

Special report

## EU support for the digitalisation of schools

Significant investments, but a lack of strategic focus in the use of EU financing by member states



EUROPEAN  
COURT  
OF AUDITORS

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## **Abbreviations**

## **Glossary**

## **Replies of the Commission**

## **Timeline**

## **Audit team**

## Executive summary

**I** In the EU, member states have full responsibility for designing education policy and the organisation of their schools. The EU supplements and supports actions by member states, and provides significant financial support for the digitalisation of schools. To this end, it uses various instruments such as Cohesion Policy funds, the Recovery and Resilience Facility, and the Erasmus+ programme. Significant amounts have been or will be disbursed between 2014 and 2026 through one of these programmes with a view to strengthening digital education.

**II** In this audit, we assessed actions financed from the EU budget in support of digital education in schools. We examined whether the Commission's actions supported the digitalisation of schools well. We also considered whether national, regional and local authorities in the member states used available EU funding as intended to support the digitalisation of schools, and whether schools were sufficiently connected to gigabit internet to achieve EU targets. Our report aims to help the Commission and the member states' national and regional authorities to address the challenges of the digitalisation of schools during the 2021-2027 period more effectively. We conclude that, overall, these measures helped schools in their digitalisation efforts, but that member states lacked strategic focus in the use of EU financing.

**III** In 2018, the Commission adopted a Digital Education Action Plan to support member states in addressing challenges for digital education. This Plan included schools. However, the member states we visited had either not translated the Action Plan objectives into their national (or regional) strategies, had not updated their strategies for the 2021-2027 period, or had not formulated dedicated strategies for the digitalisation of their schools. We also found that EU-financed actions were not always well embedded in national or regional strategies for the digitalisation of schools, even though this could have reduced the risk of fragmented interventions financed from the EU budget and helped to achieve greater impact.

**IV** In most cases, the EU-financed projects delivered their intended outputs but there were still factors that prevented the schools from making the best use of EU-financing. For measures to be financed from the Recovery and Resilience Facility, there were shortcomings in how milestones and targets to be fulfilled by member states were defined, in particular for the results to be achieved in terms of improving digital education. We found that cost estimates accepted by the Commission during the negotiations of the national plans for two measures examined for this audit did

significantly differ from the actual costs incurred during implementation. Moreover, schools were not sufficiently involved in establishing needs.

**V** Nearly all students now use digital devices, but many schools still report insufficient equipment, or further training needs for teachers. We also found that a formal approach towards the use of ICT in class is often lacking, thus preventing schools from exploiting the full potential of digitalisation.

**VI** The Commission has no comprehensive data on the overall amounts of EU funding spent for the digitalisation of schools. Only a few member states assess the results they have achieved with EU financial support for improving digital education in schools. Programme-specific indicators were not informative, and only two of the six member states we visited had approaches for systematically monitoring the progress that schools had made in terms of digitalisation as a result of EU financial support.

**VII** In 2016, the Commission set targets for the member states to connect schools to gigabit internet by 2025 and to enable them to use state-of-the-art IT equipment and adopt innovative ways of teaching and learning. However, in 2022, only a small number of schools can actually use gigabit connections. Member states had varying approaches to promoting the connection of schools varied but a lack of stringent strategic planning, together with delays in implementing dedicated programmes increases the risk that the EU will not achieve the 2025 target for gigabit internet.

**VIII** On the basis of these conclusions, we recommend that the Commission should:

- promote EU actions under the Digital Education Action Plan more actively in order to enhance their impact;
- take action to strengthen the link between objectives of the digital education action plan, national or regional strategies, and EU funding for schools; and
- monitor and encourage the achievement of the target of being connected to gigabit internet by 2025 for all schools.

# Introduction

## Digital education and the digitalisation of schools

**01 Digital education** aims to enable students to thrive in life, become engaged citizens, and integrate better into the job market in an ever more digitalised world<sup>1</sup>. In its school surveys conducted in 2013 and 2018, the Commission had already observed that specific policies and support measures at school level – such as better equipment or the professional development of teachers – could contribute to better learning results but also that the use of information technology and access to fast internet varied significantly between schools<sup>2</sup>. A study conducted in 2018 by the Organisation for Economic Co-operation and Development (OECD) highlighted that students in schools that were well equipped with computers and connected to the internet could achieve better learning results<sup>3</sup>.

**02 Digital competences and skills**, and the availability of **digital infrastructure and equipment**, have become all the more relevant at all education levels since the outbreak of the COVID-19 pandemic. The pandemic brought to light that school systems in almost all member states had not been well prepared for **distance teaching**, because schools were not well connected to the internet and suitable digital equipment for students and teachers was lacking<sup>4</sup>. There was also a need for teachers to be confident and skilled in using digital technology to support their teaching, coupled with innovative teaching methods, and to ensure that all students could participate in digital education.

**03** In the EU, **member states** are responsible for designing education policy, equipping schools, overseeing the content of teaching, and training teachers and students. Moreover, within member states, responsibilities can be allocated at different levels (i.e. national, regional or local). Any cross-border cooperation between member states in the

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<sup>1</sup> European Commission, 2022.

<sup>2</sup> Survey of Schools: ICT in education: benchmarking access, use and attitudes to technology in Europe's schools, 2013, and 2nd Survey of Schools: ICT in Education, 2019.

<sup>3</sup> (2020), PISA 2018 Results (Volume V): Effective Policies, Successful Schools, p. 113, PISA, OECD Publishing, Paris.

<sup>4</sup> (2020), Strengthening online learning when schools are closed: The role of families and teachers in supporting students during the COVID-19 crisis; OECD Publishing, Paris.

field of education is voluntary, and is not necessarily linked to the use of EU funds. Meanwhile, the EU can support and supplement the member states' actions<sup>5</sup>.

**04** The Commission's role in the digitalisation of schools is to supplement and support actions by member states, while fully respecting their responsibility for the content of teaching and the organisation of education systems.

**05** Making digital education a success also requires the **digitalisation of schools**: providing schools with high-speed internet, and equipping classrooms, teachers and students with hardware such as laptops or tablets; ensuring that teachers and other school staff have the digital skills they need; providing adequate digital learning material and secure platforms; and using up-to-date curricula and learning approaches.

**06** In 2020, there were more than **65 million registered students and teachers** in more than **200 000 primary and secondary schools** in the 27 member states<sup>6</sup>.

## The Commission's Digital Education Action Plan

**07** In November 2017, at the Gothenburg Summit, the European Parliament, the Council and the Commission proclaimed in the **European Pillar of Social Rights** that everyone has the right to quality and inclusive education, training and life-long learning in order to maintain and acquire skills that enable them to participate fully in society and successfully manage transitions in the labour market<sup>7</sup>. The Commission contributed to these discussions by setting out its vision for a **European Education Area** to harness the full potential of education and culture as drivers for jobs, social fairness, and active citizenship, as well as providing a means to experience European identity in all its diversity<sup>8</sup>. The Commission and the member states identified innovation and digital technologies as a key factor for better education, an area where Europe was perceived to be lagging behind other regions.

**08** In January 2018, the Commission issued its first **Digital Education Action Plan** (henceforth "Action Plan"), as announced in its contribution to the Gothenburg

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<sup>5</sup> Article 165(1) TFEU.

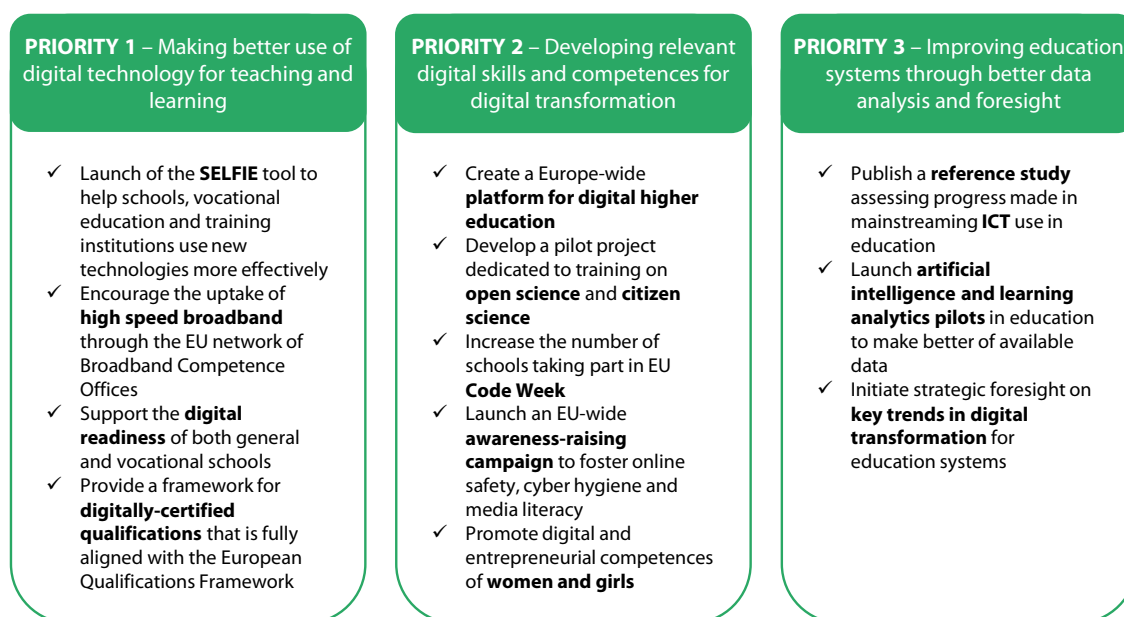
<sup>6</sup> European Commission, *Eurydice National Education Systems*.

<sup>7</sup> *European Pillar of Social Rights, Gothenburg, 2017*.

<sup>8</sup> Communication from the Commission on its contribution to the Leaders' meeting in Gothenburg, *COM(2017) 673*, 14 November 2017.

summit<sup>9</sup>. The Plan contains a number of actions in three priority areas, by means of which the Commission intended to support member states' overall education and training systems in all sectors of education by exchanging best practices, and to stimulate and scale up the purposeful use of digital and innovative education practices (see [Figure 1](#)).

**Figure 1 – Priorities of the Commission's 2018 Digital Education Action Plan**



Source: ECA.

**09** The Commission updated its Action Plan in September 2020. The updated Plan offers a long-term strategic vision covering the 2021-2027 period. It continues with the main elements of the initial Action Plan, but also takes account of the latest developments in digital education. It focuses on two priority areas and key actions to be pursued in the years to come, which are relevant not only for schools but also for post-secondary education (for example at universities) or vocational training (see [Figure 2](#)).

<sup>9</sup> Communication from the Commission on the Digital Education Action Plan, [COM\(2018\) 22](#), 17 January 2018.



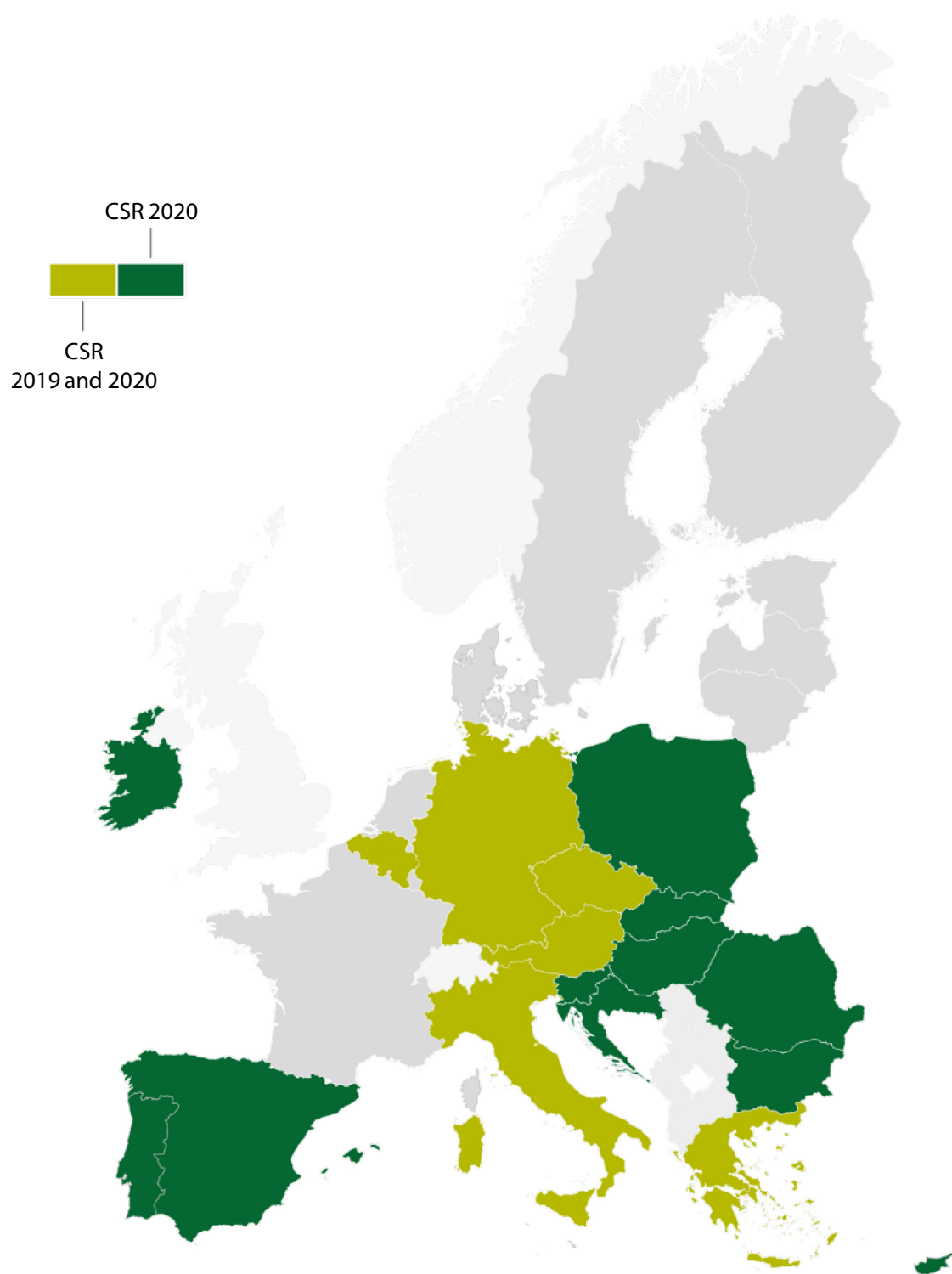
**Figure 2 – Priorities of the updated Digital Education Action Plan (2021-2027)**



Source: ECA.

**10** The Commission regards the Action Plan as a key enabler for improving digital literacy, skills and capacity at all levels of education and training, and for all levels of digital skills. It also uses the Plan as a reference document for the European Semester, the EU's cycle of economic, fiscal, labour and social policy coordination between member states' budgetary and economic policies. In this framework, based on Commission proposals, the Council made annual country-specific recommendations (CSRs) in the area of education and training. **Figure 3** shows the member states where the Council recommendations referred to investments in the digitalisation of schools either in 2019 or 2020.

Figure 3 – Member states with CSRs related to the digitalisation of schools



Source: ECA analysis; European Semester, Country-specific recommendations.

## The EU's connectivity target for schools of one gigabit per second by 2025

**11** As new data services and applications require networks of ever-higher capacity, the Commission set strategic connectivity targets in 2016 for all main socio-economic drivers such as schools. According to these targets, all schools should have a high-speed broadband connection by 2025, which means access to internet connections offering downlink and uplink speeds of at least one gigabit per second<sup>10</sup>. Connecting schools to high-speed broadband would facilitate innovative ways of teaching and learning, allow teachers and students to benefit from up-to-date learning materials, and thus enhance digital skills. These targets followed the Digital Agenda for Europe adopted in 2010, where the Commission stated that all EU citizens should have access to broadband at 30 Mbps by 2020<sup>11</sup>.

## The EU's financial support

**12** Member states can use EU financial support for the digitalisation of schools through various instruments, each with its specific objectives and characteristics:

- **Cohesion Policy Funds:**

- For the 2014-2020 period, investments in enhancing access to and improving the use and quality of information and communication technology (ICT), and of education and training, were thematic objectives of the European Regional Development Fund (ERDF) and the European Social Fund (ESF), two of the Cohesion Policy Funds (also known as the European Structural and Investment Funds (ESIF)). The EU uses these funds to co-finance investments in areas such as the balanced development of regions and the development of workers, young people and all those seeking a job<sup>12</sup>. For the 2014-2020 programming period, the total budget for the ERDF and ESF was €329 billion, an estimated €44.6 billion of which was allocated to these two thematic objectives. The digitalisation of schools was not, however, a specific objective of the Funds. This is why member states do not have

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<sup>10</sup> Communication from the Commission on Connectivity for a Competitive Digital Single Market - Towards a European Gigabit Society, [COM\(2016\) 587](#), 14 September 2016.

<sup>11</sup> Communication from the Commission on a digital agenda for Europe, [COM\(2010\) 245](#), 19 May 2010.

<sup>12</sup> Article 9 points (2) and (10) of [Regulation \(EU\) No 1303/2013](#).

to provide detailed information on the amounts spent for this purpose (see paragraph 71).

- For the years 2020 to 2022, the Recovery Assistance for Cohesion and the Territories of Europe (REACT-EU) has been set up under the NextGenerationEU (NGEU) initiative, within the framework of the 2014-2020 Cohesion Policy Funds<sup>13</sup>. Out of a total budget of €44.5 billion, member states could use funds to support the digitalisation of schools. Member states could request REACT-EU measures to be fully financed from the EU budget.
- For the 2021-2027 period, member states can also use Cohesion Policy funds for the digitalisation of their schools, mainly for investments in access infrastructure<sup>14</sup> and to support the acquisition of digital skills<sup>15</sup>.

○ **The Recovery and Resilience Facility (RRF)**<sup>16</sup>:

The RRF is a temporary instrument under NGEU, which aims to mitigate the economic and social impact of the COVID-19 pandemic. It is managed directly by the Commission. Until the end of 2026, member states will receive EU support on condition that they achieve certain performance targets and milestones for investments and reforms defined in the National Recovery and Resilience Plans (RRPs). Member states can use the EU support to finance investments in the development of digital skills and the digital transition of schools. Out of a total budget of €723.8 billion (at current prices) available for the RRF, we identified 21 member states that, according to their RRP, chose to invest more than €11 billion in measures supporting the digitalisation of their schools<sup>17</sup>.

○ **The Erasmus+ programme**<sup>18</sup>:

Among other things, this programme supports ICT-based teaching, open education and innovative practices in the digital era, and also addresses digital transformation by developing digital readiness, resilience and capacity:

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<sup>13</sup> Regulation (EU) 2020/2221.

<sup>14</sup> Regulation (EU) 2021/1058 on the European Regional Development Fund and on the Cohesion Fund.

<sup>15</sup> Regulation (EU) 2021/1057 establishing the European Social Fund Plus (ESF+).

<sup>16</sup> Regulation (EU) 2021/241.

<sup>17</sup> For a list of measures we identified in the RRP, see *Annex I*.

<sup>18</sup> Regulation (EU) No 1288/2013.

- For the 2014-2020 period, the programme had a total budget of €14.9 billion, around €1.6 billion of which was allocated to transnational strategic partnership projects for school education, with €100 million specifically dedicated to projects for enhancing the use of ICT in teaching and learning. The Commission also used the programme to finance actions under the 2018 Action Plan.
- For the 2021-2027 period, the scope of the programme has been enlarged to support activities and projects to deliver on the updated Action Plan and the digital transformation of schools<sup>19</sup>. The programme has a total budget of €26.2 billion. There is no specific allocation for digitalisation but funds can be used to support 2021-2027 actions under the Action Plan and for strategic innovation partnerships, including projects for digital education in schools. Digital transition is one of the four cross-cutting priorities of the programme.

#### o **The Connecting Europe Facility**

In the 2021-2027 period, the digital part of the Connecting Europe Facility<sup>20</sup>, an EU instrument directly managed by the Commission providing financial support for the creation of sustainable interconnected infrastructure, provides a budget of more than €2 billion to support among other things the deployment of 5G systems in so called 5G Communities, and which can be used for connecting schools.

## Management and use of EU Funds

**13** For the **Cohesion Policy programmes**, national or regional authorities in the member states are in charge of selecting and monitoring projects within the operational programmes and paying support. The Commission co-finances the project related costs in accordance with the conditions laid down in the applicable general rules and those of the respective programmes.

**14** Under the **RRF**, member states put in place the measures defined in the national RRFs. Each RRF is allocated support in line with the estimated costs of the measures it contains, up to a maximum amount stipulated by the RRF Regulation. Unlike for the Cohesion Policy programmes, EU financing is not related to the actual costs incurred, but the Commission disburses the amounts allocated to the RRFs once the member state has achieved the relevant pre-defined sets of milestones and targets. Milestones are qualitative achievements such as the entry into force of funding guidelines. Targets

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<sup>19</sup> Regulation (EU) 2021/817.

<sup>20</sup> Regulation (EU) 2021/1153.

are quantitative achievements such as the acquisition of a defined number of digital devices for schools. [Annex IV](#) provides an overview of the targets and milestones for the measures supporting the digitalisation of schools in the member states we visited.

**15** Typically, member states use the Cohesion Policy Funds and the RRF to support ICT infrastructure and equipment in schools, provide training for teachers, or develop education material (see [Box 1](#)).

### Box 1

#### Examples of the use of Cohesion Policy Funds for the digitalisation of schools

Greece finances digital learning platforms and teacher training from the ERDF and the ESF.

Croatia has a single action for the digitalisation of all public schools by 2023, including ICT equipment and training for teachers.

Italy mainly supports the acquisition of IT equipment for school computer labs (see [Picture 1](#)), and training in digital competences for teachers.

#### Picture 1 – Computer lab in an Italian school financed from the ERDF



Source: ECA.

Similarly, Poland used ERDF and ESF support to finance the connection of schools to the gigabit internet, equip them with computer labs, provide training for teachers, and develop digital learning material.

## Examples of investments in the digitalisation of schools within the RRF

Within the RRF, Germany's national RRP included the financing of loan devices for teachers in public and private schools, a national digital education platform, and centres of educational excellence for the further development of teachers' digital skills.

Greece will mainly support digital equipment for schools, teachers, and students, as well as the digitalisation of educational content and interactive learning systems.

Italy will mainly invest in connecting schools to high-speed internet, training for teachers and other school staff, innovative classrooms, and developing students' digital skills.

**16** Commission actions to support the digitalisation of schools, including those supporting the Action Plan, are mainly financed by the **Erasmus+** programme, which the Commission manages directly (see [Box 2](#)).

### Box 2

#### Commission actions to support the digitalisation of schools in the member states

In order to support schools' and other training organisations' readiness for digitalisation, the Commission developed **SELFIE**, a free online tool to help schools, teachers and students to assess where they stand as regards learning in the digital age.

To promote the development of digital skills in schools, the Commission scaled up **EU CodeWeek**, an action financed under the Digital Europe Programme. It is run by volunteers who promote coding and digital literacy in order to help more young people to master the basics of coding and computational thinking.

An online platform, **eTwinning**, supports schools, teachers and students in using ICT to connect across borders, and helps them to work together on projects. EU-cofinanced national support services in the member states and partner countries help to promote the platform at national level.

Lastly, schools and other educational organisations could benefit from individual grants for transnational strategic partnership projects related to digitalisation.

## Audit scope and approach

**17** In this audit, we assessed actions in support of digital education in schools. We specifically examined whether:

- the Commission's actions, in particular under the Erasmus+ programme supported the digitalisation of schools well;
- national, regional and local authorities in the member states used available EU funding under the Cohesion Policy as intended;
- in view of the ongoing implementation of the RRF by 2026, member states addressed the digitalisation of schools well in their RRFs; and
- member states had translated the Commission's 2025 strategic target<sup>21</sup> into national strategies or approaches for connecting schools to gigabit internet, and whether the actual connectivity of schools is well on track to achieve that target.

**18** To this end, we selected six member states: Germany, Greece, Croatia, Italy, Austria, and Poland. For Germany, where the regions (*Bundesländer*) have exclusive responsibility for education policy, we selected the Land of North Rhine-Westphalia, which is the region with the largest population of schools and students. In the 2014-2020 period, these member states had either spent significant amounts of Cohesion Policy funding (ESIF) on the digitalisation of their schools, currently use support from REACT-EU for that purpose, or had included dedicated measures in their RRFs to be financed from the RRF until the end of 2026. By the end of 2021, around €2.6 billion in Cohesion Policy funding had been paid or committed for the digitalisation of schools. Another €1.1 billion is currently available under REACT-EU. In addition, more than €7 billion will be disbursed by 2026 to the four of these member states, which choose to use the RRF for the same purpose, under the condition that they satisfactorily fulfil the milestones and targets defined in the RRFs (see [Figure 4](#)).

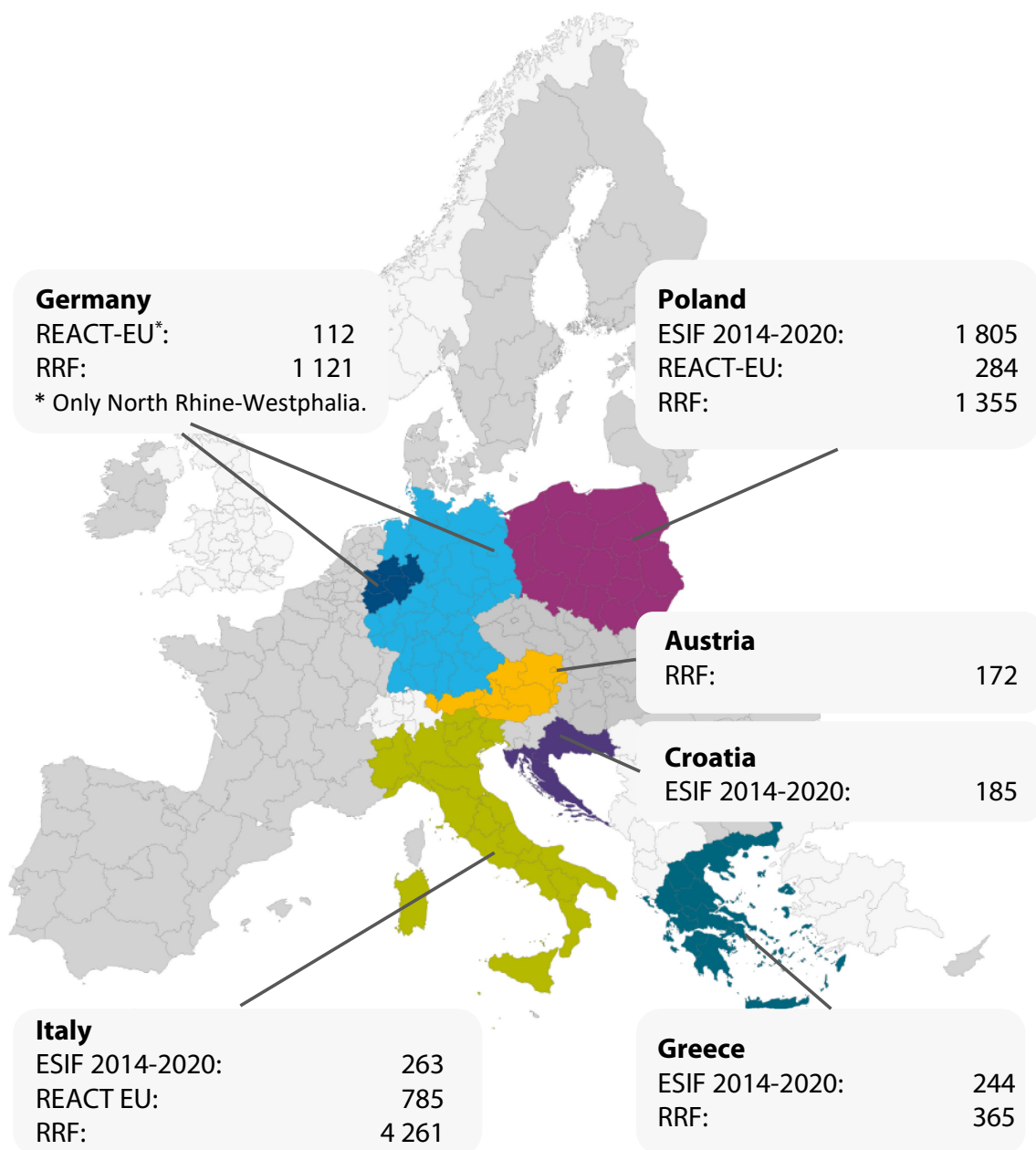
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<sup>21</sup> Communication from the Commission on Connectivity for a Competitive Digital Single Market - Towards a European Gigabit Society, [COM\(2016\) 587](#).



