurity entails all the measures that are taken to protect electronic data and counter the threat of criminal attacks and unauthorised use of data.<sup>289</sup>
- **Digital Public Services Delivery:** Public services are becoming more digital. Citizens and businesses can take care of not only purely administrative processes online, but also services in the health and education sectors for example. Digitalisation, automation and simplification are important end-goals for governments.<sup>290</sup>
- **Digitalisation of Businesses:** The private sector's digitalisation enhances the country's economic performance, companies' growth and visibility of SMEs, while ensuring competition. Cooperation between the private and public sector towards digitalisation is also an important aspect in the economy towards supporting innovation and the use of new technologies.<sup>291</sup>
- **eCulture:** New technology-based access to culture is expected to change both its production and dissemination. Culture is preserved and promoted through digital means, by increasing people's access to culture, offering them new ways to participate in cultural experiences and learn.<sup>292</sup>
- **eGovernment and Interoperability Framework:** An eGovernment and Interoperability Framework refers to commonly agreed approaches with a two-fold goal: to establish the use of ICT tools in public administration on the one hand and provide the delivery of public services in an interoperable manner on the other. This should ensure interaction between citizens and

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<sup>287</sup> COM (2017) 134 final, Annex to the Communication from the Commission of the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the European Interoperability Framework – Implementation Strategy, Brussels, 23.3.2017. Accessed on 26 February 2020.

<sup>288</sup> International Telecommunication Union (ITU) (2003). *Presentation World Summit on the Information Society PrepCom II – Geneva Roundtable 5 – Feb 19, 2003*. Accessed on 9 December 2019.

<sup>289</sup> Oxford Dictionaries. (2019). *Cybersecurity*. Accessed on 9 December 2019.

<sup>290</sup> Definition adapted from: European Commission (2017). *eGovernment Benchmark 2017*. Accessed on 9 December 2019.

<sup>291</sup> European Commission (n.d.). *Digitising European Industry*. Accessed on 9 December 2019.

<sup>292</sup> Definition adapted from: Dictionnaire Sens Agent le Parisien (n.d.). *eCulture*. Accessed on 9 December 2019.

businesses and public administrations or between public administrations internally, taking place through effective digital services.<sup>293</sup>

- **eGovernment portal:** More and more countries are now setting up eGovernment portals for citizens and businesses in order to facilitate the use of government services through electronic means. The use of these portals would improve the digital interaction between governments and businesses as well as between governments and citizens.
- **eHealth:** eHealth refers to tools and services that use ICTs to improve all aspects of health and lifestyle such as diagnosis, treatment and monitoring. eHealth solutions also contribute to access to healthcare from distant regions, enhance the cooperation among the health sector, and improve the quality of healthcare services.<sup>294</sup>
- **eID:** In the EU, eID services help both public and private service providers to extend the use of their online services to the citizens from other European countries.<sup>295</sup> This ensures citizens to use their national eID to access, in a secure way, the services of other Member States.<sup>296</sup>
- **eInclusion:** eInclusion policies aim at reducing gaps in ICT usage. Governments can organise teaching sessions for example, to promote the use of ICT and allow all citizens to participate in the many aspects of information society. This will also benefit people's employment opportunities, cohesion, quality of life and the country's digital economy performance.<sup>297</sup> The
- **eInvoicing:** Electronic invoicing is the exchange of an electronic invoice document between a supplier and a buyer. An electronic invoice is an invoice that has been issued, transmitted and received in a structured data format which allows for its automatic and electronic processing.<sup>298</sup>
- **eJustice:** The eJustice approach uses ICT to improve citizens' access to justice and to make legal action more effective. It also contributes to making the judicial system more accessible and transparent.<sup>299</sup>
- **eLearning:** eLearning encompasses a broad range of knowledge transferred through digital technologies, sometimes as a complement to traditional education channels. The use of ICT tools is especially powerful for reaching individuals with no access to traditional education and training, either because they live in remote areas or because of their socioeconomic situation or special needs<sup>300</sup>.
- **eParticipation:** eParticipation is the term used to describe all forms of political participation involving digital media, stemming both from the governmental level and the citizens themselves. There are three levels: eInformation where information is made available online;

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<sup>293</sup> COM (2017) 134 final, Annex to the Communication from the Commission of the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the European Interoperability Framework – Implementation Strategy, Brussels, 23.3.2017.

<sup>294</sup> European Commission (n.d.). *eHealth: Digital health and care*. Accessed on 9 December 2019.

<sup>295</sup> European Commission (n.d.). *CEF Digital Home*. Accessed on 9 December 2019.

<sup>296</sup> European Commission (n.d.). *What is eID?* Accessed on 9 December 2019.