**Figure 4 – EU funds allocated to the digitalisation of schools in the member states we visited**

(Amounts in million euros)



*Note:* ESIF-amounts paid or committed by 31.12.2021, or budgeted for REACT-EU. For RRF, amounts based on estimated costs included in the RRFs to be re-financed upon satisfactory fulfilment of milestones and targets until 2026 (see [Annex I](#)).

*Source:* ECA based on Commission and member state data.

**19** In all six member states, we reviewed the strategies and approaches for the digitalisation of schools. In addition, we examined a sample of 61 actions or projects that have been or will be financed from the ERDF, the ESF, the RRF, and the Erasmus+

programme, which all aimed to support the digitalisation of schools. We selected these projects either because of their financial significance, or because of their relevance for digital education in schools. The focus of our work was on how well these projects were embedded in national strategies for the digitalisation of schools. We also assessed how effective they had been at enhancing digital education in schools. In addition, we visited 35 schools that had benefited in one way or another from EU support granted within the audited projects (see [Annex II](#)).

**20** In cooperation with the relevant national and regional authorities, we also conducted an online survey of more than 49 000 primary and secondary schools in North Rhine-Westphalia (Germany), Greece, Croatia, Italy, and Poland. This survey covered around a quarter of the schools in the EU. Its purpose was to obtain up-to-date information which was otherwise unavailable on the actual gigabit connectivity of schools, the role of digital education, and the use of EU tools and actions in this area (see explanation in [Annex III](#)). We did not survey Austrian schools, because the national authorities decided not to support us in forwarding our questionnaires to schools.

**21** Lastly, we drew on findings from our previous special reports, such as on high-speed broadband infrastructure in urban and rural areas<sup>22</sup>, and on the Commission's assessment of national recovery and resilience plans<sup>23</sup>.

**22** We carried out our audit in 2021 and 2022 and covered the period from 2015 to 2021. We did not cover the use of 2021-2027 Cohesion Policy Funds, as the Commission had not yet completed its assessment of the draft programmes for most member states by the end of our audit fieldwork in June 2022.

**23** We decided to conduct this audit in view of the Commission's increased efforts of to support member states in the digitalisation of schools and the significant amounts of EU support available to member states for that purpose, in particular in response to the COVID-19 pandemic.

**24** This audit aims to help the Commission and the member states' national and regional authorities to address the challenges of the digitalisation of schools during the 2021-2027 period more effectively.

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<sup>22</sup> [Special report 12/2018](#) "Broadband in the EU Member States: despite progress, not all the Europe 2020 targets will be met".

<sup>23</sup> [Special report 21/2022](#) "The Commission's assessment of national recovery and resilience plans: Overall appropriate but implementation risks remain".

# Observations

## Member states have made only limited use of the Commission's support for the digitalisation of their schools

### In most member states there were dedicated strategies for the digitalisation of schools

**25** The Action Plan aims to support member states in addressing challenges for digital education by providing tools to help educators and trainers make better use of technology. This includes developing relevant digital skills, and better evidence and analysis. The 2020 update of Plan reinforced these ambitions (see [Figure 2](#)). We examined whether the member states we visited had adopted or updated their own strategies to support the digitalisation of their schools and whether they had incorporated elements of the Action Plan addressed to schools into their strategies since the Plan was adopted in 2018.

**26** During the 2014-2020 period, Greece and Croatia had no dedicated strategy for the digitalisation of schools. In Greece, the 2016 national digitalisation strategy mentioned the digitalisation of schools as one of several priorities and referred to the role of EU-support in this process. However, it did not set a clear timeframe for implementation. Croatia had several national strategies for connectivity and education which also included schools, and a dedicated project for the digitalisation of schools that was based on the 2014 Strategy for Education, Science and Technology (see [paragraph 59](#)).

**27** For the 2014-2020 period, Italy had already set out its strategy for the digitalisation of schools in the “National Plan for the Digitalisation of Schools”. In 2020, it adopted a national strategy for digital competences, which also covered schools.

**28** Poland had developed several general strategies and overarching projects with relevance for the digitalisation of schools. However, by 2022, a targeted strategy for the digitalisation of education (including schools) was yet to be developed, as was the plan to implement the RRP.

**29** In 2019, Germany had set up a dedicated national support programme for the digitalisation of schools (the *DigitalPakt Schule 2019-2024*). In addition, at regional level, North Rhine-Westphalia adopted a dedicated strategy for schools (*Digitalstrategie*

*Schule NRW – Lehren und Lernen in der digitalen Welt*) in 2020, when Austria also adopted its own strategy (*8-Punkte-Plan*).

### **Only a few member states had incorporated elements of the Action Plan into their strategies**

**30** Only Italy referred to the Action Plan in the relevant strategy. The relevant ministry had already supported each of the actions of the 2018 Plan with its own actions, and intended to do so when implementing the national strategy for digital competences.

**31** In Germany, the regions had agreed on a guidance framework for digital education which referred to [DigComp](#), a European digital competence framework for citizens. This describes the most important skills that people need in order to participate in the digital world, and is also relevant for schools. However, no other elements of the Action Plan had been explicitly taken up in the strategy of the region we visited.

**32** In Greece, by the end of 2022, none of the strategies referred to the Action Plan, while in Croatia, the authorities considered the updated Plan as a starting point for preparing their National Education System Development Plan for the 2022 to 2027 period but had not defined concrete actions by the end of 2022.

**33** In Austria, the Action Plan was not explicitly taken into account when preparing the national strategy, primarily because its main pillars were designed before the Plan was published in 2018. In Poland, none of the strategies referred to – or clearly incorporated elements of the Action Plan – although our audit visit showed that some projects did address a few of its priority actions.

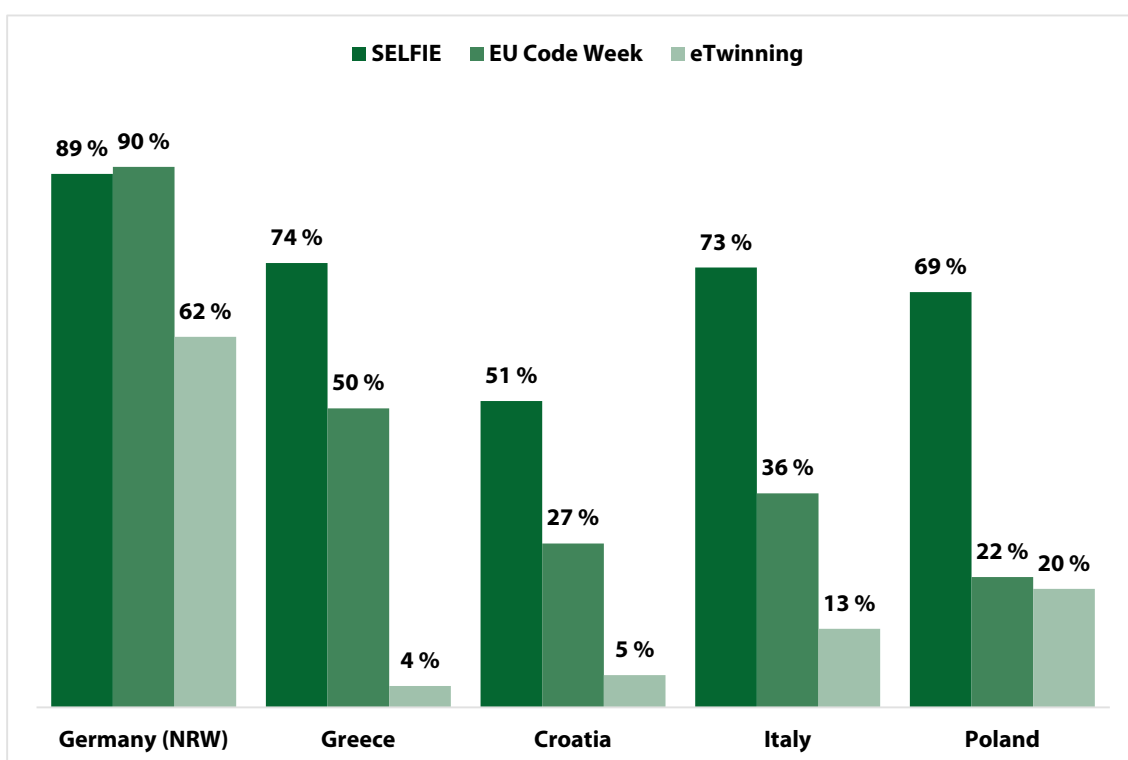
### **Many schools were not aware of Commission actions relevant for the digitalisation of schools**

**34** By means of Action Plan, the Commission directly supports the digitalisation of schools with free online tools and actions available to all schools. The most relevant of these were SELFIE, EU Code Week, and eTwinning (see [Box 2](#)). We therefore examined how effective the Commission was at reaching schools in member states with these actions.

**35** The Commission informed us that, overall, several million students and other persons in many member states, as well as outside the EU, had made use of SELFIE, EU Code Week and eTwinning. For example, by the end of 2022, SELFIE had more than

3 million registered students and teachers in more than 20 000 schools in the EU. However, when we asked the schools in our survey about these tools, most said they were either unfamiliar with them or had not used them. Our survey also confirmed that SELFIE – the newest initiative – was by far the tool with which schools were least familiar, followed by EU Code Week. By contrast, only very few schools in Greece, Croatia, and Italy were not aware of eTwinning (see [Figure 5](#)).

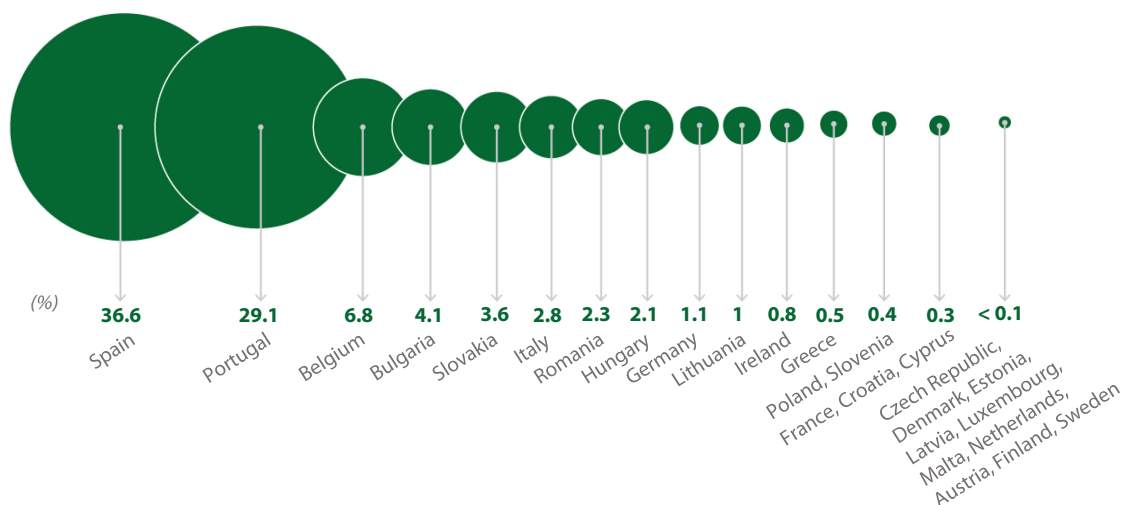
**Figure 5 – Share of surveyed schools not aware of selected Commission actions supporting the digitalisation of schools**



Source: ECA survey.

**36** Our analysis of Commission data and Eurostat school statistics for 2020 covering all member states also shows that there were significant differences between member states in terms of the share of students and teachers using SELFIE. Spain and Portugal were in the lead, while in other member states hardly any schools used the tool (see [Figure 6](#)).

**Figure 6 – Share of students and teachers using SELFIE in member states**



Source: ECA based on Commission and Eurostat data.

**37** In the member states we visited, we found that the main reason for not using SELFIE was individual schools' lack of awareness about the tool, and the fact that it had not been integrated into national or regional digital education strategies. In Croatia and Austria schools used national tools with similar features that had been developed prior to SELFIE. We note that the overall aim of SELFIE might be jeopardised if it has to compete with tools and processes that schools are already using. The Commission explained the high number of registered users in Spain and Portugal (which were not part of our selection of member states) by the fact that national ministries of education actively promoted the use of SELFIE in schools.

**38** Similarly, the use of actions under eTwinning varied significantly between the member states we visited. For example, in Italy, the relevant ministry had organised specific training to support teachers in using the tool and to promote the initiative in schools. In other member states, national or regional education ministries had not specifically encouraged schools to participate in EU activities, or had not integrated them into the curriculum.

### **Digitalisation did not have priority in strategic partnership projects for schools**

**39** With strategic partnerships involving schools and other organisations active in the field of education, the Commission's aims to support the development, transfer and/or implementation of innovative practices at organisational, local, regional, national or European levels. Even though digitalisation was not an explicit objective of the Erasmus+ programme in the 2014-2020 period, the Commission's guidelines encouraged schools

to apply with projects for ICT-based teaching, open education and innovative practices in a digital era. Since 2020, the guidelines have further emphasised the development of high-performing digital education ecosystems and better use of digital technologies for teaching and learning. We thus examined the extent to which Erasmus+ has helped schools in their digitalisation efforts.

**40** In the context of the Erasmus+ programme, we found that the Commission had not defined “digitalisation” further, and had not clarified the impact to be achieved with the funding. The selection criteria for projects had not particularly emphasised ICT related projects or the digitalisation of schools. Before the COVID-19 pandemic, there were more than 8 700 projects for school partnerships and strategic partnerships between schools and other organisations, which the Commission had approved since 2015. We estimate that only a negligible share of projects in the member states we visited aimed to increase digital competences or the adoption of new ICT based learning methods in schools. In August 2020, in response to the COVID-19 pandemic, the Commission launched an additional call whereby it provided an additional €100 million to promote digital education readiness, which was directed at schools and other education entities<sup>24</sup>. However, by 2022, projects financially supported under the call were still ongoing and results were not yet available.

**41** In our sample of 10 projects for strategic partnerships which involved elements of digitalisation and had started before 2020, we found that, where they were not delayed by the COVID-19 pandemic, the projects in question had achieved the intended outputs and supported participants with innovative learning and teaching solutions. However, their impact was mostly limited to participants. They were not embedded in or linked to national or regional digitalisation strategies, and coordination with other EU-financed or nationally-financed actions was not a requirement. Only in two of the projects we audited had new learning approaches become an integral part of the school’s curriculum. However, for these projects too, there was no information available about whether the approaches had been disseminated to schools that had not participated in the project.

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<sup>24</sup> [Coronavirus response: Extraordinary Erasmus+ calls to support digital education readiness and creative skills.](#)

## EU financial support contributed to the digitalisation of schools but there were weaknesses in the allocation of funding

### EU-financed actions were not always well embedded in national strategies for the digitalisation of schools

**42** A strategic and coordinated approach within the member states or regions for investments in school infrastructure, the professional development of teachers, and the availability of e-content and concepts for digital teaching promises a greater impact on mainstreaming digital education in schools. Against this background, we examined whether EU-financed actions in the member states we visited were at least well embedded in up-to-date national or regional strategies for the digitalisation of schools.

**43** We found that EU-financed actions were not always well embedded into national strategies for the digitalisation of schools. This is also explained by the fact that no such legal requirement exists in EU (or national) legislation. Given this context, we note that smart specialisation strategies, which were a pre-condition for member states or regions to receive Cohesion Policy funds for investments in the areas of research, technological development and innovation' did not explicitly require actions aimed at the digitalisation of schools<sup>25</sup>.

**44** In Germany (North Rhine-Westphalia), the *Digitalstrategie Schule NRW* included loan devices for teachers (ultimately financed from the RRF) and students (financed under REACT-EU). However, both the planned national education platform and the support for centres of educational excellence (see [Box 1](#)), were not embedded in any digitalisation strategy. By mid of 2022, they remained isolated measures for supporting digitalisation in schools, because there was no governance framework to ensure that the *Länder*, which are the main players in education in Germany, and which have exclusive responsibility for school education, use the planned services for their schools. In our opinion, this may significantly reduce their added value for schools.

**45** In Greece and Poland, EU-funded projects such as the acquisition of devices were not embedded in a dedicated strategy for the digitalisation of schools in the 2014-2020 period. As part of a general strategy to develop and expand the use of modern ICT-based teaching methods for all levels and types of education, Croatia had incorporated the digitalisation of schools into a single project starting in 2015, thus enabling it to take a largely holistic approach to the digitalisation of its schools. In the

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<sup>25</sup> Article 19 together with Annex XI of [Regulation \(EU\) No 1303/2013](#).



Austrian strategy for supporting the digitalisation of schools, EU-financed actions played a central role in so far as the provision of devices to students was its financially most important element.

**46** Although in Italy some actions financed from the 2014-2020 Cohesion Policy programmes were well embedded in the National Plan for the Digitalisation of Schools (see paragraph 27), a new action plan supporting the new general strategy on digital competences referred to actions for the digitalisation of schools only insofar as these were to be financed from the RRF. However, although Italy had adopted the *School 4.0 plan* for equipping schools with innovative classrooms in June 2022, it had not updated its specific strategy for the digitalisation of schools. As a result, there is a lack of specification how the actions financed from the RRF will be complemented by other EU-actions financed by the 2021-2027 Cohesion Policy programmes, or by nationally financed actions that were needed to ensure that the RRF-funded actions were fully effective.

**47** Greece, which plans substantive investments in the digitalisation of schools to be financed from the RRF until 2025 (see *Annex I*), presented an overarching strategy in 2021 for the digital transformation of society and the economy (the “Bible for Digital Transformation 2020-25”), which also covers education and schools. However, by 2022, there was only a rough estimate of the budget needed for actions to complement the RRF-financed measures, and the relevant ministry had not translated priorities in the education sector into concrete action plans.

**48** As, in the member states we visited, EU-financed actions were usually (with the exception of Croatia) single interventions, such as the acquisition of devices for teachers or students, or training for teachers, a lack of integration in relevant national or regional strategies raises the risk of fragmented use of EU funds, thus negatively affecting their potential impact.

### **EU financing enabled member states to support the digitalisation of schools, but sometimes merely replaced national funding that had already been allocated**

**49** Both, the Cohesion Policy funds for 2014-2020 and support from the RRF are subject to the condition that they do not replace public or equivalent structural expenditure by a member state, do not substitute recurring national budgetary expenditure, and are additional to the support provided under other EU programmes

and instruments (the principle of additionality)<sup>26</sup>. We therefore examined whether EU-financed actions for the digitalisation of schools were in line with this principle.

**50** In our sample, we found actions for the digitalisation of schools in Germany (North Rhine-Westphalia) which were retroactively included in the German RRP: early in 2020, the regional authorities had already decided to finance the respective devices for teachers from the regional budget. This measure will now be re-financed from the RRF. This approach was in line with the applicable rules and therefore accepted by the Commission during the negotiations of the German RRP. However, while it formally complies with the principle of additionality and the possibility of retroactivity as set out in the relevant legislation<sup>27</sup>, we consider that there is no intrinsic added value of EU financing through the RRF in such a case.

### **EU-financed actions contributed to the digitalisation of schools but the expected results of measures to be financed from the RRF have not been clearly defined**

**51** In the member states which used Cohesion Policy Funds for the digitalisation of schools, we examined whether the projects responded to the schools' actual needs and whether they had achieved their intended outputs. As in 2022 most of the measures supported from the RRF were only about to start in the member states we visited, we assessed how clearly milestones and targets had been defined to mark progress. We also assessed which results were expected from the investments. In addition, we assessed individual measures in Germany (devices for teachers) and Austria (devices for students) in the schools which had already benefited from them.

**52** Under the Cohesion Policy Funds, the EU-financed projects which we reviewed usually involved individual aspects of digitalisation, such as purchasing ICT equipment, training teachers, or providing digital learning material to the schools via dedicated platforms. Our analysis found that projects achieved their intended output in most cases, but we identified several factors that prevented the schools we visited from making the best use of the EU support (see **Box 3**).

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<sup>26</sup> Article 95(2) of [Regulation \(EU\) No 1303/2013](#) and Articles 5(1) and 9 of [Regulation \(EU\) 2021/241](#). See also our [review 01/2023](#) "EU financing through cohesion policy and the Recovery and Resilience Facility: A comparative analysis", paragraph 44.

<sup>27</sup> Article 9 and 17 of [Regulation \(EU\) 2021/241](#).

### Box 3

#### Examples of factors preventing best outcomes for EU-financed projects

In Greece and Italy, low connectivity speeds and inadequate networks in school buildings prevented many schools from making best use of EU-financed equipment, in particular for cloud applications or education platforms. Both member states organised dedicated ICT training for teachers with EU support, but this accounted for only a comparatively small proportion of all teachers. As a result, most schools responding to our survey still saw a considerable need for teachers to become digitally competent and confident.

In Poland, as in Greece, most schools used EU-financed digital learning material regularly. However, due to budget constraints, students lacked suitable devices for using the material effectively in class, in particular outside dedicated ICT lessons. In both member states, students were also not allowed to bring their own devices to most of the schools, even though this is known to increase their use by students for studying purposes. By contrast, as part of Italy's digitalisation strategy, the relevant ministry encouraged students to bring their own devices to schools.

**53** Where member states use the RRF for the digitalisation of schools, milestones and targets which they have to satisfactorily fulfil for the disbursement of RRF support usually mention inputs or outputs such as amounts invested, devices acquired, or number of teachers trained. Another of our audits had already found that some milestones and targets lacked clarity, that not all key stages were covered, and that they measure output rather than impact<sup>28</sup>. Impact indicators have by definition a longer time horizon, which may not be well suited to the limited timeframe for implementing the RRF. Avoiding impact indicators, however, considerably limits the possibility of assessing the performance of measures. Also in the present audit we found examples of weaknesses in the definition of milestones and targets, which did not refer to expected results for the digitalisation of schools. Consequently, full disbursement of funds to member states can take place, even if at that stage only poor results or no results have been achieved in schools (see [Box 4](#)).

<sup>28</sup> [Special report 21/2022](#) "The Commission's assessment of national recovery and resilience plans: overall appropriate but implementation risks remain", paragraphs 82-84, and 89.

## Box 4

### Unclear expected results for measures financed from the RRF in schools

In Italy and Austria, the measures contained in the national RRFs also involved a reform of the education sector aimed at “strengthening the training services offer from kindergarten to university” (Italy), or “fair and equal access to basic digital skills for all lower secondary school students” (Austria). However, the actual progress in terms of digital education that the schools are supposed to achieve is still unclear on the level of the milestones and targets defined for these measures.

In Germany, full disbursement of support for the devices-for-teachers measure is conditional upon teachers having observed an improvement in the digital infrastructure available and the use of digital media in schools (see [Annex IV](#)). However, it remains unclear what results for digital education are expected from the investment.

In Greece, the investment measure for the digitalisation of schools entails 11 sub-projects (actions) at national level, ranging from interactive equipment for schools, training for teachers, and devices for students and teachers, to the development of innovation centres and digital services for schools and universities. The measure should be accompanied by a comprehensive reform strategy to update curricula, rationalise services and monitor educational outcomes. However, for full disbursement of the support (completion target), Greece has to install, by the end of 2024, a minimum of only 36 000 interactive learning systems such as whiteboards, laptops, or interactive projectors for classrooms in primary and secondary schools, even though this is only one of many sub-projects for improving digital education financed from the RRF.

**54** Under the RRF, EU support is disbursed when a member state satisfactorily fulfils the targets and milestones defined in the Implementing Decision on the national RRF as adopted by the Council. For RRF-financed investments in the digitalisation of schools, member states had usually estimated the amounts included in the RRF by using data from similar actions in the past where such data were available, albeit – due to the urgency of the instrument – without conducting any cost-benefit analyses prior to their inclusion in the RRF. During the negotiations for the national RRFs, these estimates were then checked and validated by the Commission<sup>29</sup>.

<sup>29</sup> [Special report 21/2022](#), paragraphs 66-72.

**55** In contrast to other forms of EU support, under the RRF the actual costs of the measures borne by the member states can be higher or lower than the amounts included in the national RRP<sup>30</sup>. In two member states, we found that the cost estimates for two measures already being implemented had been significantly higher than the actual costs incurred during implementation (see [Box 5](#)). The Commission uses these cost estimates to set the financial contribution to the member state<sup>31</sup>.

### Box 5

#### Examples of significantly lower investment costs for RRF financed measures supporting the digitalisation of schools

In Germany, the RRF supports the establishment of a national digital education platform. When the Commission assessed the national RRP, the scope of the platform was to create an “education area ecosystem”. As the intended investment had no precedent, the costs associated with the €630 million project were therefore estimated only in very general terms and without the relevant ministry being able to quantify the benefits of such a platform. By the time of our visit in April 2022, the ministry estimated the costs at under €500 million excluding value added tax (VAT). This is significantly lower than the €529 million Germany estimated as cost net of VAT for this measure during its negotiations with the Commission.

In Italy, as part of the €261 million investment, the relevant ministry launched a public tendering procedure to connect more than 9 900 schools to gigabit internet and awarded framework contracts worth a total of €166 million to four contractors. This is €18 million less than the costs which the relevant ministry had estimated for this stage of the procedure. Moreover, the total planned investment also includes €41 million in VAT which is a national revenue and not a cost to be borne by the member state. The Commission’s ex-ante checks of the cost estimates for this measure when negotiating the national RRP did not detect the inclusion of VAT.

The way the RRF is designed means that excess amounts not spent on a measure constitute *de facto* budget support for the member state in question.

<sup>30</sup> [Review 01/2023](#), paragraph 43.