<sup>297</sup> European Commission (2006). *Riga Ministerial Declaration on ICT for an Inclusive Society*. Accessed on 9 December 2019.

<sup>298</sup> European Commission (n.d.). *What is eInvoicing*. Accessed on 9 December 2019.

<sup>299</sup> COM (2008)329 final, Communication from the Commission to the Council, the European Parliament and the European Economic and Social Committee on Towards a European e-Justice Strategy, Brussels, 30.5.2008.

<sup>300</sup> Eurostat (2016). *Glossary: E-Learning*. Accessed on 13 November 2019.

eConsultation for government to take into consideration citizens' views; and eDecision-making, directly involving citizens.<sup>301</sup>

- **ePayments:** ePayment is the possibility to make payments for goods and services online. It is available on all types of devices, i.e. computers, smartphones and tablets. It is a widely used means in the private sector by banks and is currently being developed in the public sector as well.<sup>302</sup>
- **eProcurement:** eProcurement entails more than merely the use of electronic tools. It rethinks the pre-award and post-award phases to simplify participation and improve the management for the public sector. The integration of data-based approaches is facilitated at various stages of the procurement process. The aim is to address the lack of transparent public procurement processes and improve the competitiveness and transparency of many Member States.<sup>303</sup>
- **eSkills:** eSkills relate to the knowledge of applying and developing ICT and infrastructure. Users, i.e. citizens, need to possess the capabilities to use various technologies. For this reason, digital education starts from an early age in several countries. Practitioners, in both the front and back offices of public administrations also need to have profound digital literacy. Quality and new technologies will only enhance if people constantly learn and evolve.<sup>304</sup>
- **eTax:** Taxation becomes easier, faster and more efficient through digitalisation. eTax measures enhance the quality of public administration services, making the tax collection process more uniform.<sup>305</sup>
- **ICT Infrastructure:** ICT infrastructure embodies the system of hardware, software, facilities and service components that support the delivery of business systems and IT-enabled processes. The appropriate ICT infrastructure is a necessity to support the introduction or expansion of eGovernment and interoperability services.<sup>306</sup>
- **New Technologies:** The term 'New Technologies' encompasses all the emerging technologies that are available to citizens, businesses and public administrations. This definition incorporates all key innovative tools and machineries pointed out in the future Digital Europe Programme 2021-2027, namely: high-performance computing, artificial intelligence, cybersecurity, advanced digital skills, and their wide use and accessibility across the economy and society. Having a more efficient IT infrastructure equipped with new technologies allows both private and public administration systems to get more work done faster and more securely, even when employees are on the go.<sup>307</sup>

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<sup>301</sup> UN E-Government Knowledgebase (2019). *E-Participation Index*. Accessed on 9 December 2019.

<sup>302</sup> Definition adapted from: Collins Dictionary (n.d.). *e-Payments Definition*. Accessed on 9 December 2019.

<sup>303</sup> European Commission (n.d.). *E-procurement*. Accessed on 9 December 2019.

<sup>304</sup> Eurostat (2016). *Glossary: E-skills*. Accessed on 9 December 2019.

<sup>305</sup> Definition adapted from: Collins Dictionary (n.d.). *e-Taxes*. Accessed on 9 December 2019.

<sup>306</sup> Gartner IT Glossary (2019). *IT infrastructure*. Accessed on 9 December 2019.

<sup>307</sup> Definition adapted from: Petroni, G. and Cloete, F. (2007). *New Technologies in Public Administration*. Accessed on 19 December 2019.

- **Open Data:** Open data refers to the idea that all public data should be freely available for use and reuse by others, unless restrictions apply, such as for the protection of personal data, for example.<sup>308</sup>
- **Geospatial portal:** A geospatial portal provides citizens with the means to search online for spatial data sets and data services they need. These portals play an important role in the sharing of geographic information for both individuals and administrations. The organisation of the information into structured datasets combined with the use of data visualisation tools can lead to a better delivery of public services and to an increase in efficiency and interoperability.<sup>309</sup>

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<sup>308</sup> COM (2017) 134 final, Annex to the Communication from the Commission of the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the European Interoperability Framework – Implementation Strategy, Brussels, 23.3.2017. Accessed on 26 February 2020.

<sup>309</sup> Definition adapted from: European Commission (n.d.). *INSPIRE Geoportal*. Accessed on 10 December 2019.



## An action supported by ISA<sup>2</sup>

ISA<sup>2</sup> is a EUR 131 million programme of the European Commission which develops digital solutions that enable interoperable cross-border and cross-sector public services, for the benefit of public administrations, businesses and citizens across the EU. ISA<sup>2</sup> supports a wide range of activities and solutions, among which is the National Interoperability Framework Observatory (NIFO) action.

ISA<sup>2</sup> solutions can be used free of charge and are open source when related to IT.

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