<sup>31</sup> Article 20(4) of [Regulation \(EU\) 2021/241](#).

## Schools were not sufficiently involved in establishing needs thus reducing the impact of EU funding

**56** National or regional strategies for the digitalisation of schools can only serve as a starting point for defining what should be achieved by schools and what those schools specifically need. It is thus important that the needs of schools should be determined at an appropriate level, and with a view to improved learning outcomes for students. To this end, we examined how well the member states we visited had taken the needs of schools on board when defining the EU-funded projects.

**57** The way schools can express their needs for digitalisation varies significantly in the member states we visited. For example, in Germany, local school authorities are responsible for connecting their schools and equipping them with devices, while the respective *Land* defines education policy, pays teachers' salaries, and provides them with training. In Croatia, a single public entity is responsible for infrastructure, as well as for training teachers in ICT and providing software for digital learning material in public schools. In Italy, schools have a degree of autonomy in buying equipment and services, while the Ministry of Education is responsible for organising training for teachers and other support.

**58** We found that schools were not always sufficiently involved in the acquisition process to express their needs, or could not take a strategic approach to digital education. EU-financed projects may thus achieve their targets and contribute to the digital development of schools, but they remain fragmented and have no significant impact on the digitalisation of schools as a whole (see [Box 6](#)).

### Box 6

#### Weaknesses in establishing schools' needs

In Germany (North Rhine-Westphalia), the allocation of funds to *Länder* for new loan devices for teachers followed a national distribution key based on their tax revenue and population, but not on the number of teachers who actually needed a new device. School authorities had also not always taken sufficient account of teachers' needs when acquiring devices: at two of the four schools we visited, the new devices were incompatible with existing equipment, teachers were not allowed to install the software they needed for teaching, or the devices were not suitable for carrying out administrative tasks. Teachers therefore continued to use private devices.

In Greece, the acquisition of ICT equipment was managed centrally by the relevant ministry. In 2016 and 2017, schools had to state their needs for IT equipment, but

the ministry had not issued guidance or set up a formal framework for using digital technologies in the classroom. This made it difficult for schools to establish what type of equipment was best suited to their needs. Due to significant delays in the procurement process, schools received equipment only late in 2021 or were still waiting for it in 2022, when their needs and the technology of the equipment had already changed.

In Italy, the relevant ministry organised individual competitive calls over time, enabling schools to apply for Cohesion Policy support for a specific project such as a new computer lab. The primary purpose was to channel a limited budget to schools meeting certain criteria such as their location or the social background of their students. Although this approach addressed the objectives of the operational programme, schools had to specify a need and define a “project” for each call rather than being able to determine it on the basis of a strategic digitalisation approach for their school.

In Poland, the lack of an overarching strategy for the digitalisation of schools resulted in schools having to apply for support from a variety of sources, financed from the EU or nationally.

**59** For Cohesion Policy funds, and in the member states we visited, only Croatia had taken an approach using EU support within a single action to coordinate investments in ICT equipment, teachers’ professional development and e-content in order to enable all schools to use modern teaching methods and techniques, and innovative teaching and learning practices in a systematic manner. The other member states usually explained the overall need for support by the below-average connectivity of schools and digital skills, as demonstrated by national or international studies or evaluations. Sometimes, the operational programmes also referred to higher-level objectives such as reducing the number of early school-leavers, or improving the skills of teachers and students in general. In such cases, actions to support digitalisation were often complemented by actions not related to digitalisation, and it was not clear what specific results schools were expected to achieve with their digitalisation efforts.

### **Many schools do not yet exploit the potential of digitalisation**

**60** A key driver of the adoption of digital technologies in schools is appropriate curricula and training plans that encourage teachers and students to adopt new technologies across all school subjects. The availability and quality of instructional materials are themselves a condition for the digitalisation of schools, but they do not guarantee better learning. Schools and teachers must thus be able to use these

resources to enhance learning and teaching, in particular with regard to ICT in education<sup>32</sup>.

**61** In order to integrate ICT into daily school life on as broad a basis as possible, schools also need an approach that supports the use of digital education in class. Such support can be informal, for example by advising teachers about the benefits of digital education and training in general, or by formal strategies or written statements such as an “e-policy” adopted at school level. This could also help schools to establish their own needs better.

**62** In our survey, we asked schools about the equipment that was available, their view of teachers’ skills at using digital technologies in learning and teaching, and where they still saw the greatest need for action. According to the replies we received, nearly all respondent schools use digital devices in one way or another. However, the replies suggest that there are still significant differences in the quantity and quality of equipment available to schools, how well teachers are seen as being prepared for digital teaching, and how often and where digital teaching is actually used (see [Annex III](#)).

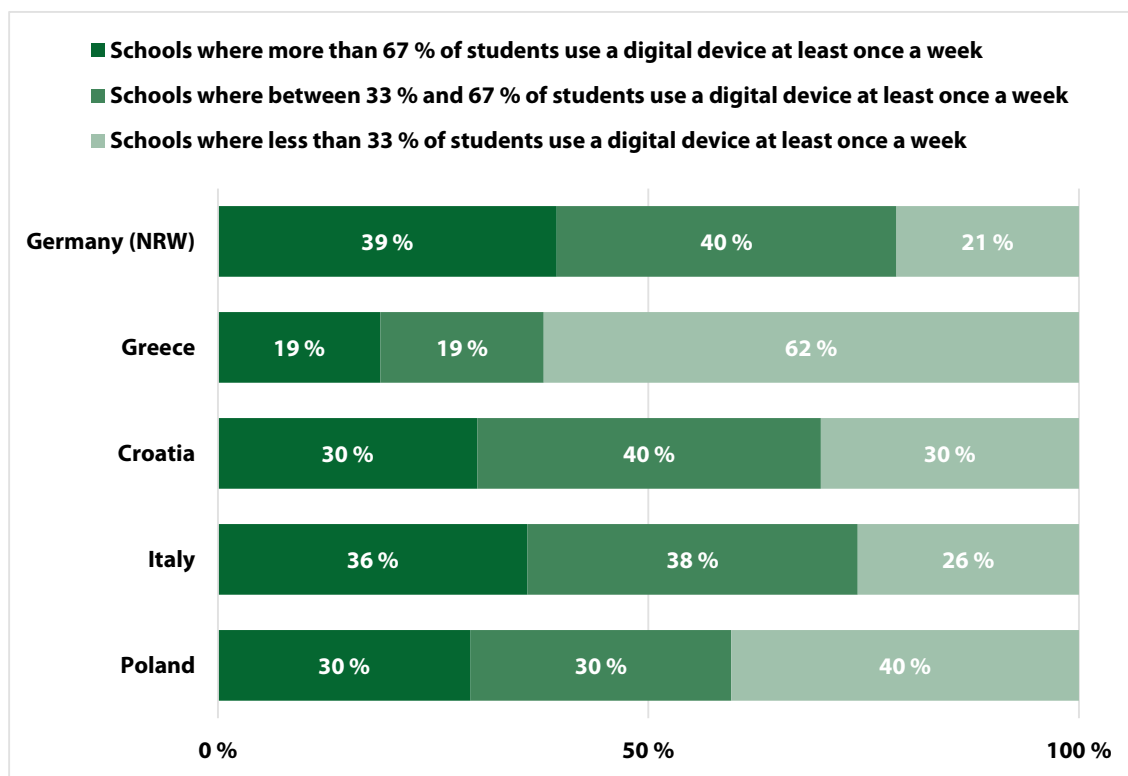
**63** Although the member states we visited had introduced mandatory ICT lessons for certain classes, or were at least planning to do so, many schools that responded to our survey said that, outside dedicated ICT lessons, less than one third of students use a digital device for learning at school at least once a week. This means that in many schools the use of ICT is not yet common in all subjects (see [Figure 7](#)).

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<sup>32</sup> (2020), [PISA 2018 Results \(Volume V\): Effective Policies, Successful Schools](#), p. 112, PISA, OECD Publishing, Paris.



**Figure 7 – Share of students using a digital device outside dedicated ICT lessons**



Source: ECA survey.

**64** Neither the 2014-2020 operational programmes nor the national RRP we examined required schools benefiting from EU support to have strategies or concepts in place to ensure the broad use of digital technologies for teaching purposes.

**65** In the member states we visited, only Austria legally requires schools, which had participated in the RRF-financed measure for equipping their students with digital devices, to establish a development and implementation plan to support education by using ICT and digital media to define short-, medium- and long-term objectives and actions<sup>33</sup>. However, the relevant ministry had no up-to-date information about how many schools had actually complied with this legal requirement.

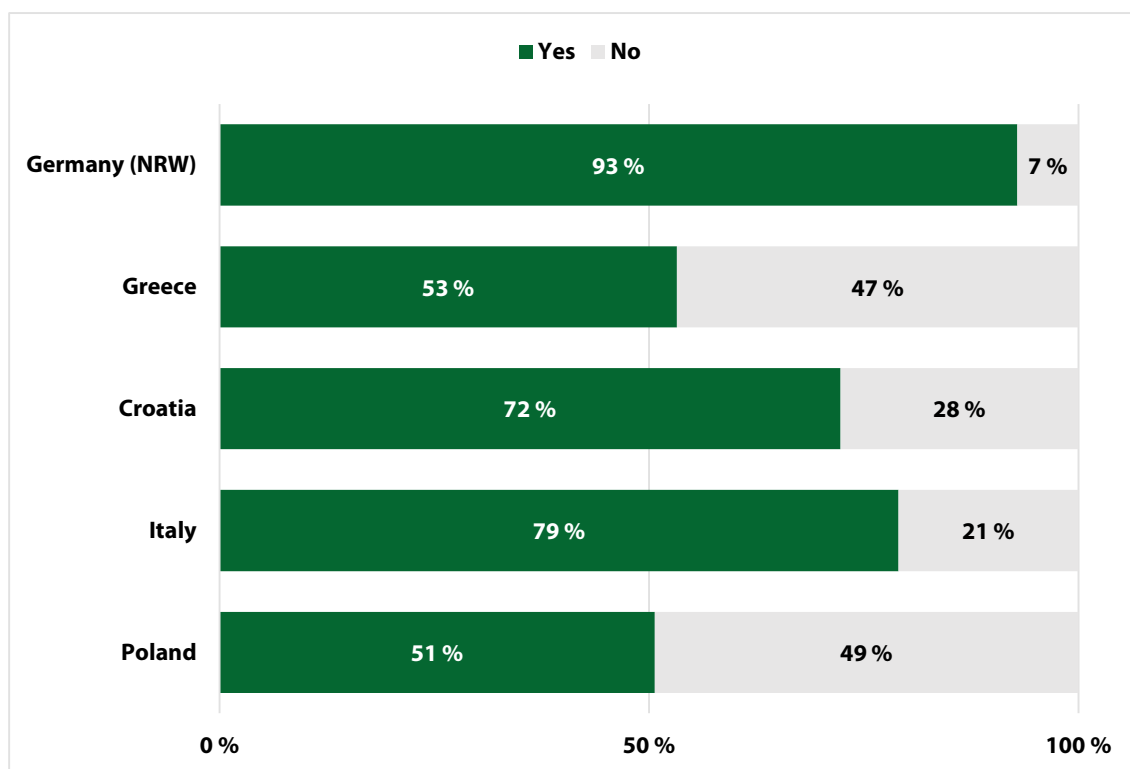
**66** In Germany, the regional ministry of education in the *Land of North Rhine-Westphalia* provided schools with a reference framework for school quality, and had made digital media concepts mandatory in schools in 2018 with a view to mainstreaming the adoption of digital teaching methods. In Italy, mainly due to the

<sup>33</sup> Article 2(1) of the federal law on financing the digitalisation of the Austrian school system (the *Schuldigitalisierungsgesetz*).

impact of the COVID-19 pandemic on schools, the Ministry of Education asked schools in 2020 to adopt a plan for integrated digital teaching. In Greece, schools could opt to incorporate digital skills into their development plans on a voluntary basis.

**67** We therefore asked schools if they had a formal strategy (or concept) for using digital technologies for teaching purposes. Such concepts may involve existing and desired school IT infrastructure, continuous ICT training for teachers, consciously using digital devices, using platforms and digital learning material for teaching purposes, or cyber security. At least half of the schools that responded to our survey did have such concepts in place (see [Figure 8](#)).

**Figure 8 – Share of schools with a formal strategy or concept for using digital technologies for teaching purposes**



Source: ECA Survey.

**68** Our analysis of the survey replies also indicates that schools which have no e-policy in place use ICT less in the course of their teaching. In our opinion, this underlines the importance of formal approaches by schools to using the potential of digitalisation in the most effective manner.

## Only a few member states assess the results achieved with EU support for the digitalisation of schools

**69** The digitalisation of schools is not an end in itself, but an open process for supporting the development of students' skills and improving learning outcomes. The acquisition of devices or the training of teachers are thus a pre-requisite for the effective digitalisation of schools, but they are not in themselves indicative of the quality of digital education in schools. Monitoring the digitalisation process makes it easier to establish whether the resources employed are effective at achieving results for students. Monitoring and evaluation are also relevant for assessing the effectiveness, efficiency and impact of EU support<sup>34</sup>. For this reason, we examined whether the Commission and the member states we visited had procedures for monitoring and evaluating the progress that schools had made in digital education with the aid of EU funds.

**70** Since 2013, the Commission has supported the International Computer and Information Literacy Study, which assesses the ICT knowledge of students and teachers in selected countries worldwide every five years. The EU member states that participated in the latest available study (2018) were Denmark, the Czech Republic, Germany, France, Luxembourg, Portugal and Finland. The next study will be carried out in 2023.

**71** Meanwhile, the Commission has no comprehensive data on the overall amounts spent for the digitalisation of schools. As digital education or the digitalisation of schools were not an explicit thematic objective of the Cohesion Policy Funds in the 2014-2020 period, member states were not obliged to collect and report such data to the Commission. In addition, the Commission does not specifically monitor the contribution of EU funding to digital education.

**72** There was also no requirement for those member states using EU funds for the digitalisation of schools to conduct specific assessments of the progress that schools have made in digital education with the aid of EU funds. The indicators which the member states were required to define for the purpose of monitoring the output and results of operational programmes under the Cohesion Policy Funds<sup>35</sup> focused on the investment priority as a whole. These indicators were either at too high a level to provide information about the progress schools had made in terms of digitalisation, or

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<sup>34</sup> Article 34 of [Regulation \(EU, Euratom\) 2018/1046](#) and Article 54 of [Regulation \(EU\) No 1303/2013](#).

<sup>35</sup> Article 27(4) of [Regulation \(EU\) No 1303/2013](#).

were limited to single actions such as the percentage of teachers who had completed training courses to improve their digital skills.

**73** Similarly, due to the temporary nature of the RRF, the Commission did not ask member states that were using it to include monitoring and evaluation milestones in their RRFs or for evaluating the measures to support the digitalisation of schools. There is thus generally no requirement for the member states to assess whether the measures financed from the RRF have resulted in actual improvements in digital education.

**74** We found in the member states we visited that only Croatia and Italy had approaches in place for systematically monitoring the progress of digitalisation of schools in receipt of EU support (see [Box 7](#)).

### **Box 7**

#### **Examples of monitoring progress on school digitalisation**

In Italy, the Ministry of Education introduced a monitoring system (the Observatory for the Digital School) whereby each year it uses a digital reporting platform to collect quantitative data on the connectivity of school buildings, the use of devices and technological equipment, and students' digital skills.

In Croatia, as one of the key outputs of the project for the digitalisation of Croatian schools that is financed by the Cohesion Policy Funds, the national authorities monitor the e-maturity of schools expressed on five levels. Digitally mature schools are those with a high level of ICT integration where the use of ICT no longer depends on the enthusiasm of individuals, but on a systematic approach. This monitoring uses data from self-assessments by the schools, and external evaluations from 151 schools which participated in the first phase of the project.

**75** In the other member states, results were generally monitored only for individual projects, and no arrangements existed for regularly evaluating the impact of the EU-financed measures on digital education. This makes it challenging to assess the extent to which EU support has improved the digitalisation of schools.

## Only a few schools can use gigabit connectivity

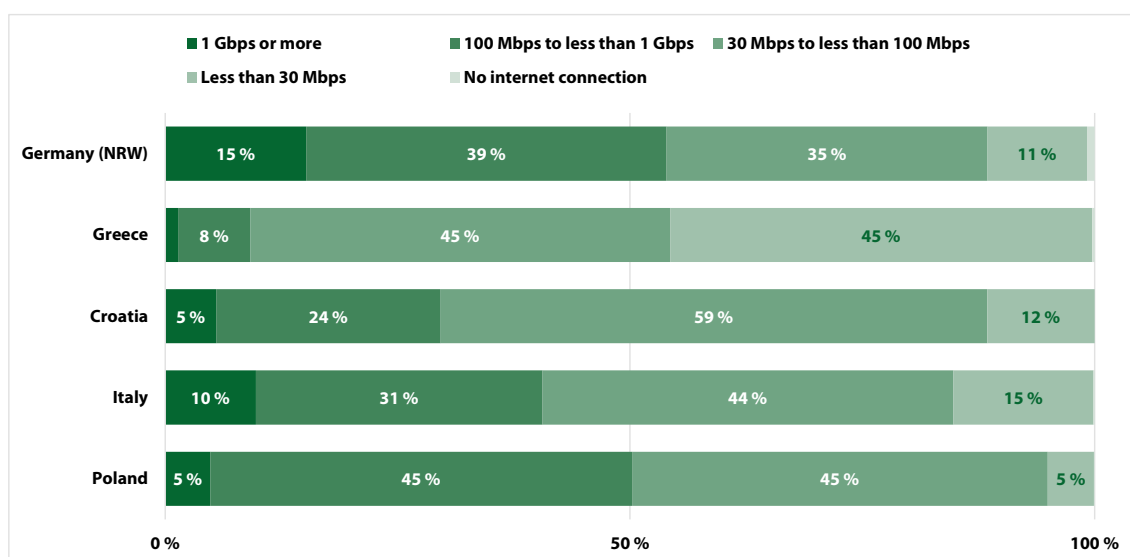
### The actual connectivity of many schools is still low

**76** The availability of fast internet connections and networks in schools is a pre-requisite for being able to use state-of-the-art IT equipment. We thus examined whether the member states we visited had translated the 2025 strategic target for gigabit connectivity set by the Commission into national strategies or approaches for connecting all their schools by 2025, and whether the schools' actual connectivity enables them to make good use of ICT.

**77** While the Commission monitors general progress towards connectivity targets for households at EU level via the Digital Economy and Society Index, it has only limited information on the actual connectivity of schools, and does not specifically monitor it. All the member states we visited monitored overall progress on the connectivity of their schools, but we noted some difficulties in assessing actual connectivity in Germany, Austria and Poland. In Germany (North Rhine-Westphalia), information on actual connectivity was contradictory. The regional ministry surveyed schools regularly, but its data deviated significantly from the data collected at federal level from telecommunications service providers. In Austria, the authorities only had outdated information, because they had not surveyed the schools since the start of the COVID-19 pandemic. There were also technical difficulties in matching school addresses with the data in the national broadband atlas, the key source of information for gigabit availability. In Poland, monitoring already covered more than 85 % of schools, and was increasing with the progress made on connecting schools.

**78** The Commission's 2025 targets aim only at the availability of gigabit connections, not at the actual uptake of services by schools. In the member states covered by our audit, the contracts with telecommunications providers showed that only a small proportion of the surveyed schools actually use gigabit broadband connections and are thus able to make best use of the potential of ICT in digital education (see [Figure 9](#)).

**Figure 9 – Download speed of schools according to contracts with telecoms providers**



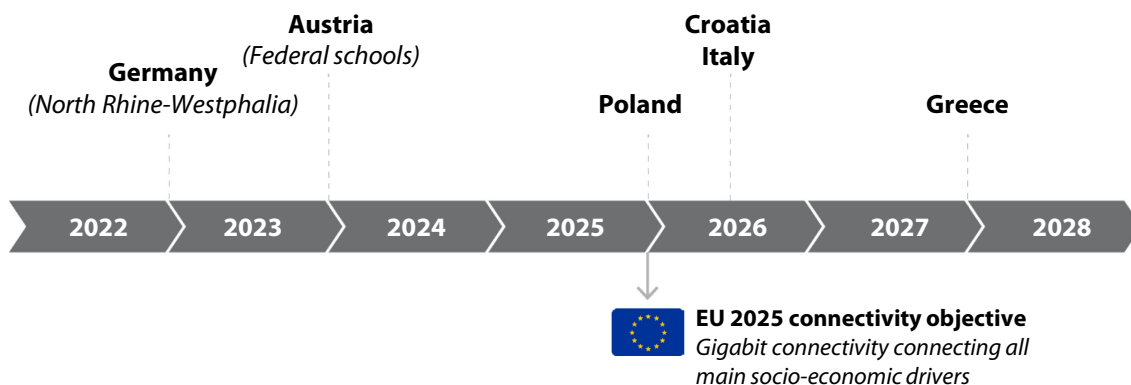
Source: ECA survey.

**79** In all the member states we visited we also observed that inadequate infrastructure prevents many schools from making the best use of available connections for teaching. Many school buildings are old and need to be upgraded with proper network cabling and Wi-Fi in classrooms.

### Some member states may not achieve the 2025 gigabit target

**80** We found that member states had varying approaches in the way they promoted the gigabit connectivity of their schools. In Germany (North Rhine-Westphalia) the regional government aimed to connect all schools by the end of 2022. Austria planned to connect only its federal schools by the end of 2023, i.e. only 10 % of all schools. Responsibility for connecting other schools lies with local school authorities, which may – or may not – strive for fast connections for the schools within their remit. Croatia and Italy are aiming to connect school buildings by 2025, but their procurement processes set targets for the completion of works only for mid-2026. Greece envisages connecting public administrations – including all schools – by 2027 (see [Figure 10](#)).

**Figure 10 – Member state targets for gigabit connectivity of schools**



Source: ECA.

**81** According to the latest update of a Commission study on National Broadband Plans in the EU-27, only a few member states are close to reaching – or have already reached – even the Digital Agenda for Europe 2020 targets, which were less ambitious than the Gigabit Society target<sup>36</sup>. The study did not specifically focus on schools, but concluded that member states have to intensify their efforts in order to reach – or get close to reaching – the Gigabit Society targets by 2025. In our opinion, the lack of stringent strategic planning in the member states and of dedicated programmes for connecting schools, combined with delays in the implementation of such programmes, make it unlikely that all schools in the EU will be connected to gigabit internet by 2025.

**82** Only four of the six member states we visited (Germany, Italy, Austria, and Poland) had adopted dedicated support programmes to accelerate the connection of schools, for which Poland had already used EU financing before 2021. However, in Italy, despite a significant increase in the number of school buildings connected since the start of the programme in 2020, there were already significant delays in implementing the programme in some regions, thus putting the overall achievement of the 2025 target at risk.

<sup>36</sup> Updated Study on National Broadband Plans in the EU27, 2021.

## Conclusions and recommendations

**83** We conclude that EU supported actions helped schools in their digitalisation efforts, but that member states lacked strategic focus in the use of EU financing.

**84** The Commission's Digital Education Action Plan aims to support member states in addressing challenges for digital education by providing tools to help educators and trainers make better use of technology, for example by developing relevant digital skills and providing better evidence and analysis. However, by 2022, not all the member states we visited had dedicated strategies for the digitalisation of their schools, and most of them had not translated the action plan objectives into their strategies (see paragraphs [25-29](#)).

**85** While schools in some member states have been successful in adopting some important elements of the action plan, such aspects were still largely unknown to many schools in other member states. Until the outbreak of COVID-19, digitalisation had not been a priority in the strategic partnership projects of schools financed under the Erasmus+ programme: only a few projects supported digitalisation, and their results were mostly limited to direct participants in the project (see paragraphs [30-41](#)).

### **Recommendation 1 – Promote EU actions under the Digital Education Action Plan more actively and enhance impact of strategic partnerships**

---

The Commission should more actively promote their own actions, such as SELFIE and EU Code Week, under the Digital Education Action Plan, for example by a closer cooperation with schools, and enhance the impact of strategic partnership actions on the digitalisation of schools.

**Timeframe: by the end of 2024**

**86** Member states were not always successful at including EU-financed actions in national or regional strategies for the digitalisation of schools, something which could have reduced the risk of fragmented interventions financed from the EU budget and helped to achieve greater impact. There were also some member states which had not updated their strategies for the 2021-2027 period, and where it was unclear how actions complementing EU-financed measures would be funded (see paragraphs [42-48](#)).



**87** EU-financed actions examined for this audit formally complied with the principle of additionality. However, we also found instances where a member state retroactively included a measure in the national Recovery and Resilience Plan, which replaced national funding that had already been allocated before the Recovery and Resilience Facility came into being. While this is in line with the legislation, there is no intrinsic added value in financing such a case (see paragraphs 49 and 50).

**88** In most cases, the EU-financed projects examined during this audit delivered their intended outputs but there were still factors that prevented the schools we visited from making the best use of EU financing. For measures supported by the Recovery and Resilience Facility we identified shortcomings in how milestones and targets were defined. In particular, none of the targets and milestones referred to expected results that the measures were supposed to achieve in terms of improving digital education. Moreover, cost estimates accepted by the Commission during the negotiations of the national plans for two measures examined for this audit did significantly differ from the actual costs incurred during implementation, resulting in excess amounts that constitute *de facto* budget support for member states. Finally, schools were often not sufficiently involved in establishing their own needs, which can reduce the impact of EU support (see paragraphs 51-59).

**89** Nearly all schools now use digital devices but the availability of ICT equipment for schools or dedicated training for teachers does not guarantee better learning on a broad basis if schools have no approach for supporting the use of digital education in class. Many schools still report insufficient equipment, or further needs for the training of teachers, and there are also many which have still not adopted a formal approach to using ICT in class. This may prevent them from exploiting the full potential of digitalisation (see paragraphs 60-68).

**90** The Commission still lacks comprehensive data on the overall amounts spent for the digitalisation of schools. Only a few member states assess the results they have achieved with EU financial support for improving digital education in schools, as there was no such requirement. Programme-specific indicators were not informative, and only two of the six member states we visited had approaches for systematically monitoring the progress schools had made in terms of digitalisation as a result of EU financial support (see paragraphs 69-75).

## Recommendation 2 – Link EU funding more closely to objectives, needs and expected outcomes for schools

---

The Commission should take action, where appropriate in close cooperation with the member states, to strengthen the link:

- (a) between the objectives of the Digital Education Action Plan, EU support, and national or regional strategies for the digitalisation of schools;
- (b) between EU support for the digitalisation of schools and clearly defined objectives, needs and scalable outcomes for schools.

**Timeframe: by the end of 2027**

**91** In 2016, the Commission set targets for the member states to connect schools to gigabit internet by 2025 and enable them to use state-of-the-art IT equipment and adopt innovative ways of teaching and learning. The Commission has only limited information on the actual connectivity of schools and does not specifically monitor it. Only a small number of schools can actually use gigabit connections, and thus make best use of the potential of ICT in digital education (see paragraphs [76-79](#)).

**92** Member states had varying approaches to promoting the connection of schools: some had dedicated national support programmes while others had no specific strategy. A lack of stringent strategic planning and delays in implementing dedicated programmes make it unlikely that all schools in the EU will achieve the 2025 target for gigabit internet (see paragraphs [80-82](#)).

## Recommendation 3 – Monitor and encourage achievement of connectivity targets for all schools

---

In close cooperation with member states and regions, the Commission should:

- (a) set up a mechanism to periodically collect up-to-date data for monitoring the actual connectivity of schools, and report on the outcome; and
- (b) encourage member states to connect all schools to gigabit internet by 2025.

**Target implementation date: by the end of 2025**

This Report was adopted by Chamber II, headed by Mrs Annemie Turtelboom, Member of the Court of Auditors, in Luxembourg at its meeting of 15 March 2023.

*For the Court of Auditors*

Tony Murphy  
*President*

# Annexes

## Annex I – RRF financed measures for the digitalisation of schools

| Member state          | Component   | Title  | Budget<br>(million euros) |
|-----------------------|---|--|---------------------------|
| <b>Belgium</b>        | F.2.3 – Optic fibre, 5G and new technologies                      | Improving the connectivity of schools (internal), but also of the 35 business parks in Wallonia – Walloon Region | 70                        |
|                       | J.4.1 – Education 2.0   | “Digisprong” of the Flemish Community  | 318                       |
|                       |   | “Digital turnaround for Brussels schools” in the Brussels-Capital Region   | 5                         |
|                       |   | “Digital transformation of education” of the German-speaking community   | 5                         |
| <b>Bulgaria</b>       | C.1 – Education and skills  | STEM centres and innovation in education - digitalisation  | 122                       |
| <b>Czech Republic</b> | 3.1 – Innovation in education in the context of digitalisation    | Implementation of the revised curriculum and digital skills of teachers  | 22                        |
|                       |   | Digital equipment for schools  | 169                       |
| <b>Germany</b>        | 3.1 – Digitalisation of education                                 | Loan devices for teachers  | 420                       |
|                       |   | National education platform  | 529                       |
|                       |   | Educational centres of excellence  | 172                       |
| <b>Estonia</b>        | 3 – Digital state   | Construction of very high capacity broadband networks including schools  | 24                        |
| <b>Ireland</b>        | 2 – Accelerating and expanding digital reforms and transformation | Programme to provide digital infrastructure and funding for schools  | 64                        |
| <b>Greece</b>         | 3.2 – Education, vocational education and training, and skills    | Digital transformation of education  | 365                       |

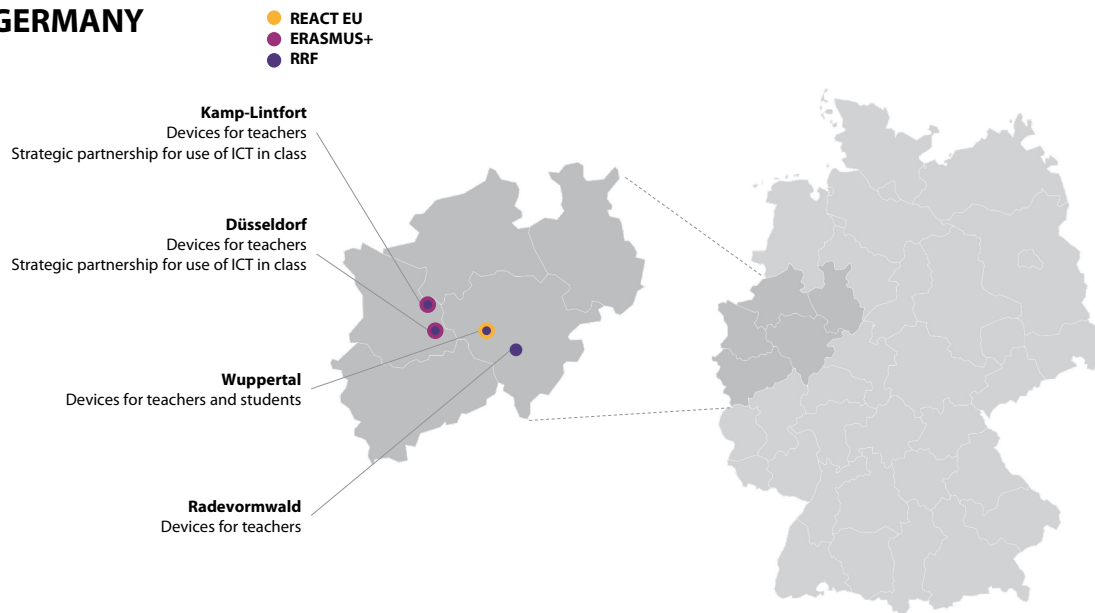
| Member state     | Component   | Title  | Budget<br>(million euros) |
|------------------|---|--|---------------------------|
| <b>Spain</b>     | 3.1 – Innovation in education in the context of digitalisation                          | Digital transformation of education  | 1 412                     |
| <b>France</b>    | C.7 – Digitalisation of the State, territories, enterprises, and culture                | Digital upgrading of the administration of the education system  | 35                        |
|                  |   | Educational continuity: digital transformation of schools  | 131                       |
| <b>Italy</b>     | 1.2 – Fast internet connections (Broadband and 5G)                                      | Connected Schools  | 261                       |
|                  | 4.1 – Strengthening the provision of education services: from nurseries to universities | Integrated digital teaching and training on the digital transformation for school staff  | 800                       |
|                  |   | New skills and new languages   | 1 100                     |
|                  |   | School 4.0: innovative schools, wiring, new classrooms and workshops   | 2 100                     |
| <b>Cyprus</b>    | L.5.1 – Educational system modernisation, upskilling and re-training                    | Reform 2: A new teacher and school evaluation system - digital   | 0.3                       |
|                  |   | Reform 4: Digital transformation of school units with the aim of enhancing digital skills and skills related to STEM education | 13.8                      |
| <b>Latvia</b>    | 2 – Digital transformation  | Closing the digital divide for socially vulnerable learners and educational institutions                                       | 15                        |
|                  | 3 – Reduction of inequality   | Development of infrastructure and equipment of educational institutions  | 31                        |
| <b>Lithuania</b> | 3 – Digital transformation for growth   | Production of digital education content and resources  | 20                        |
|                  | 4 – Quality and accessible education for the entire life cycle                          | Sub-measure 6: Digital education transformation  | 10                        |
| <b>Hungary</b>   | C.1 – Demography and public education   | Development of competitive public education using 21 <sup>st</sup> century technology  | 391                       |

| Member state       | Component   | Title  | Budget<br>(million euros) |
|--------------------|---|--|---------------------------|
| <b>Netherlands</b> | P.4 – Strengthening the labour market, pensions and future oriented education                                     | National Education Lab AI  | 36                        |
|                    |   | Laptops and tablets for online and hybrid education to combat and mitigate learning losses   | 24                        |
| <b>Austria</b>     | 2 – Digital recovery  | Provision of digital end-user devices to students and connection of federal schools  | 172                       |
| <b>Poland</b>      | C – Digital transformation  | Level playing field for schools with mobile multimedia devices – investments related to the fulfilment of minimum equipment standards  | 550                       |
|                    |   | E-competences  | 184                       |
|                    |   | Equipping schools/institutions with adequate ICT devices and infrastructure to improve the overall performance of the education system | 621                       |
| <b>Portugal</b>    | C.20 – Digital School   | Digital Transition in Education  | 500                       |
|                    |   | Digital Education (Azores)   | 38                        |
|                    |   | Programme to accelerate the digitalisation of education (Madeira)  | 21                        |
| <b>Romania</b>     | C.15 – Education  | In-service training programme for teaching staff   | 80                        |
|                    |   | Providing digital technology equipment and resources for schools   | 479                       |
|                    |   | Online School: Assessment platform and content development   | 79                        |
| <b>Slovenia</b>    | 7 – Digital transformation of the public sector and public administration   | Digitising education, science and sport  | 67                        |
|                    | 12 – Strengthening competences, especially digital and those required by new occupations and the green transition | Renovating the education system for the green and digital transitions - digital skills   | 1                         |
|                    |   | The comprehensive transformation (sustainability and resilience) of green and digital education - digital skills                       | 28                        |

| Member state    | Component  | Title  | Budget<br>(million euros) |
|-----------------|--|--|---------------------------|
| <b>Slovakia</b> | C.7 – Education for the 21 <sup>st</sup> century | Education content and form reform – Curriculum and textbook reform – Digital testing and digital tools | 20                        |
|                 |  | Preparing and developing teachers for new content and form of teaching – Digital teacher education     | 17                        |
|                 |  | Digital infrastructure in schools  | 187                       |
|                 |  | Digital infrastructure in schools - administrative capacity  | 5                         |
|                 |  | <b>Total</b>   | <b>11 714</b>             |

## Annex II – Schools and projects visited for this audit

### GERMANY



### GREECE

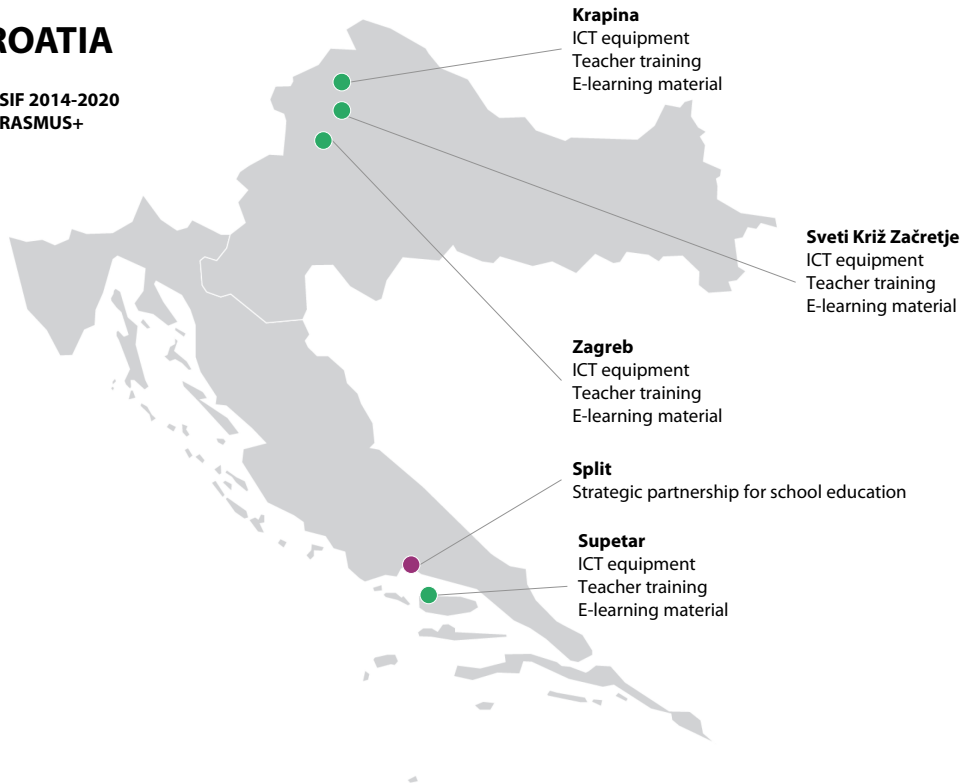
● ESIF 2014-2020





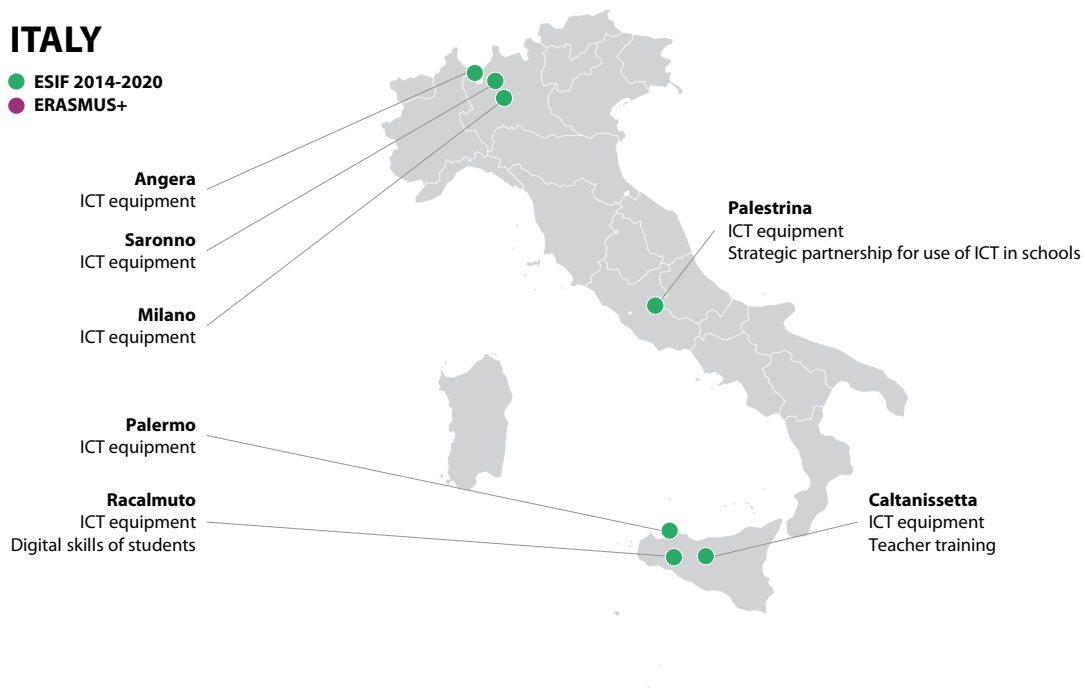
## CROATIA

- ESIF 2014-2020
- ERASMUS+



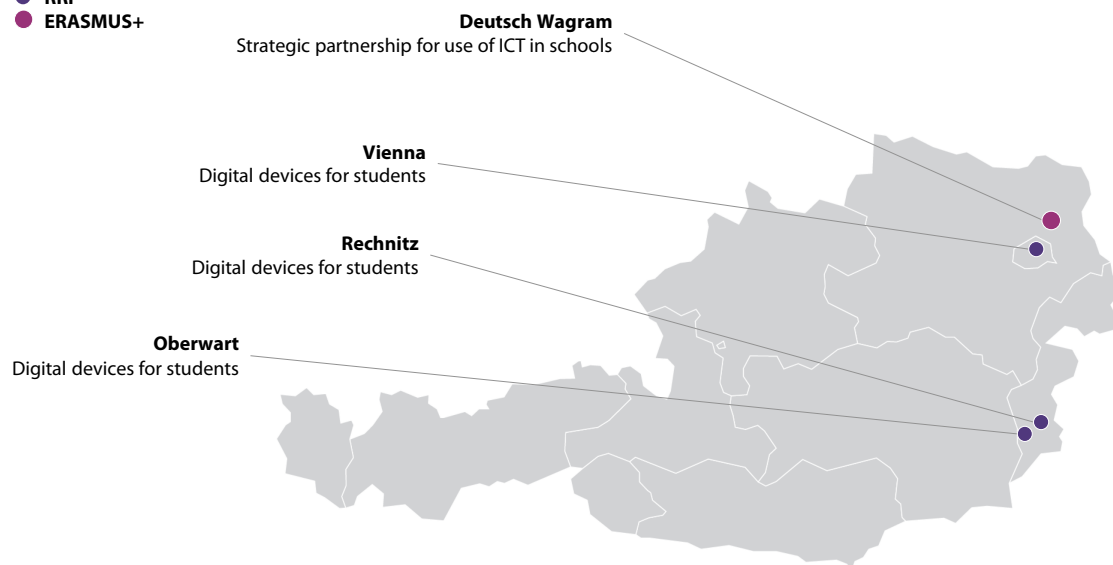
## ITALY

- ESIF 2014-2020
- ERASMUS+



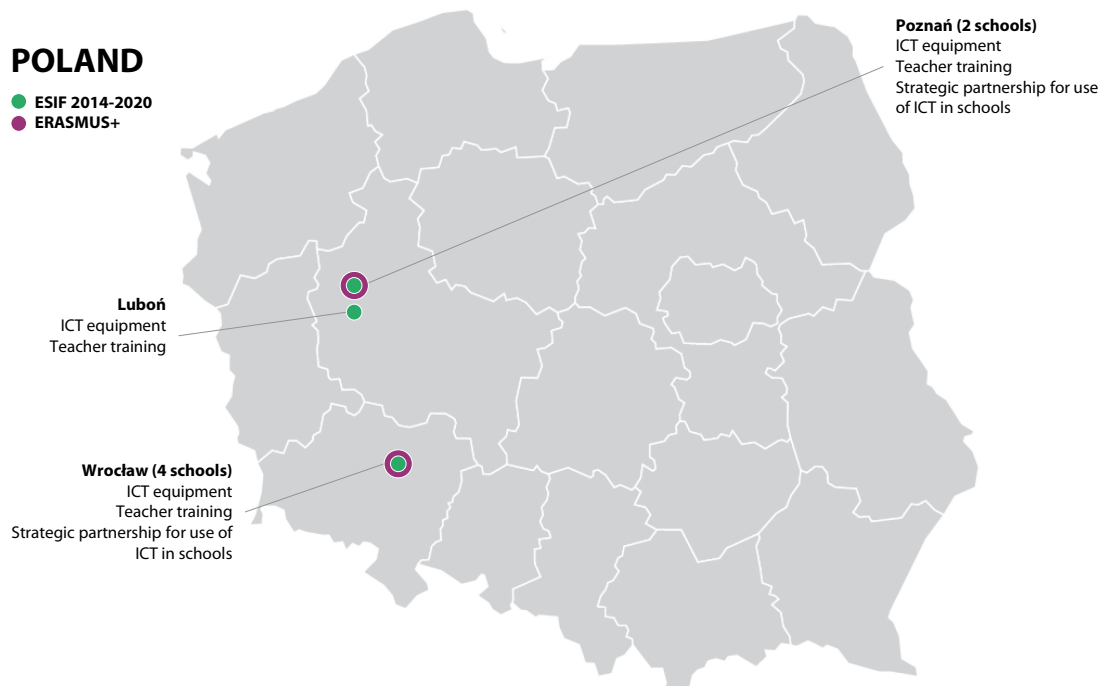
## AUSTRIA

- RRF
- ERASMUS+



## POLAND

- ESIF 2014-2020
- ERASMUS+



Source: Eurostat Maps.

## Annex III – ECA School Survey

### Purpose

The purpose of our survey was to obtain representative up-to-date information on the actual connectivity of schools, the role of digital education, and the use of EU tools and actions in this area, which was not otherwise available.

### Conduct of the survey

We conducted the online survey between February and May 2022 using *EUSurvey*, a tool provided by the Commission for online surveys. The questionnaire was sent to the principals of 49 512 schools in five member states with training for levels 1-3 of the International Standard Classification of Education (ISCED), i.e. to primary and lower and upper secondary education. ISCED is the benchmark international classification for organising education programmes and related qualifications by levels and fields developed by the United Nations Educational, Scientific and Cultural Organization.

Participation in the survey was voluntary and no personal data were collected or evaluated.

We invited the ministries of the member states concerned by this audit to notify the schools of the upcoming publication of the survey. The authorities in Germany (North Rhine-Westphalia), Greece, Croatia, Italy, and Poland had informed schools about the survey beforehand, and encouraged participation.

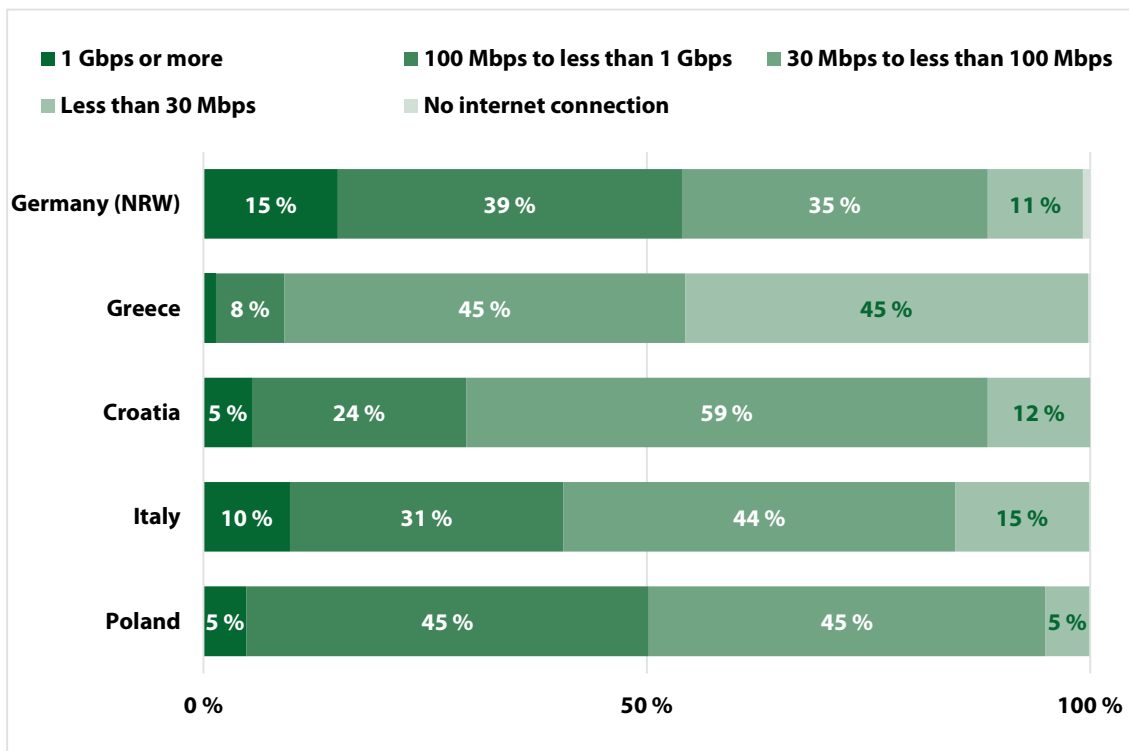
Austrian schools were not covered by this survey as the national authorities decided not to support us in sending our questionnaires to their schools.

### Response rate

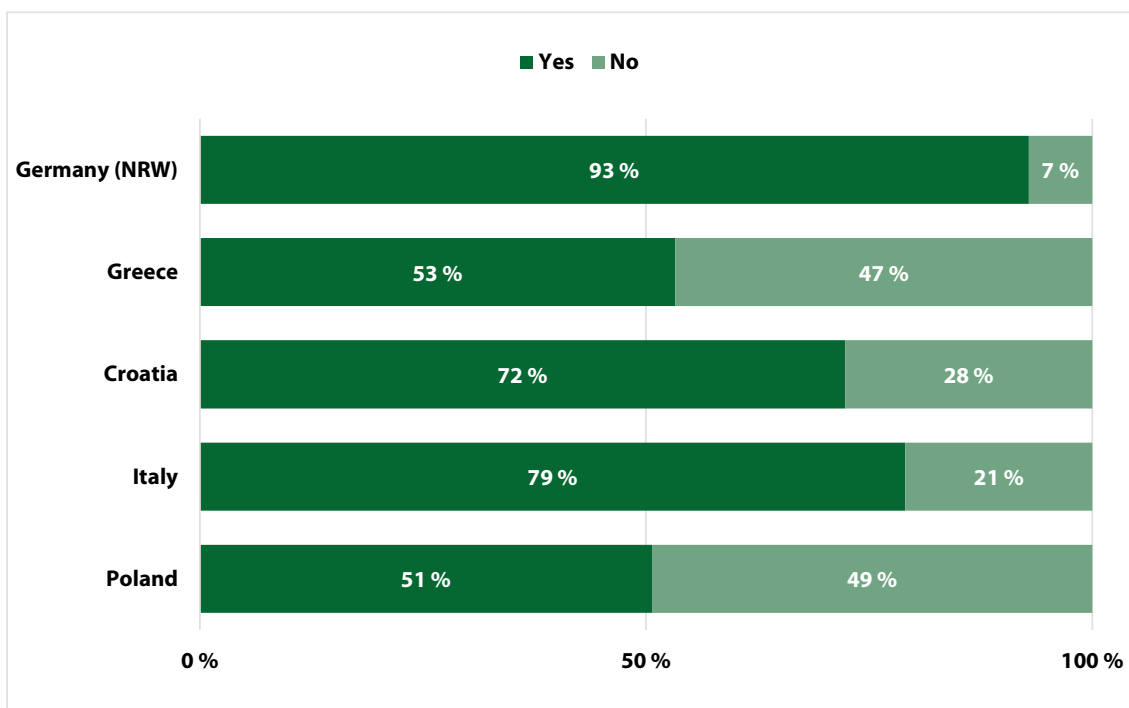
In total, we received valid answers from 16 142 schools, i.e. an overall response rate of around 33 %. The response rate was highest in Croatia (around 49 %) and lowest in Italy (around 26 %).

## Main survey questions

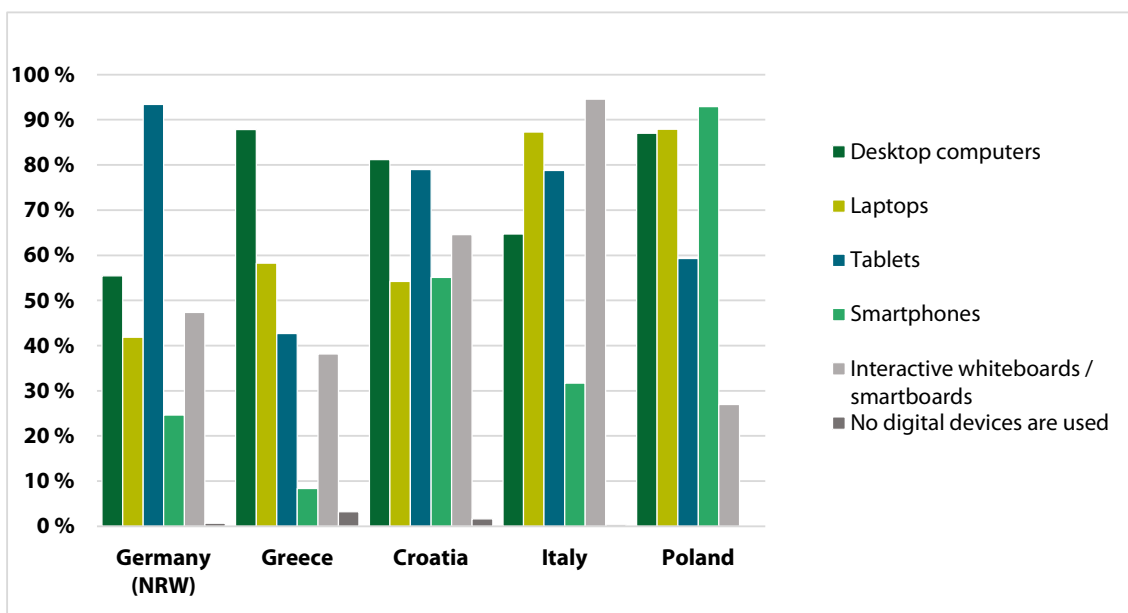
1. What is the download speed at your school according to the contract with the telecom provider?



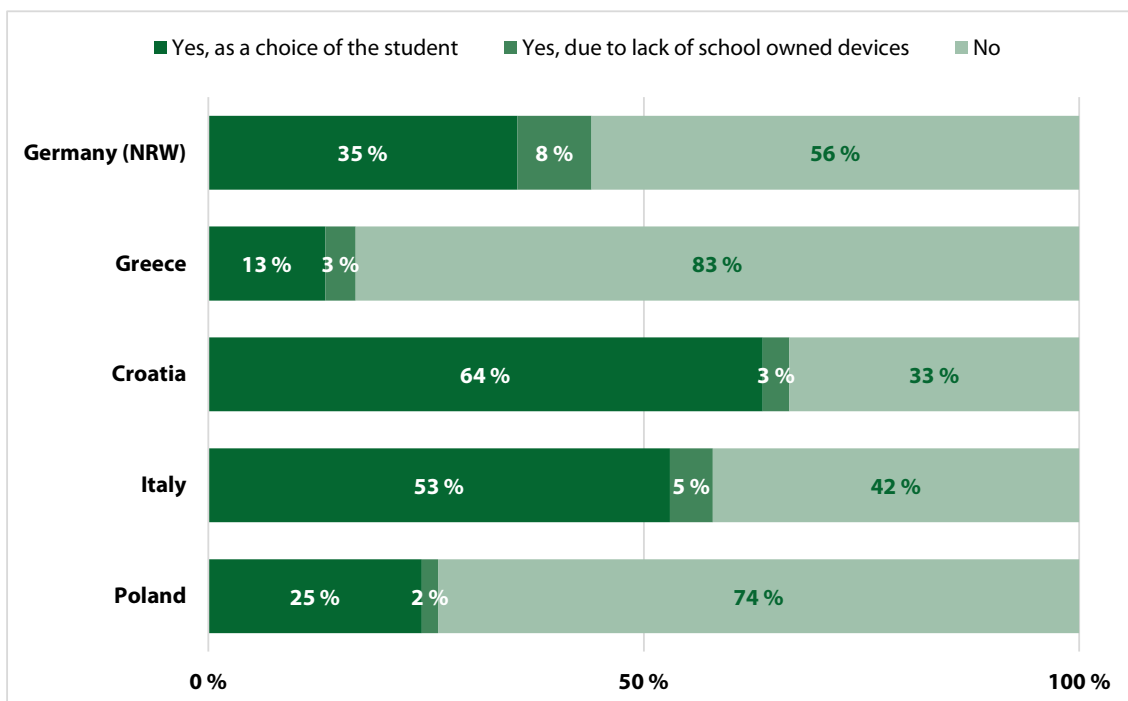
2. Does your school have a formal strategy (concept) for the use of digital technologies for teaching purposes?



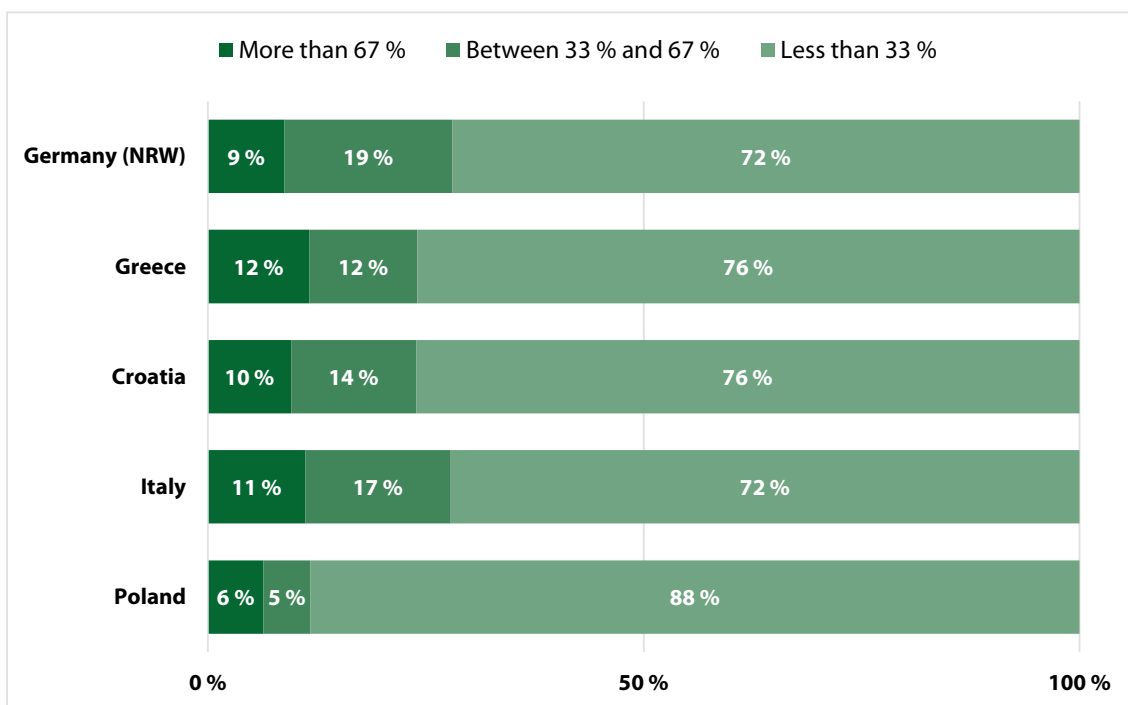
### 3. Which of these digital devices are used by your students for teaching purposes at school?



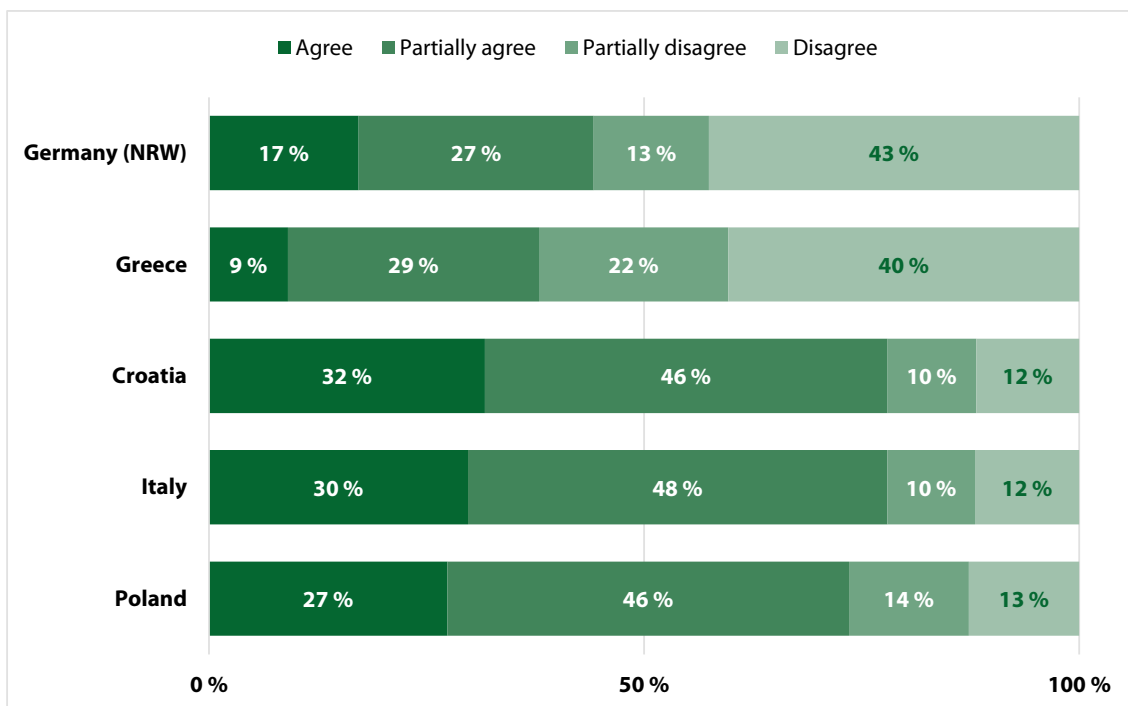
### 4. Can students bring entirely privately financed laptops or tablets to school lessons?



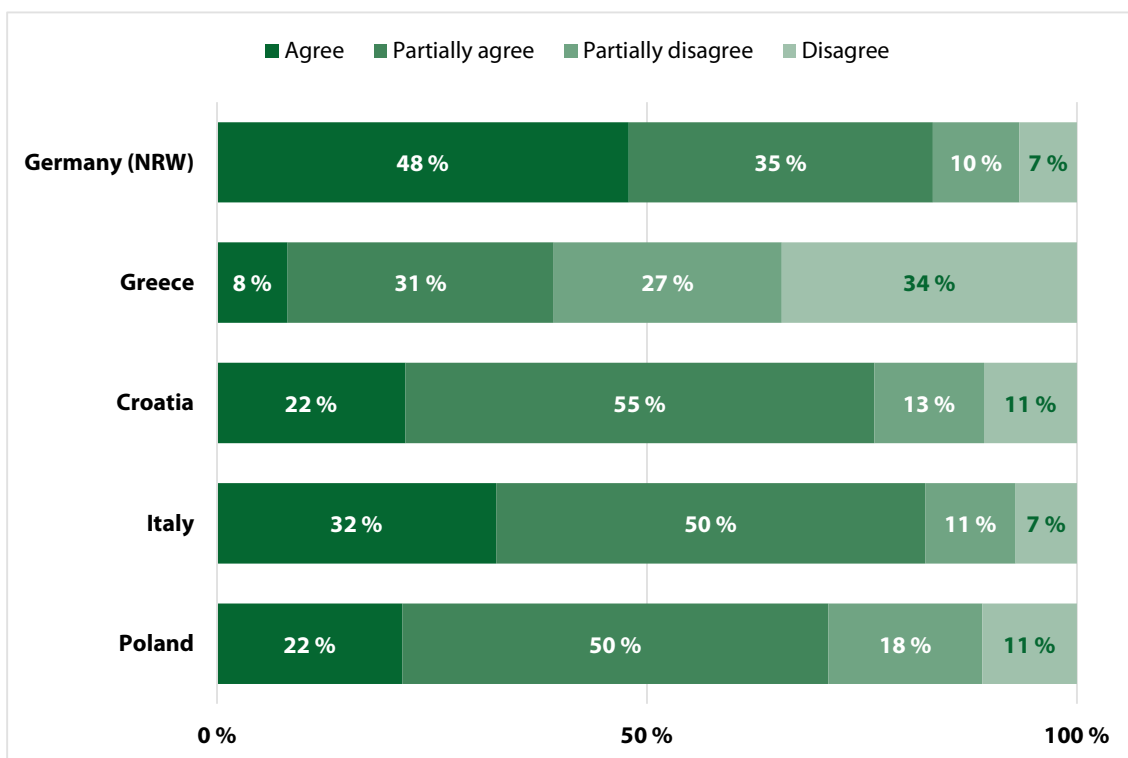
5. How many of your students use entirely privately financed laptops or tablets at least once a week during school lessons?



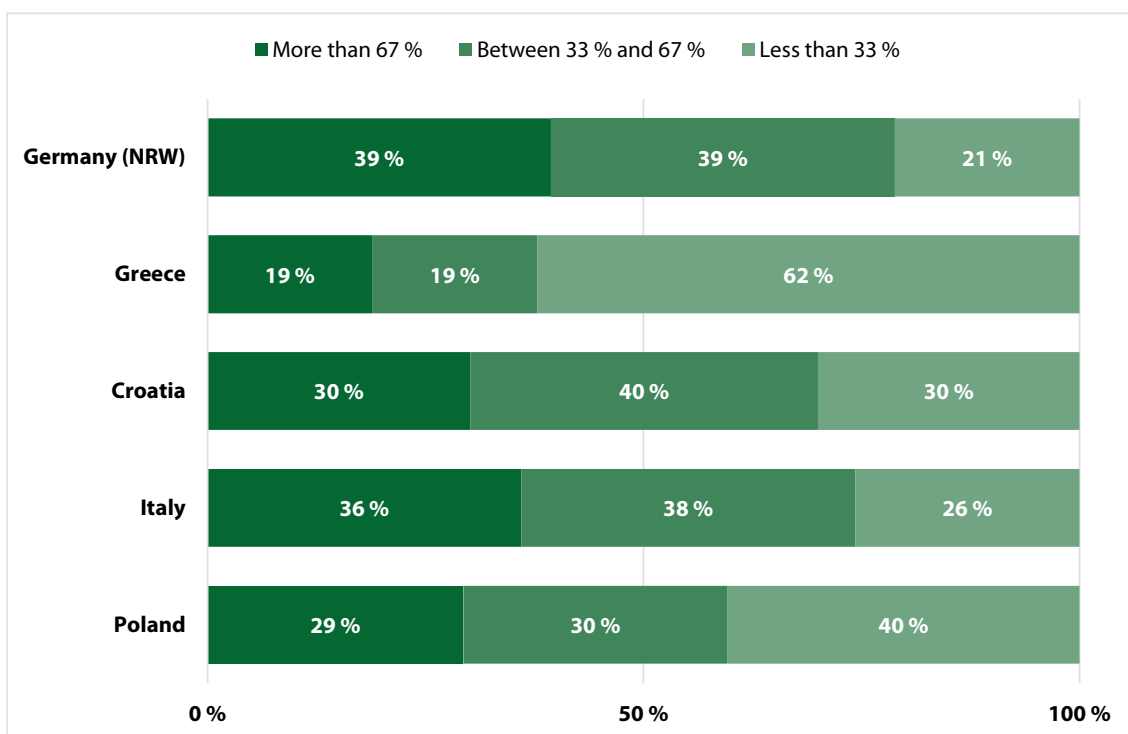
6. To what extent do you agree that the number of digital devices available to students at your school for teaching purposes is sufficient?



**7. To what extent do you agree that the quality of digital devices available to students at your school for teaching purposes is sufficient?**

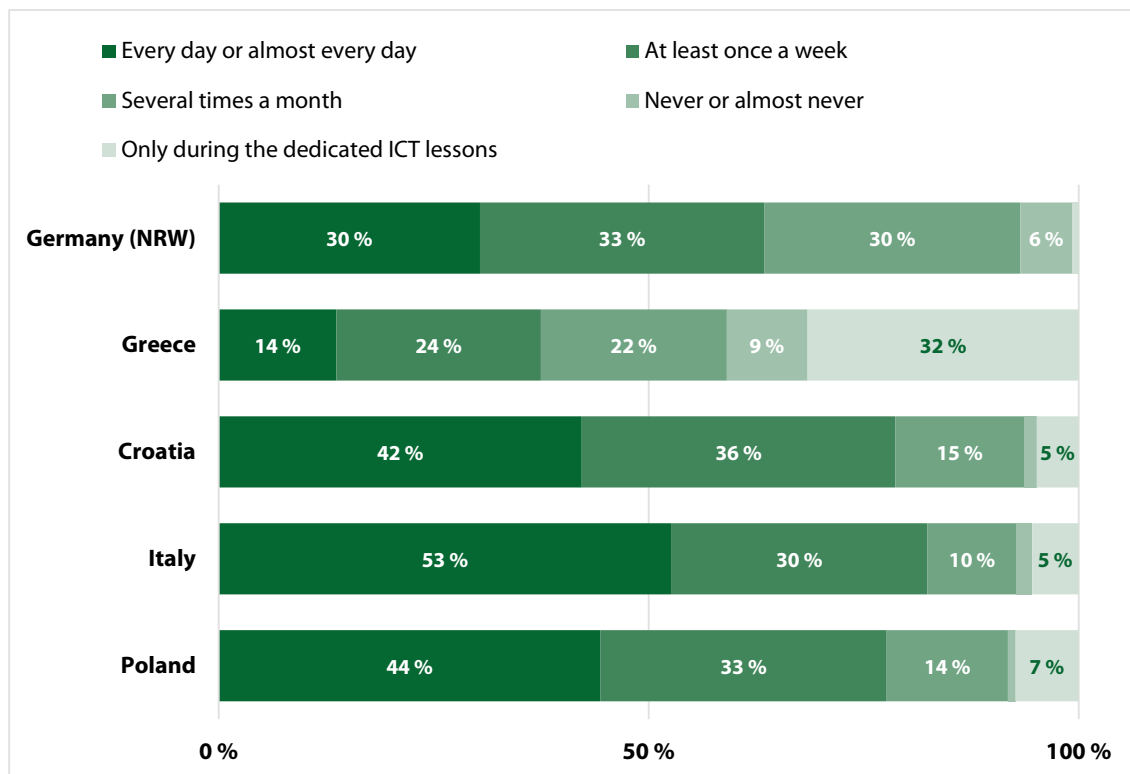


**8. How many of your students use a digital device (desktop computer, laptop, tablet etc.) at least once a week for learning at school, apart from usage during dedicated ICT lessons?**

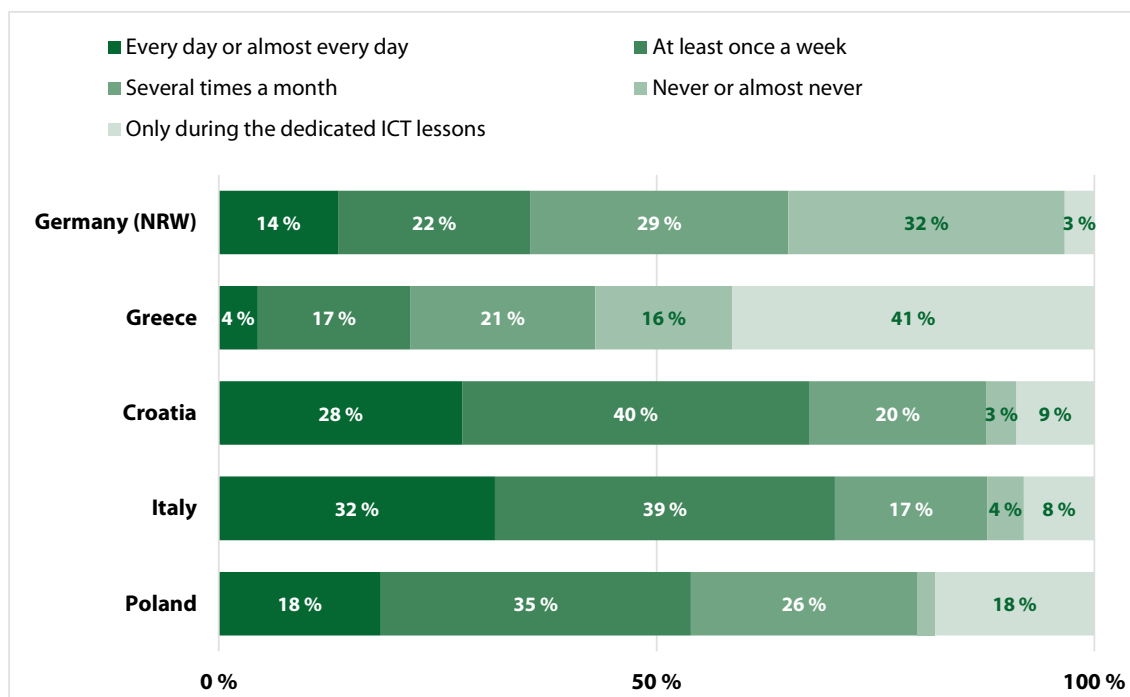


## 9. How often are the following digital learning activities undertaken during lessons?

### a) Search the internet to collect information

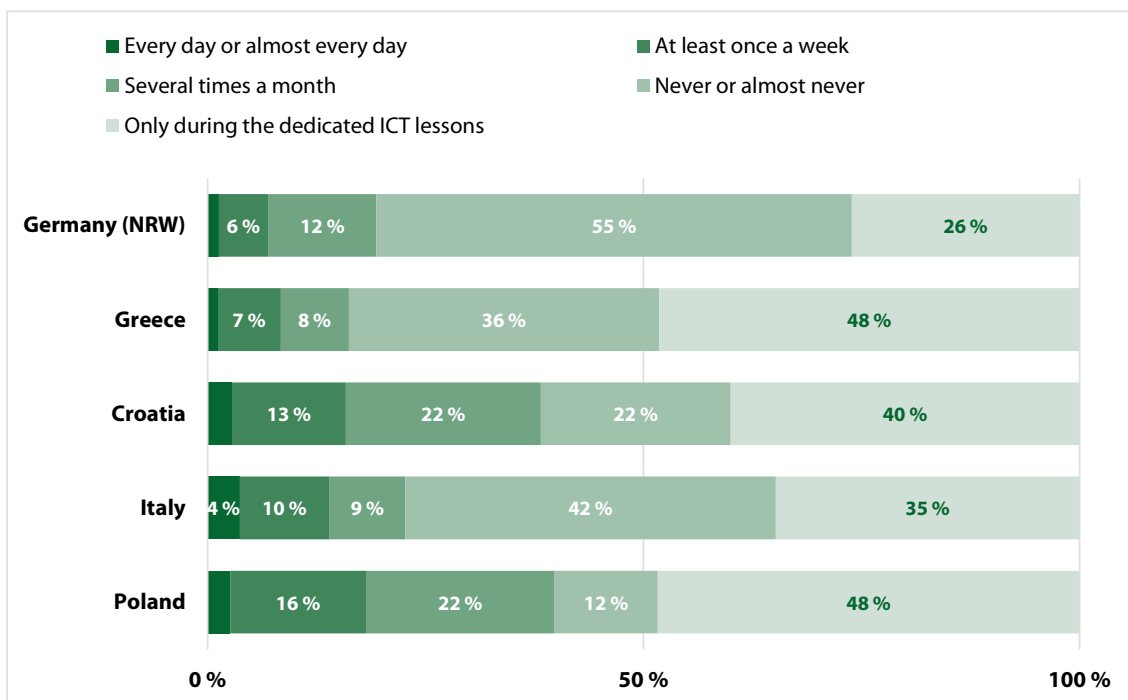


### b) Use a word processing, spreadsheet or presentation programme (e.g. Word, Excel, PowerPoint)

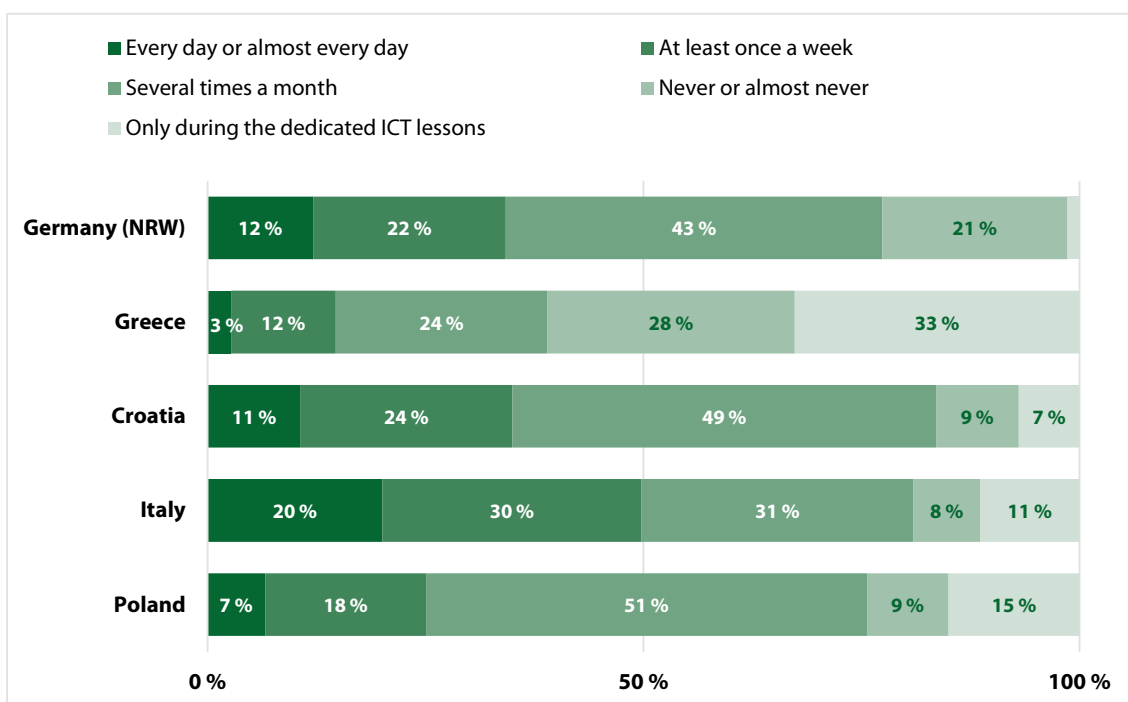




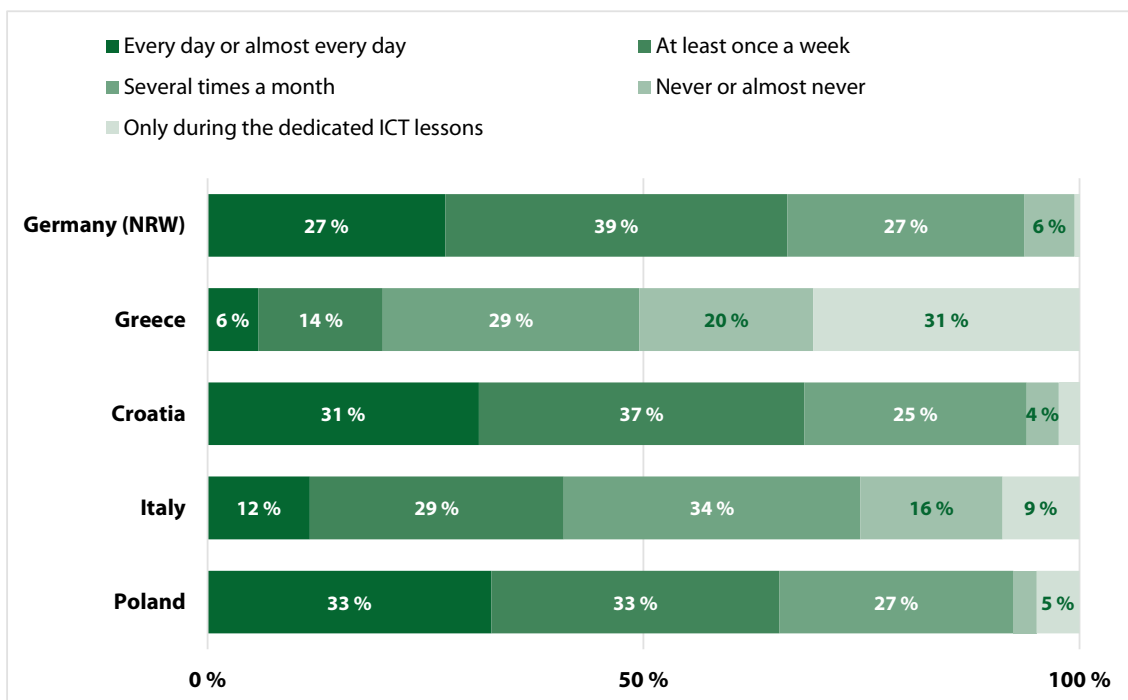
## c) Code/programming apps, programmes and/or robots



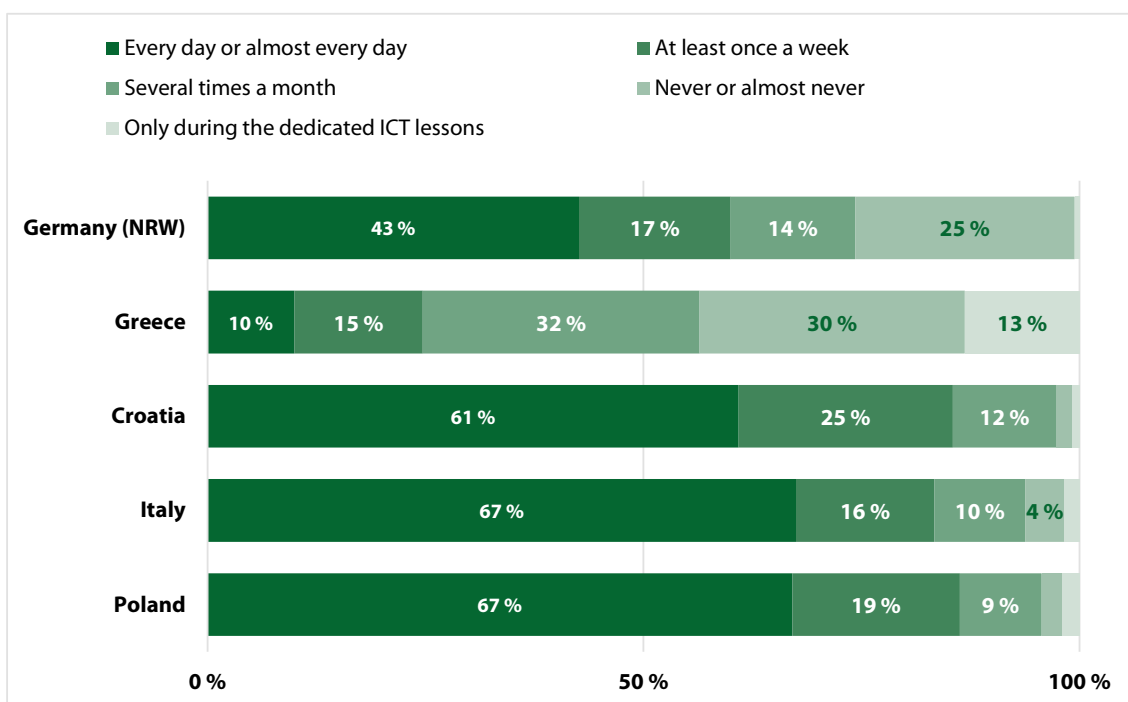
## d) Use digital technologies and devices when working on projects



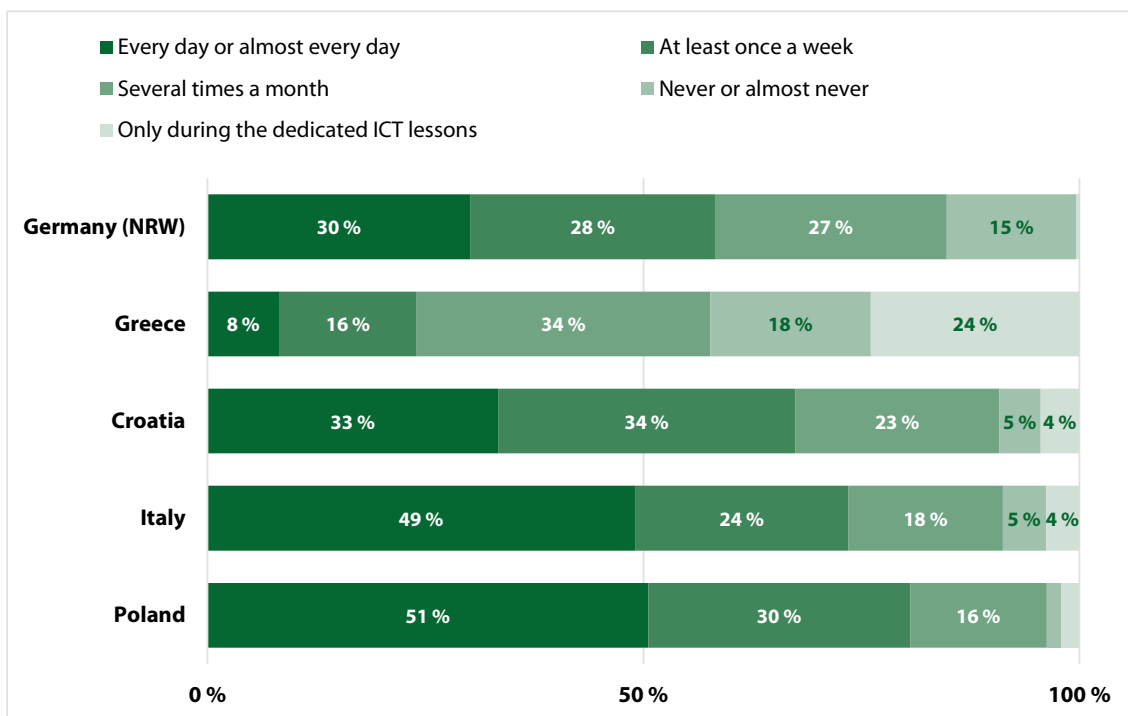
## e) Learning with online training programmes, games, apps and quizzes



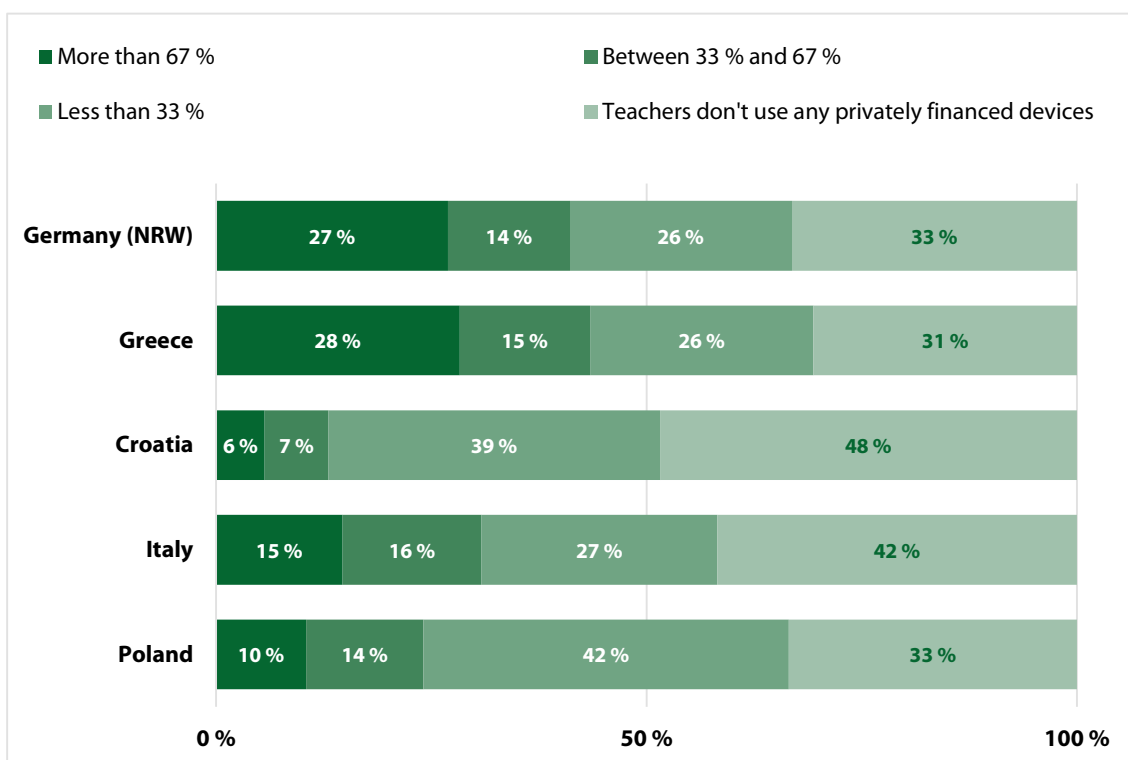
## f) Communication between teachers and students, and among students



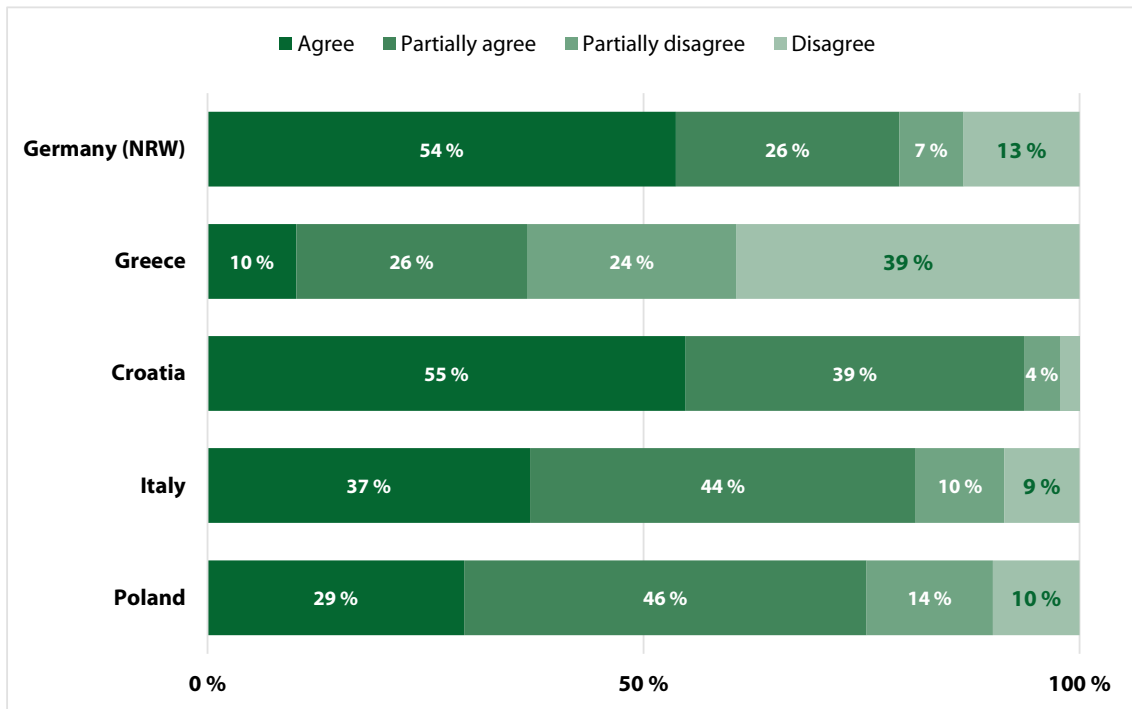
## g) Use of online educational software and platforms



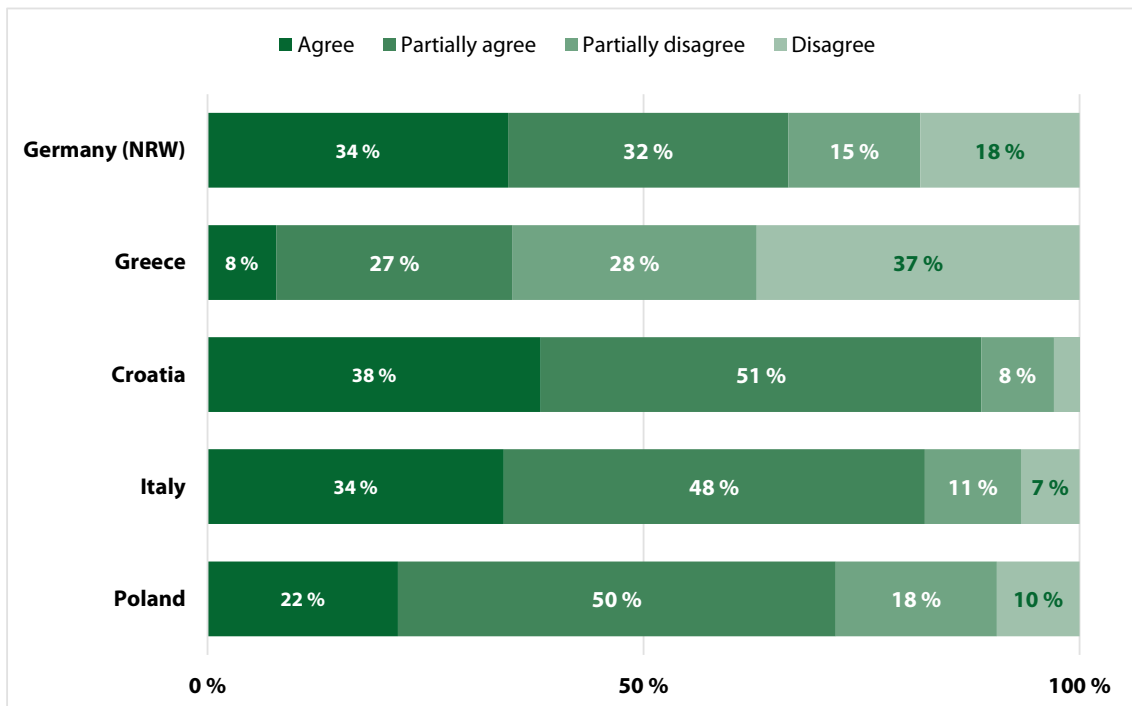
## 10. What percentage of teachers use entirely privately financed devices for teaching purposes at your school?



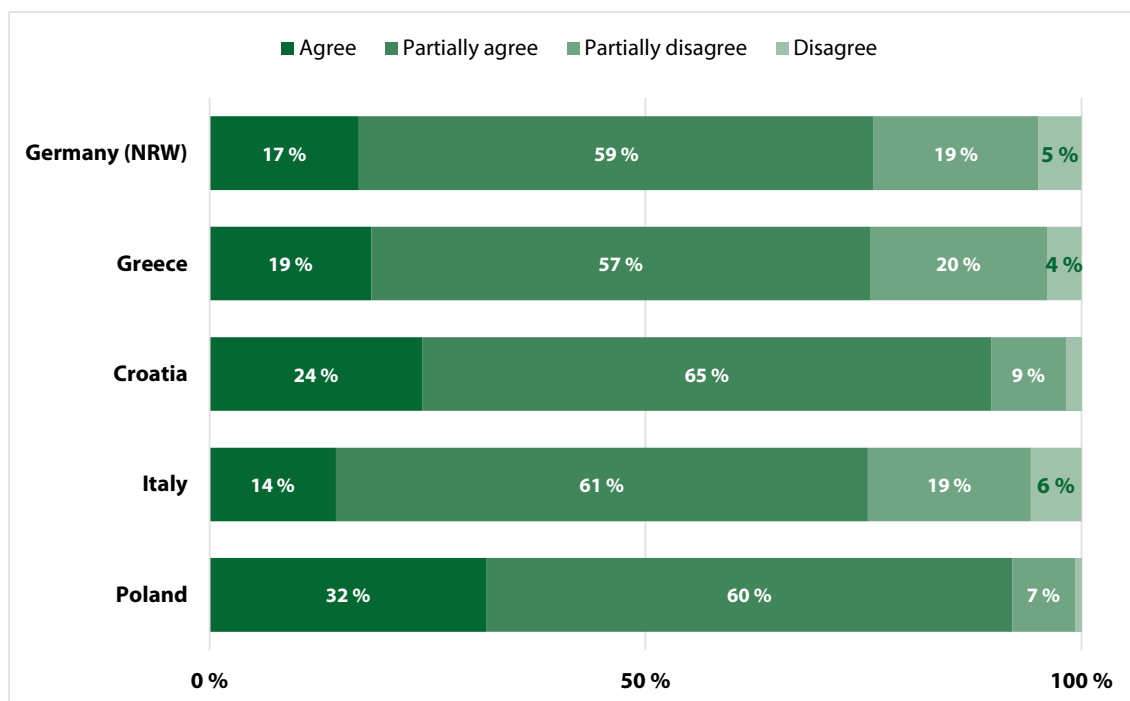
**11. To what extent do you agree that the number of digital devices available to teachers for teaching purposes is sufficient at your school?**



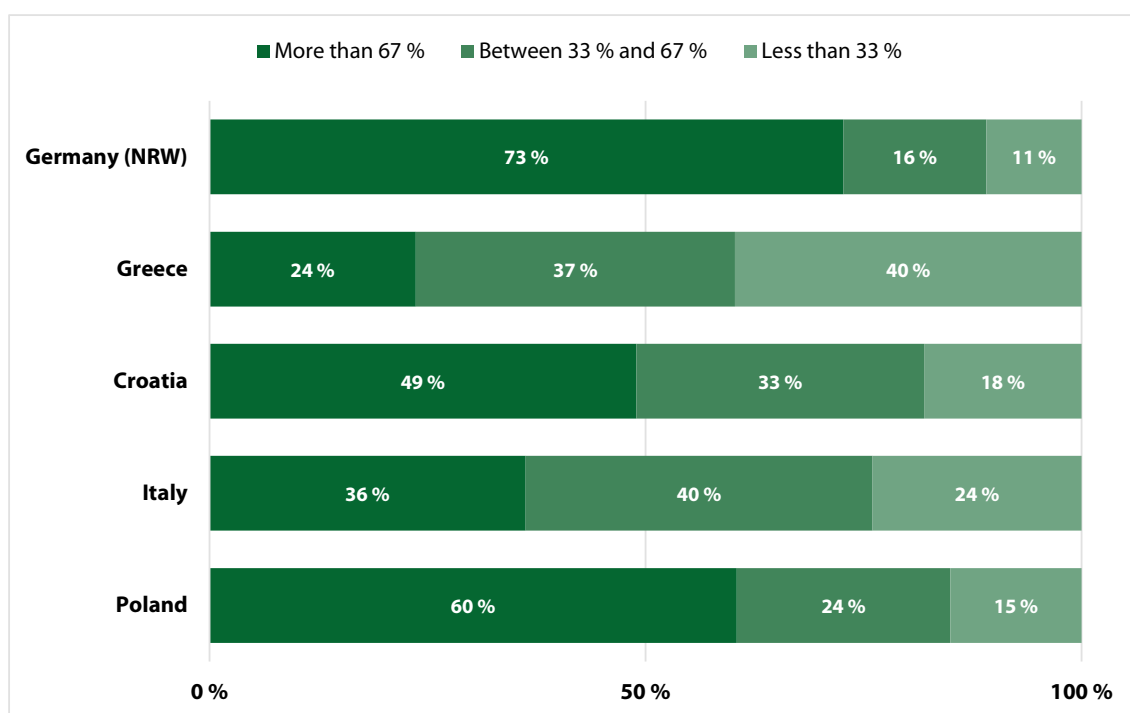
**12. To what extent do you agree that the quality of digital devices available to teachers for teaching purposes is sufficient at your school?**



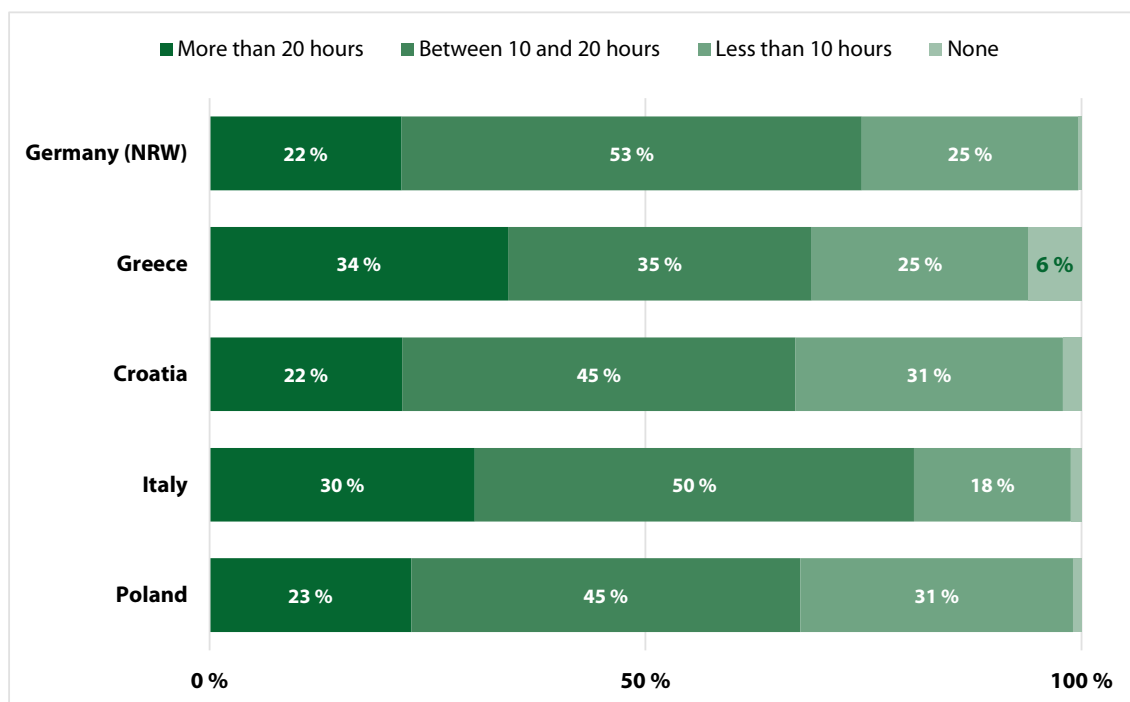
**13. To what extent do you agree that the majority of teachers at your school have the necessary skills and confidence in the effective use of digital technologies for learning and teaching?**



**14. How many of your teachers have attended training on using digital technologies in class in the last two school years (2019/20 and 2020/21)?**

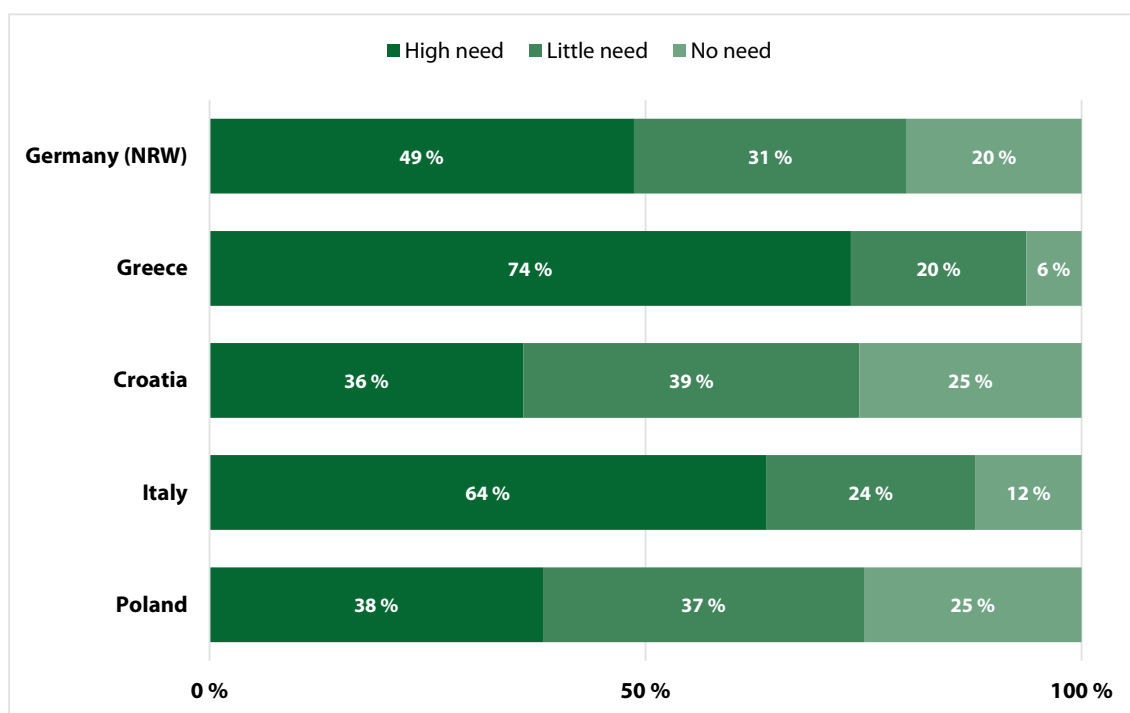


**15. On average, how many hours of training did teachers receive on using digital technologies in class in the last two school years (2019/20 and 2020/21)?**

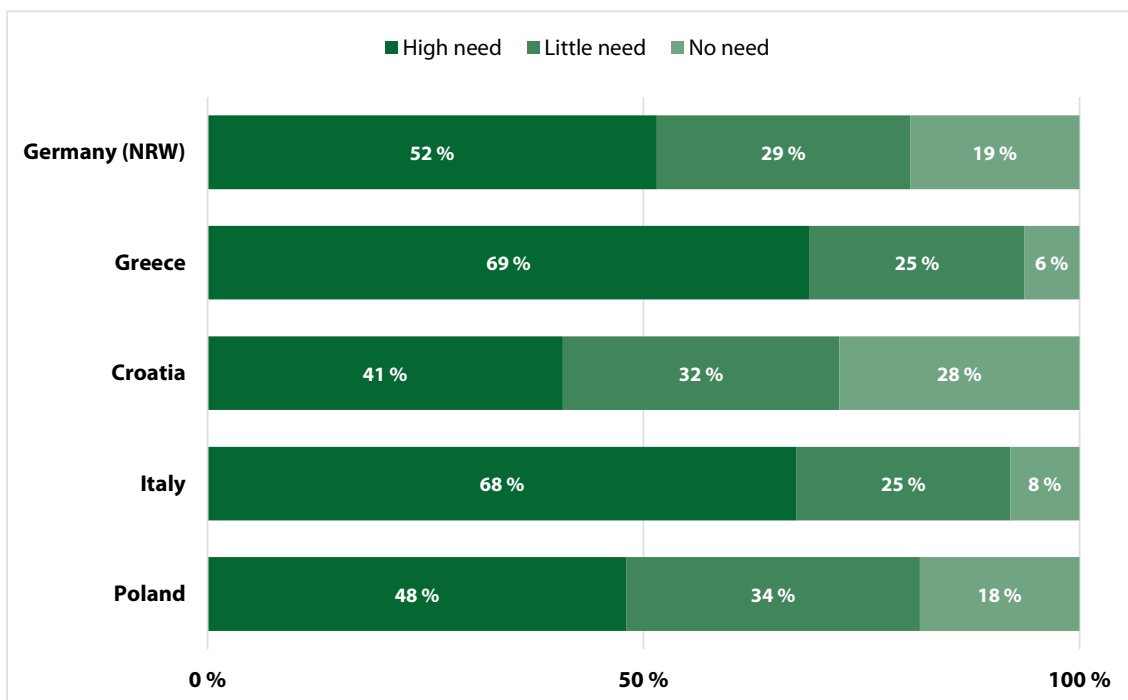


**16. Where do you see the greatest need for action?**

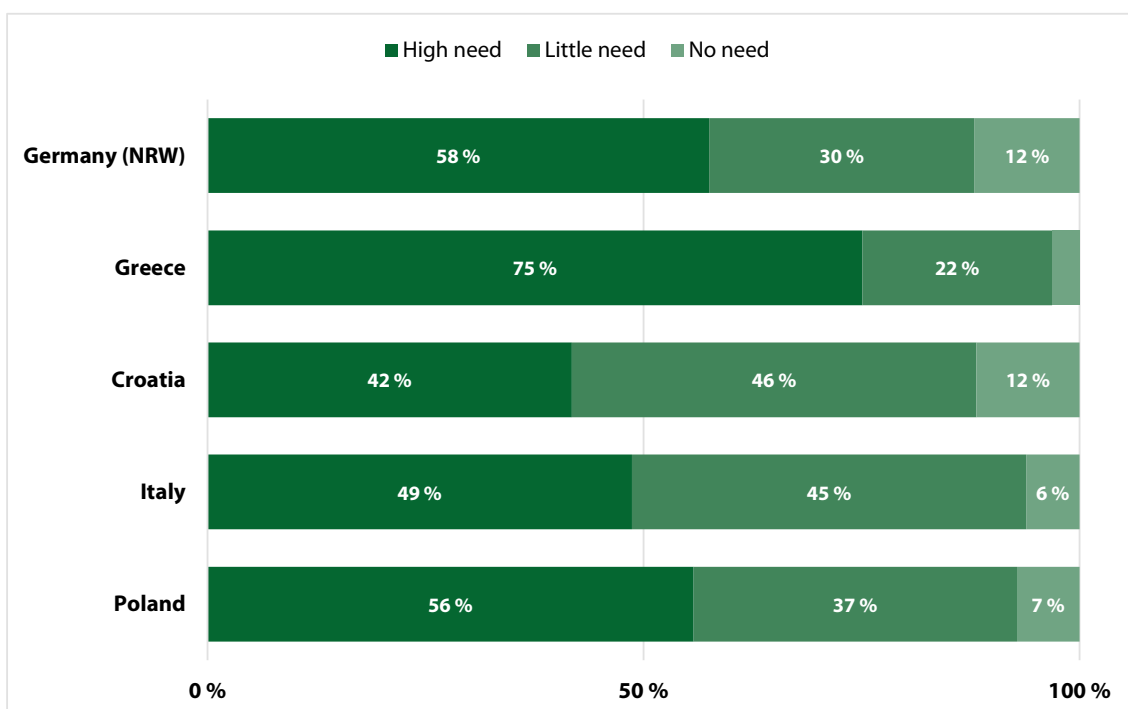
a) Improvement of the school's internet speed



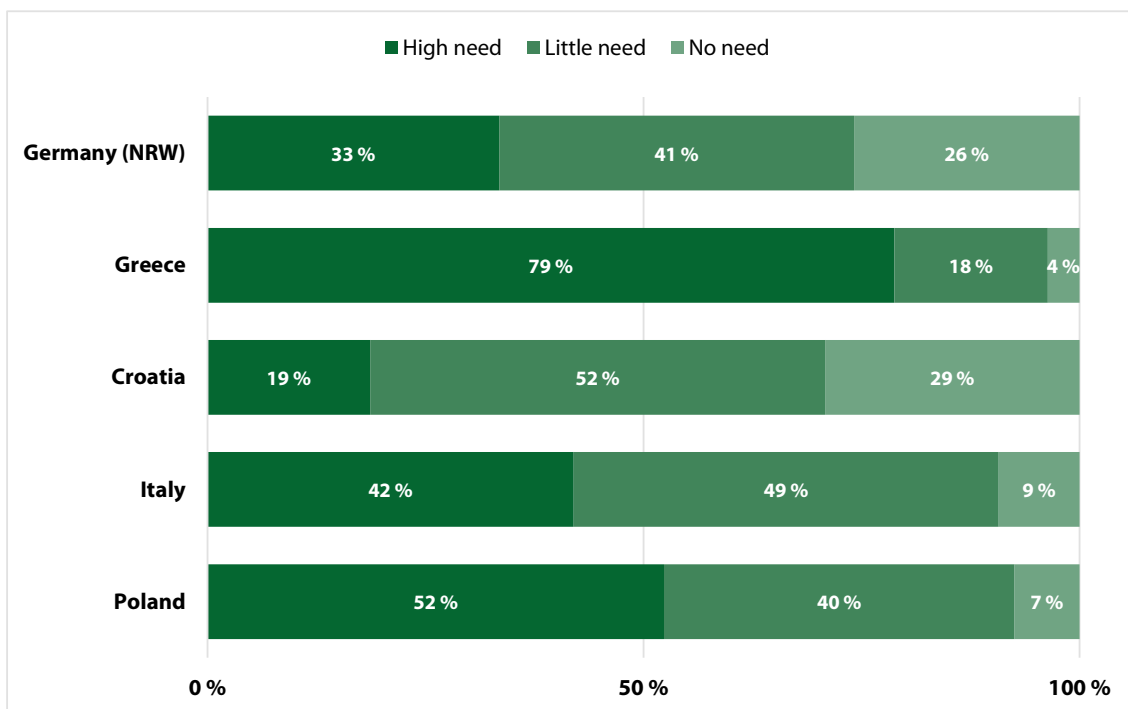
## b) Improvement of the school's wireless LAN/Wi-Fi (untethered/wireless)



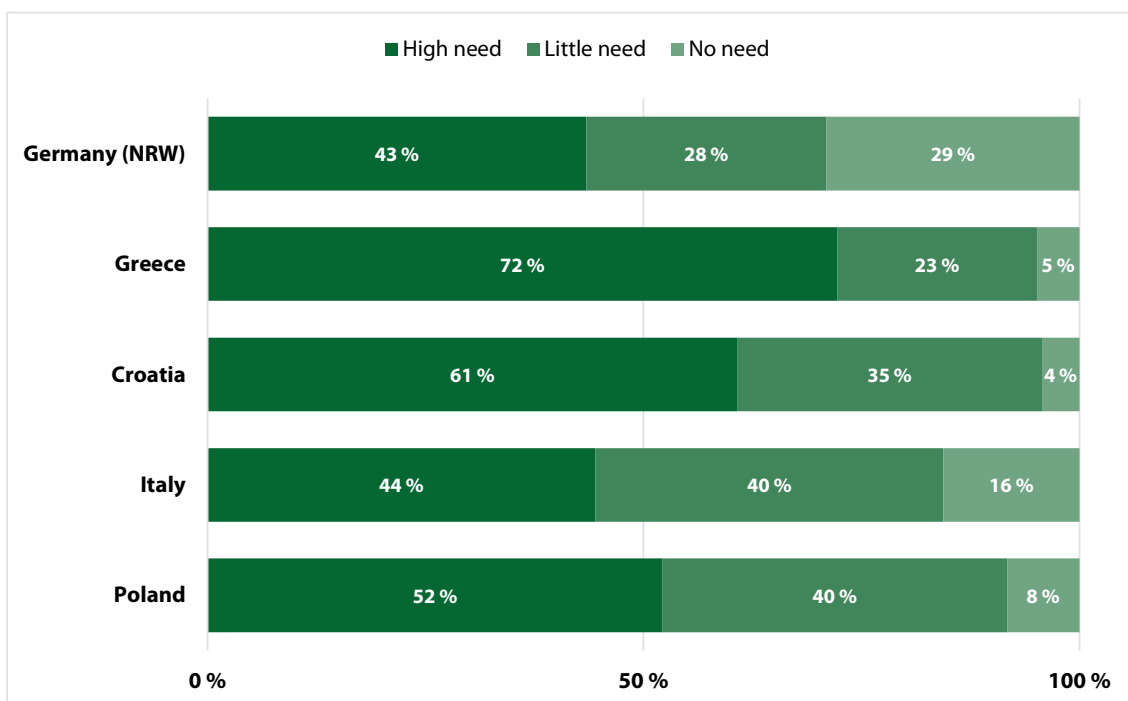
## c) Acquisition of digital devices for students (desktop computers, laptops, tablets)



## d) Acquisition of digital devices for teachers (desktop computers, laptops, tablets)

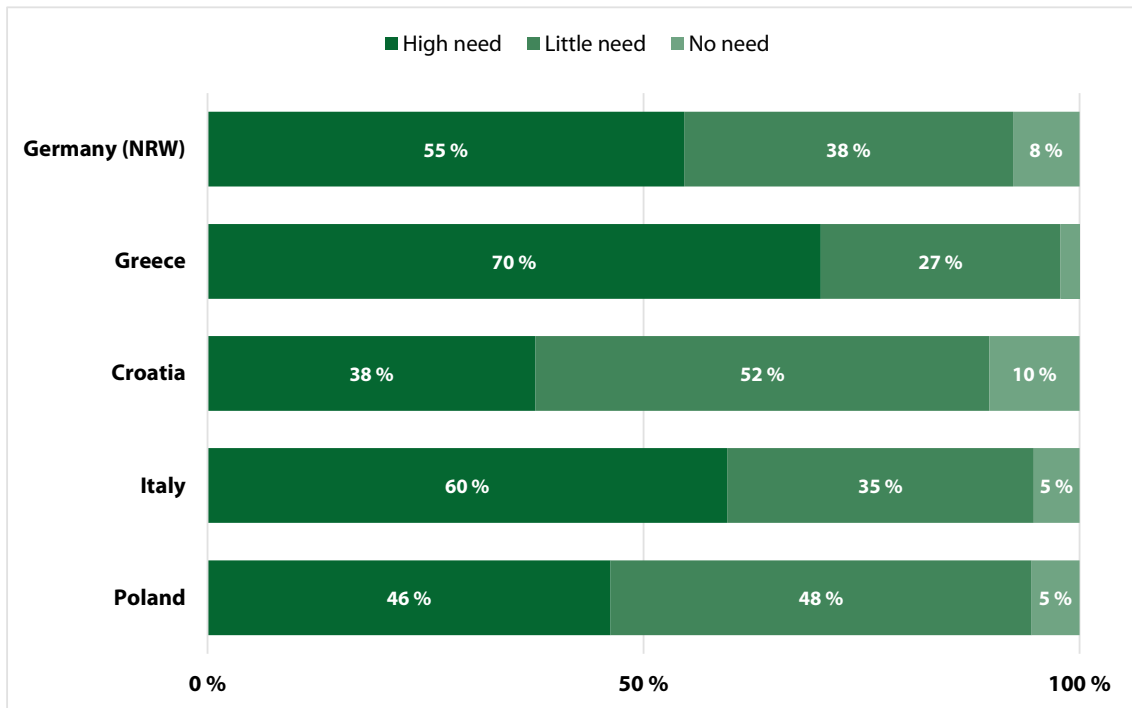


## e) Acquisition of interactive whiteboards and/or other classroom equipment

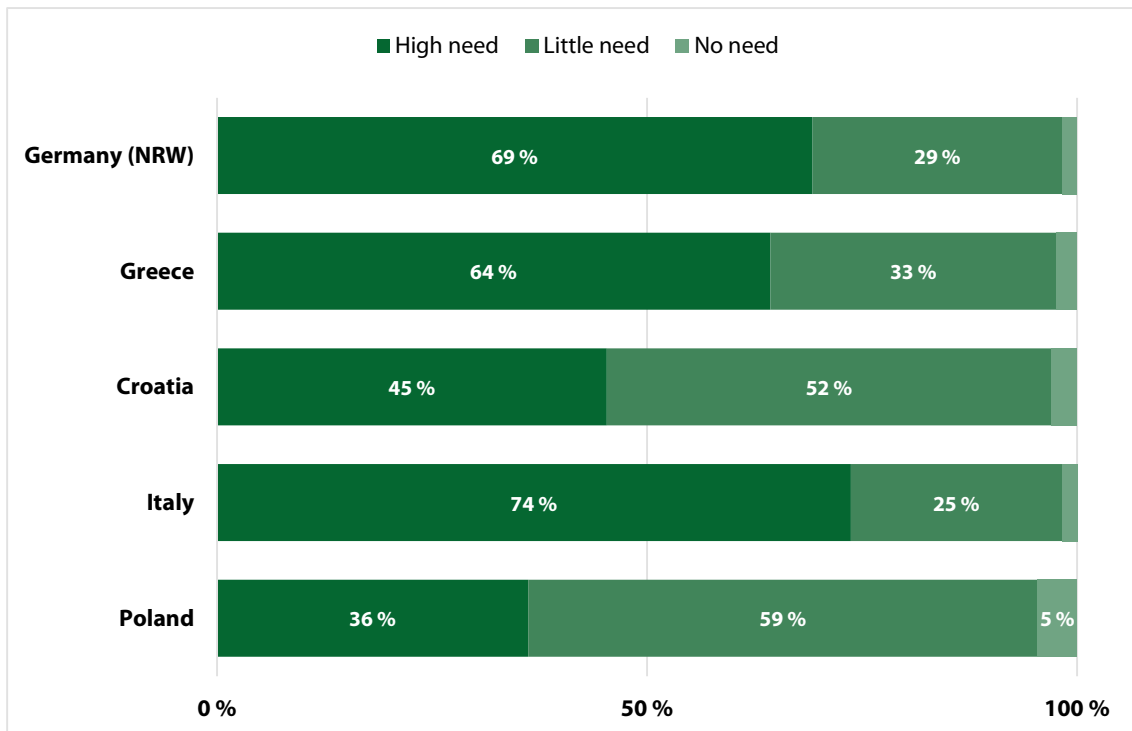




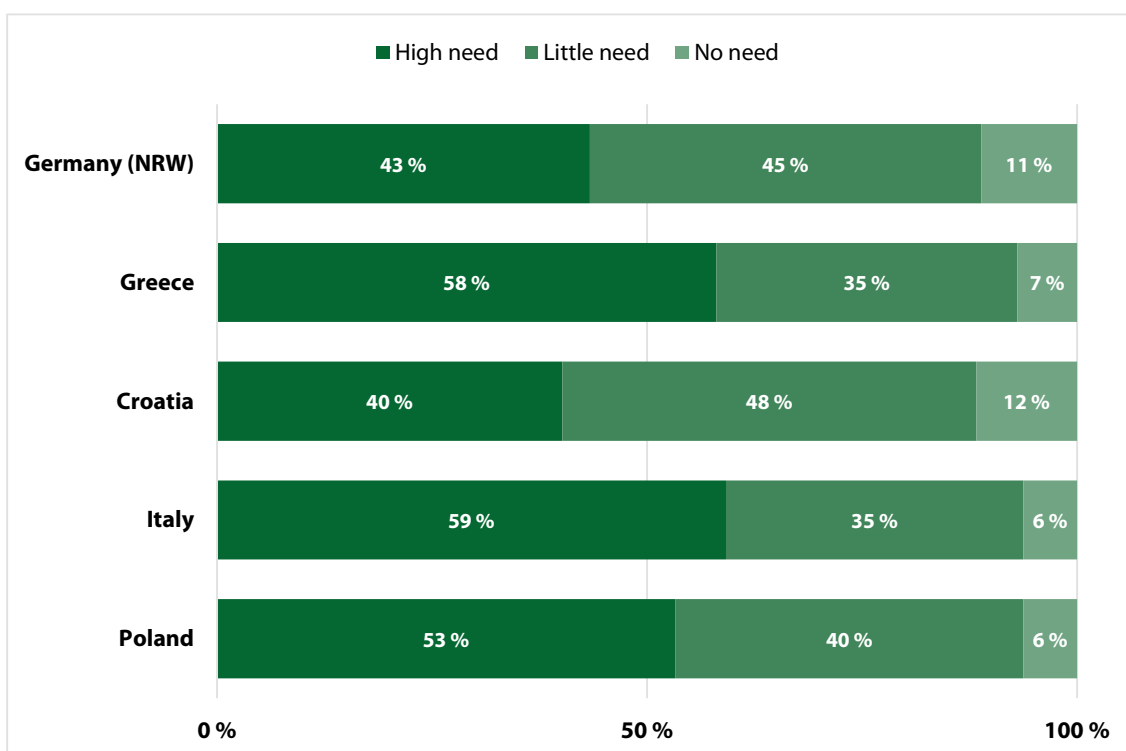
f) Development of digital learning content, user-friendly tools and secure platforms



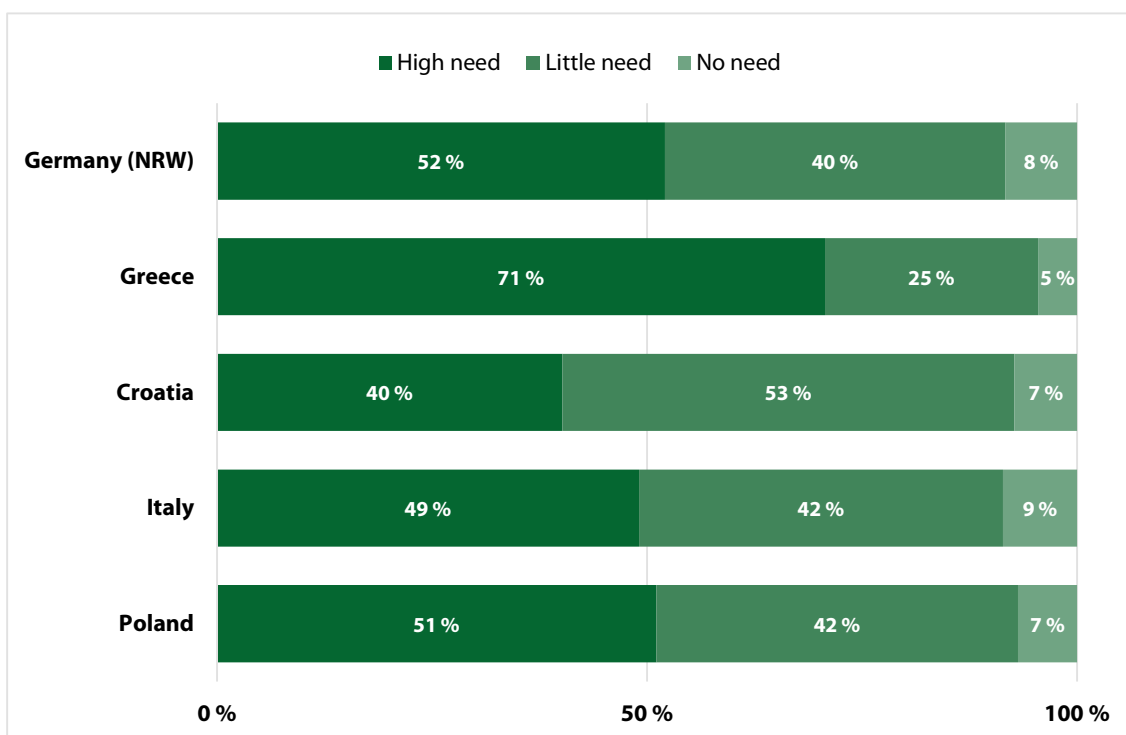
g) Training for teachers to be digitally competent and confident



h) Additional courses for students on using digital technologies (e.g. coding classes)

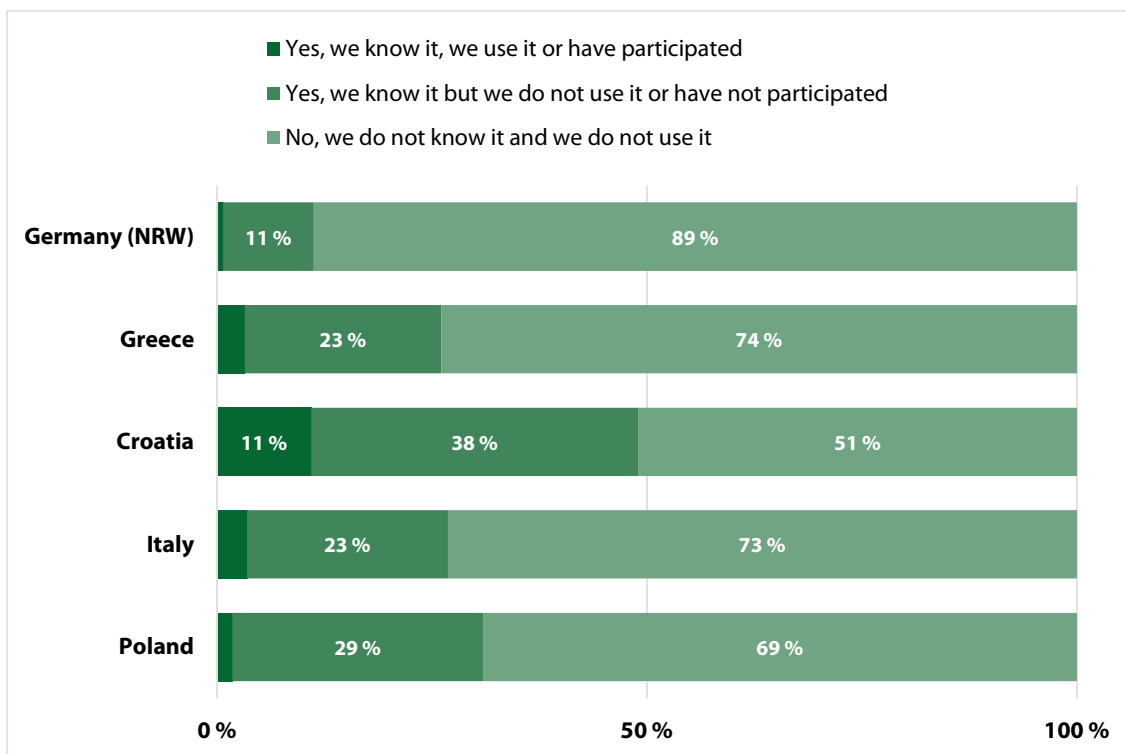


i) Supporting the education system by improving the conditions for remote education, in particular in connection with the COVID-19 pandemic

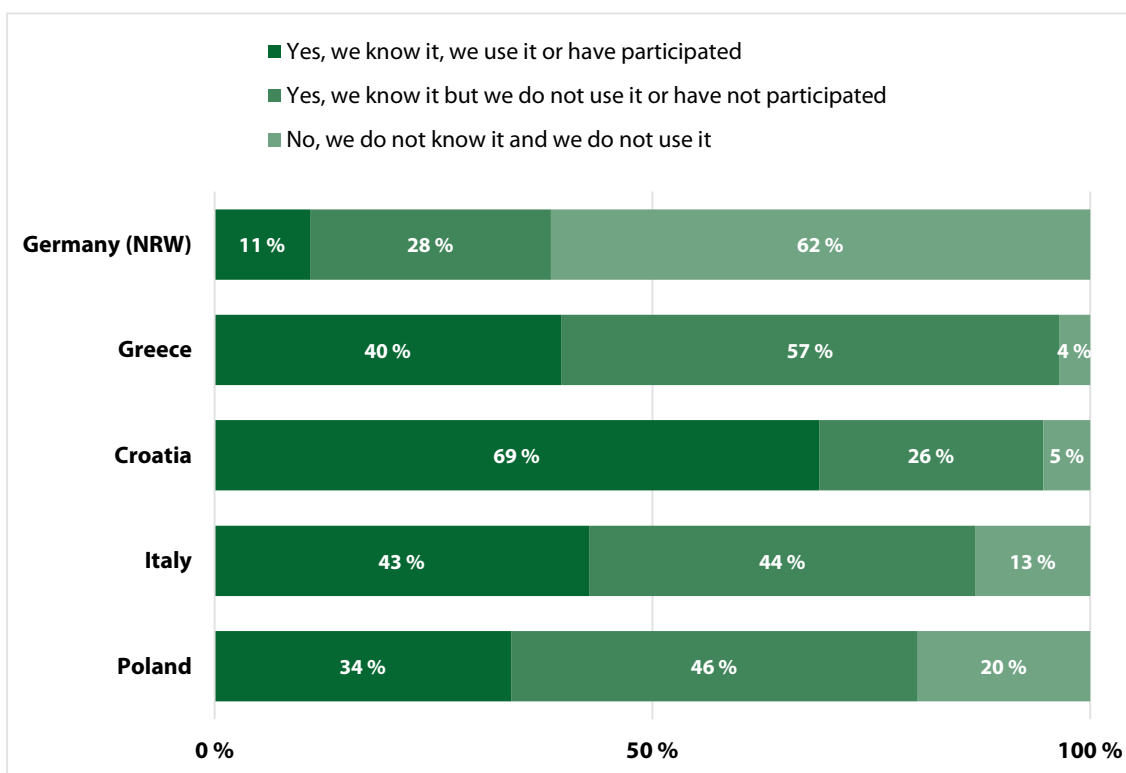


## 17. Which of the EU supported tools/platforms/actions do you know, are you using or have you participated in?

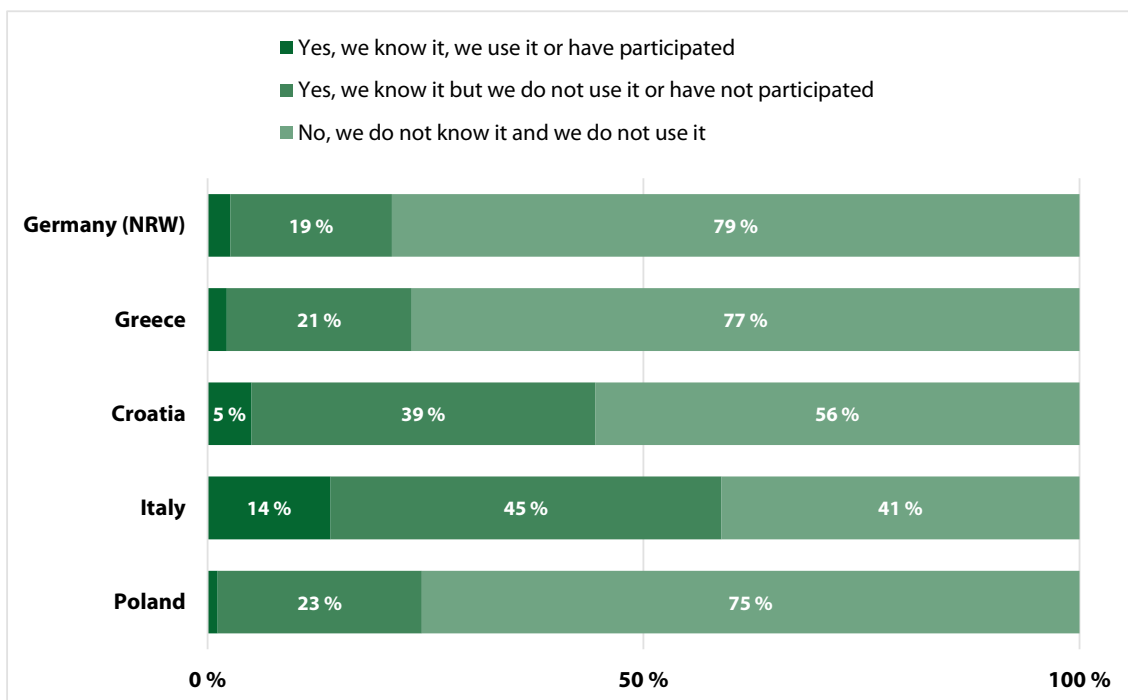
### a) SELFIE (Self-assessment tool for digitally capable schools)



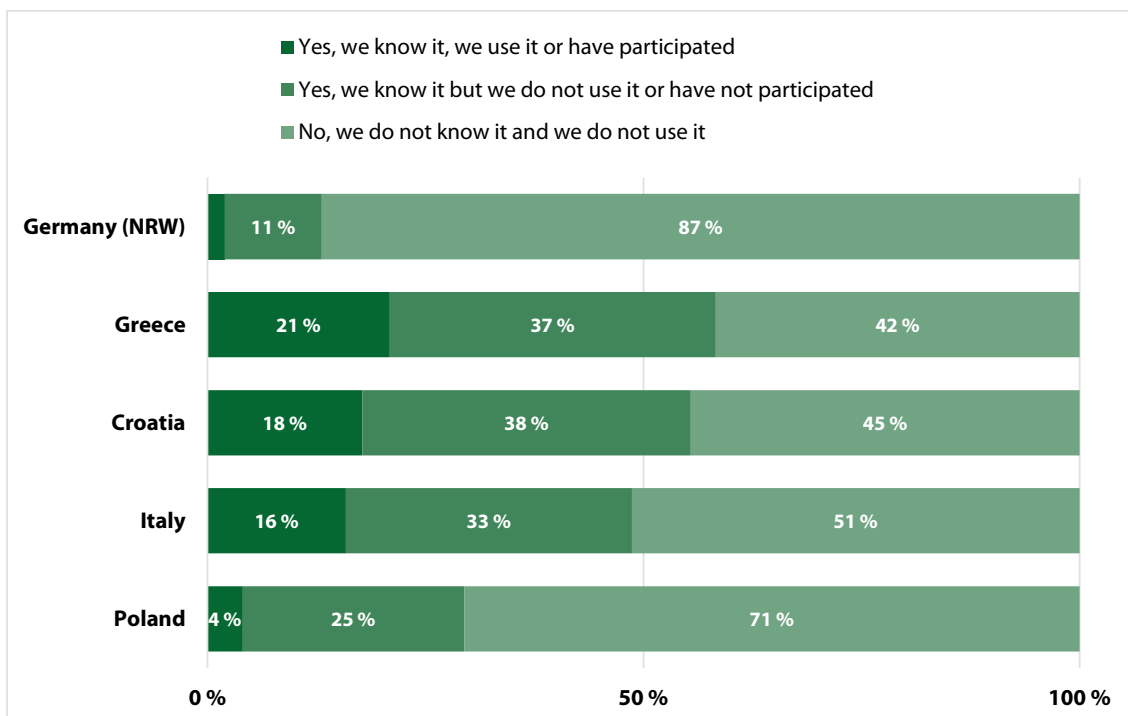
### b) eTwinning (Educational network)



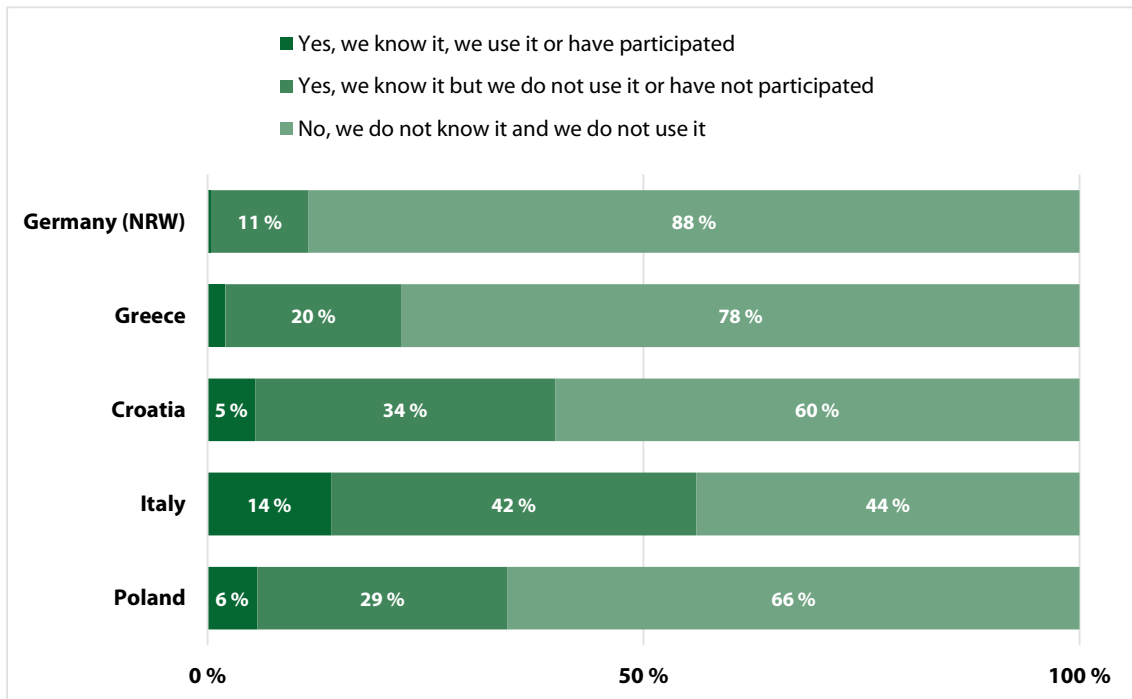
## c) DigComp (European Digital Competence Framework)



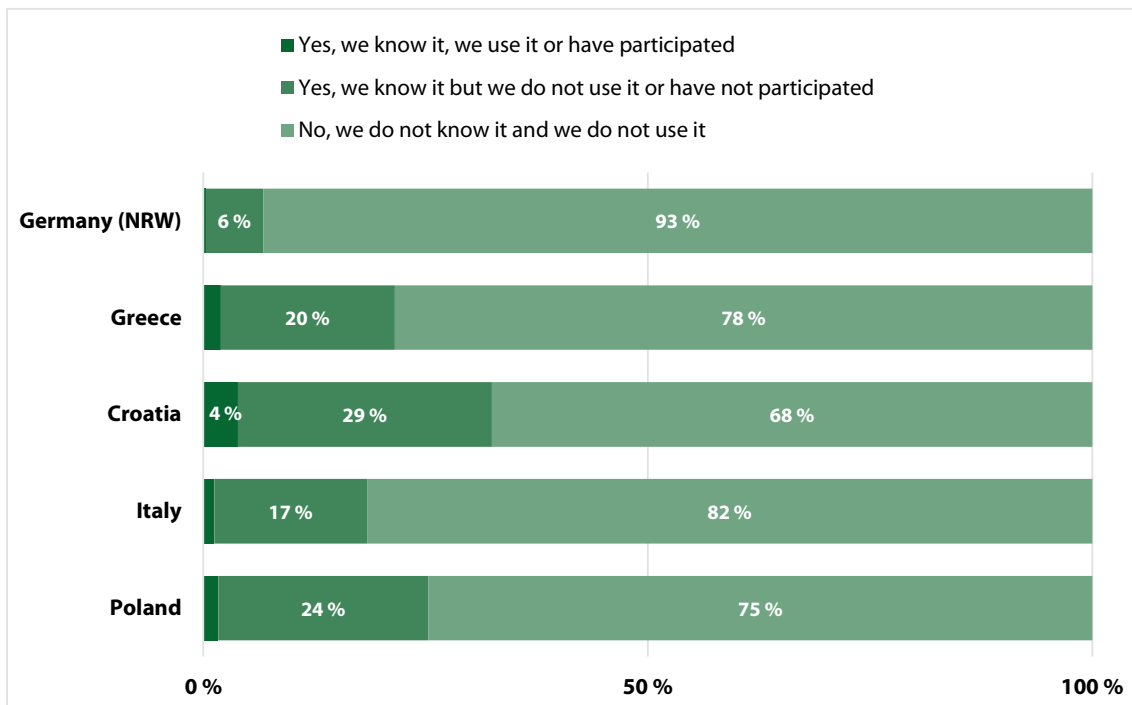
## d) School Education Gateway (single point of entry for teachers, school leaders, policy makers, experts and other professionals in the field of school education)



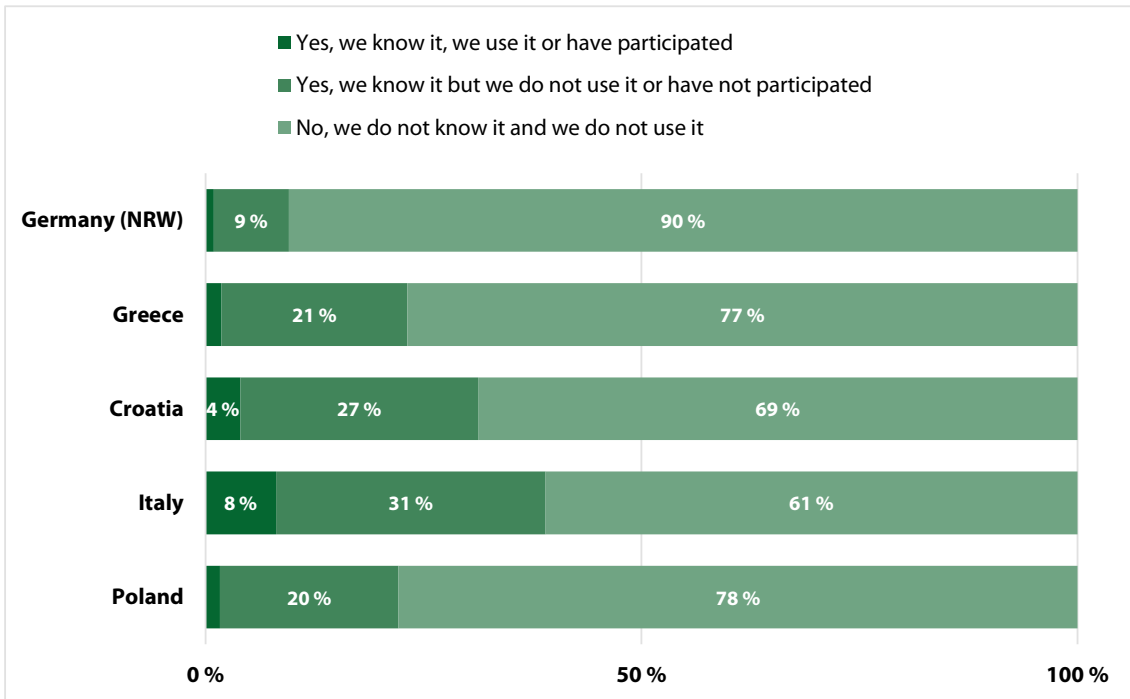
e) Future Classroom Lab (provided by the European School net and including training courses, working groups etc.)



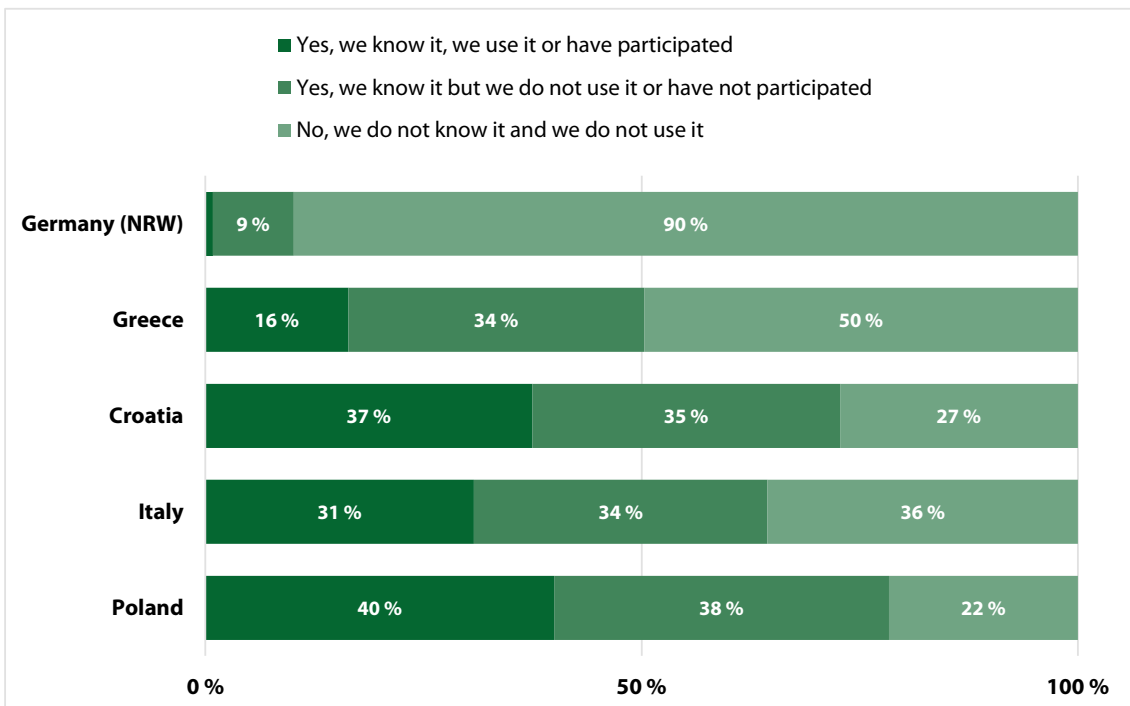
f) Living Schools Lab



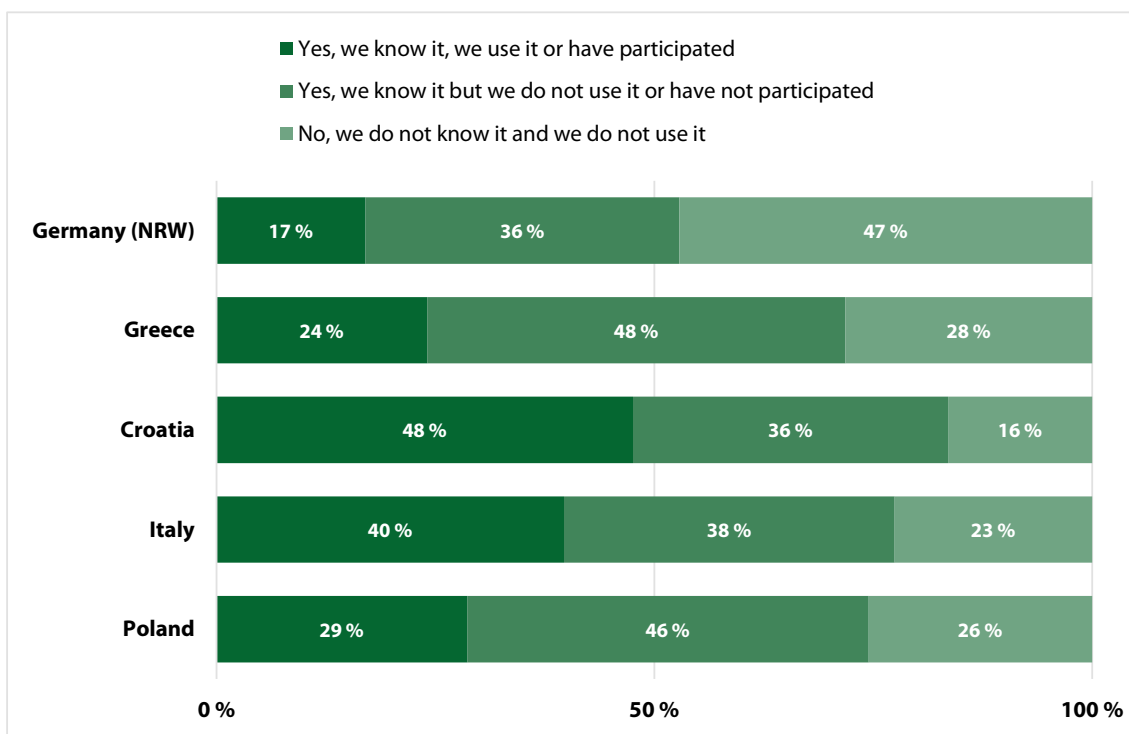
## g) Digital Education Hackathon



## h) EU Code Week



- i) Projects promoting international school partnerships (e.g. exchanges, knowledge sharing)



Source: ECA survey.

## Annex IV – Milestones and targets for RRF measures supporting the digitalisation of schools in the member states we visited

| Member state   | Measure   | Milestones and targets  | Indicative timeline |
|--|---|---|---------------------|
| Germany  | 3.1.1 Investment programme for teacher devices  | Milestone:<br><b>Publication of the administrative agreement</b> between the Federal Government of Germany and the governing bodies at Länder level to implement this investment.   | 3/2021              |
|  |   | Target:<br><b>Disbursement of at least €475 million</b> for the provision of digital equipment for teachers.  | 3/2022              |
|  |   | Milestone:<br><b>Evaluation of changes in digital infrastructure and use of digital media in schools.</b> The evaluation report of the programme confirms that teachers have observed an improvement in the digital infrastructure available and the use of digital media in school.  | 4/2025              |
|  | 3.1.2 National Education platform   | Milestone:<br><b>Entry into force of the funding guidelines for education platform prototypes</b> of the meta-platform on education, as well as for cross-compatible research projects, accessible by learners and teachers. Depending on the result of these projects, the key dimensions of the project specifications are clarified and the procurement procedure shall be launched.   | 3/2022              |
|  |   | Milestone:<br><b>Launch of the beta-version of the education platform</b> , with all services and functions that have been identified in the functional description as high priority by the Federal Ministry of Education and Research. These functions include access for information, user profile, collaboration, identity and access management, chat-bot, workflows, inbox. The launch shall be accompanied by additional security and data protection audits and successful load tests.             | 9/2023              |
|  |   | Milestone:<br><b>Publication of a final evaluation report</b> with a decision on the future of the education platform, with an assessment confirming that the project was successful according to the project monitoring criteria. The project shall be successful if the continuation of the education platform is recommended or if it is established that services and functions of the prototypes shall be taken over and continued by other stakeholders on the basis of the results of the project. | 9/2024              |
|  | 3.1.3 Educational centres of excellence   | Milestone:<br><b>Entry into force of the first funding guidelines and call for tenders for a project executing agency for the overall programme.</b>  | 12/2021             |
|  |   | Target:<br><b>Approval of at least 45 research projects.</b>  | 9/2022              |
|  |   | Milestone:<br><b>Entry into force of three additional funding guidelines.</b>   | 9/2022              |
| Greece   | Digital Transformation of Education   | Target:<br><b>Installation of at least 36 000 interactive learning systems</b> (including white-boards, laptops, interactive projectors and internal cables) for classrooms of primary and secondary schools.   | 12/2024             |
| Italy  | Investment 3: Fast internet connections (Ultra Broadband and 5G)  | Milestone:<br><b>Award of all public contracts</b> for faster connection projects (including "connected schools").  | 6/2022              |
|  |   | Target:<br><b>Provide at least additional 9 000 schools with at least 1 Gbps connectivity.</b>  | 6/2026              |
|  | Investment 2.1: Integrated digital teaching and training on the digital transformation for school staff   | Target:<br><b>Training of at least 650 000 school managers, teachers and administrative staff</b> in integrated digital education and digital transition.   | 12/2024             |
|  | Investment 3.1: New skills and new languages  | Target:<br><b>Activate in at least 8 000 schools STEM guidance projects</b> aiming at the development and digitization of the national digital platform STEM for monitoring and spreading information and data for all school types, technical and professional institutes, and universities.   | 6/2025              |
|  |   | Target:<br><b>At least 1 000 annual language and methodological courses</b> provided to all teachers.   | 6/2025              |
| Investment 3.2: School 4.0: innovative schools, wiring, new classrooms and workshops | Milestone:<br><b>"School 4.0"</b> plan to foster the digital transition of the Italian school system adopted by the Ministry of Education.  | 6/2022  |                     |
|  | Target:<br><b>Transformation of 100 000 classrooms into innovative, adaptive and flexible learning environments</b> according to the "School 4.0" Plan. The investment shall bring all the most innovative teaching technologies (such as coding and robotics devices, virtual reality devices and advanced digital devices for inclusive teaching) in primary and secondary schools used for teaching. | 12/2025   |                     |



| Member state  | Measure   | Milestones and targets   | Indicative timeline |
|---|---|--|---------------------|
| Poland  | C2.1.2 Level playing field for schools with mobile multimedia devices – investments related to the fulfilment of minimum equipment standards  | Target:<br>465 000 new portable computers at disposal of teachers.   | 9/2023              |
|   |   | Target:<br>735 000 new portable computers at disposal of students.   | 9/2025              |
|   | C2.1.3 E-competences  | Milestone:<br>Creation of a Digital Competence Development Centre (DCDC).  | 12/2022             |
|   |   | Target:<br>T1 - 1 500 digital coordinators, on average one per each municipality (gmina) in Poland.  | 6/2023              |
|   |   | Target:<br>T2 - 2 477 new digital coordinators, at least one per each municipality (gmina) in Poland.  | 9/2025              |
|   |   | Target:<br>T1 - 190 000 additional people trained in digital competences, including digital literacy.  | 9/2024              |
|   |   | Target:<br>T2 - 380 000 additional people trained in digital competences, including digital literacy.  | 6/2026              |
|   |   | Milestone:<br>Public consultation on the framework defining the procedures for the distribution of ICT equipment and for the provision of infrastructure to schools.                       | 9/2022              |
|   | C2.2.1 Equipping schools/institutions with adequate ICT devices and infrastructure to improve the overall performance of the education system | Milestone:<br>Framework defining the procedures for the distribution of ICT devices and for the provision of infrastructure to school.   | 6/2023              |
|   |   | Target:<br>100 000 classrooms in schools equipped with Local Area Network (LAN) connection.  | 9/2025              |
| Target:<br>100 000 classrooms in vocational schools and general education institutions equipped with IT tools to allow for remote teaching. |   | 3/2025   |                     |
| Target:<br>16 000 artificial Intelligence (AI) and Science, Technology, Engineering and Mathematics (STEM) laboratories set-up in schools.  |   | 9/2025   |                     |
| Milestone:<br>Digitalisation of the examination system.   |   | 12/2025  |                     |
| Milestone:<br>Entry into force of the School Digitalisation Act.  |   | 3/2021   |                     |
| Austria   | Reform: 2.B.1 Fair and equal access of pupils to basic digital competence   | Milestone:<br>Entry into force of the Implementing regulation.   | 12/2021             |
|   |   | Milestone:<br>Evaluation of the law has been completed and published by the responsible Ministry.  | 6/2025              |
|   |   | Milestone:<br>The award decision on the published tender for the digital devices has been finalised and published.   | 6/2021              |
|   | Investment: 2.B.2 Provision of digital end-user devices to pupils   | Target:<br>Delivery of the devices for the 5th and 6th grade (first and second years of lower secondary level) shall be completed.   | 12/2021             |
|   |   | Target:<br>The delivery of the devices for the new 5th and 6th grades shall be completed, so that pupils across the first four years of secondary school have been provided with a device. | 12/2023             |
|   |   | Target:<br>The delivery of the devices for the first year of the new four-year cycle has been completed.   | 12/2024             |

Source: ECA on the basis of Council documents.

# Abbreviations

**CSR:** Country specific recommendations

**ERDF:** European Regional Development Fund

**ESF:** European Social Fund

**ESIF:** European Structural and Investment Funds

**ICT:** Information and communication technology

**ISCED:** International Standard Classification of Education

**NGEU:** NextGenerationEU

**NRW:** North Rhine-Westphalia

**REACT-EU:** Recovery Assistance for Cohesion and the Territories of Europe

**RRF:** Recovery and Resilience Facility

**RRP:** Recovery and Resilience Plan

**VAT:** Value added tax

# Glossary

**Cohesion policy:** The EU policy which aims to reduce economic and social disparities between regions and member states by promoting job creation, business competitiveness, economic growth, sustainable development, and cross-border and interregional cooperation.

**Cohesion policy funds:** Provide financial support within the framework of the EU Cohesion Policy, through multi-annual programmes, which complement national, regional and local interventions. The relevant funds for this audit are the European Regional Development Fund (ERDF) and the European Social Fund (ESF).

**Digital education ecosystem:** A digital learning and teaching infrastructure which supports all aspects of a digitally transformed educational system.

**Digitalisation:** Introducing digital technology and digitised information to processes and tasks.

**Digitalisation of schools:** In the context of this report, the process of systematically introducing ICT to teaching and learning in schools.

**Erasmus+:** EU programme to support education, training, youth and sport in Europe.

**European Regional Development Fund:** Cohesion policy fund that strengthens economic and social cohesion in the EU by financing investments that reduce imbalances between regions.

**European Semester:** Annual cycle which provides a framework for coordinating the economic policies of EU member states and monitoring progress.

**European Social Fund:** Cohesion policy fund for creating educational and employment opportunities and improving the situation of people at risk of poverty. Superseded by the **European Social Fund Plus**.

**Gigabit:** Unit of measurement of digital information, equivalent to one billion bits.

**Gigabit internet:** Internet service that offers a connection speed of 1 gigabit per second.

**NextGenerationEU:** Funding package to help EU member states recover from the economic and social impact of the COVID-19 pandemic.

**Operational programme:** Framework for implementing EU-funded cohesion projects in a set period, reflecting the priorities and objectives laid down in partnership agreements between the Commission and individual member states.

**REACT-EU:** NextGenerationEU programme that provides additional funding for existing cohesion policy programmes to support crisis recovery while promoting green and digital transformation.

**Recovery and Resilience Facility:** The EU's financial support mechanism to mitigate the economic and social impact of the COVID-19 pandemic and stimulate recovery in the mid-term, while promoting green and digital transformation.

## Replies of the Commission

<https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=63783>

## Timeline

<https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=63783>

## Audit team

The ECA's special reports set out the results of its audits of EU policies and programmes, or of management-related topics from specific budgetary areas. The ECA selects and designs these audit tasks to be of maximum impact by considering the risks to performance or compliance, the level of income or spending involved, forthcoming developments and political and public interest.

This performance audit was carried out by Audit Chamber II Investment for cohesion, growth and inclusion spending areas, headed by ECA Member Annemie Turtelboom. The audit was led by ECA Member Pietro Russo, supported by Chiara Cipriani, Head of Private Office and Benjamin Jakob, Private Office Attaché; Niels-Erik Brokopp, Principal Manager; Sven Kölling, Head of Task; Fabio Fattore, Marija Grgurić, Marina Karystinou, Rene Reiterer, and Angelika Zych, Auditors. Miłosz Aponowicz, Kyriaki Kofini, and Mark Smith provided linguistic support.



*From left to right: Fabio Fattore, Niels-Erik Brokopp, Benjamin Jakob, Pietro Russo, Sven Kölling, Angelika Zych, Marina Karystinou, Rene Reiterer.*

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The EU supplements and supports member states in the digitalisation of their schools under various programmes and measures financed from the EU budget.

In this audit, we examined whether EU-financed action supported the digitalisation of schools well. We conclude that, overall, it helped schools in their digitalisation efforts, but member states lacked strategic focus in the use of EU financing. Moreover, in spite of an ambitious EU target to connect all schools by 2025 to gigabit internet, only a small number of schools have such fast connections to make best use of the potential of digital education.

We recommend that the Commission should promote EU actions more actively, and strengthen, in cooperation with the member states, the link between EU objectives, national or regional strategies for the digitalisation of schools and EU funding for schools. The Commission should also closely monitor and encourage member states to connect all schools to gigabit internet by 2025.

ECA special report pursuant to Article 287(4), second subparagraph, TFEU.



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