



Thematic mapping document

E-health



This mapping document was prepared as part of the EU-funded project: ‘ESIF Support in the area of health: building knowledge and capacities for monitoring and implementation, supporting innovation and effectiveness’. Study Contract No. 2015 73 01.

Author: Milieu Ltd

This mapping document was produced under the EU’s third Health Programme (2014-2020) in the framework of a service contract with the Consumers, Agriculture, Health and Food Executive Agency (Chafea) acting under the mandate from the European Commission. The content of this mapping document represents the views of the contractor and is its sole responsibility; it can in no way be taken to reflect the views of the European Commission and/or Chafea or any other body of the European Union. The European Commission and/or Chafea do not guarantee the accuracy of the data included in this document, nor do they accept responsibility for any use made by third parties thereof.



Table of contents

INTRODUCTION	3
OVERVIEW OF RELEVANT ESI FUNDS INVESTMENTS AT OP LEVEL	6
Investment priorities	6
Indicators	9
ANALYSIS OF IDENTIFIED ESI-FUNDED PROJECTS	10
Number of projects and budget	10
Sub-themes and intervention fields	11
Origin of funding	15

Introduction

This thematic mapping document is part of the outputs produced under the **ESI Funds for Health** project. It covers the theme of **e-health** and provides an overview of the approved 2014-2020 ESI funding in this particular area of health based on extensive Member State-level research carried out as part of the ESI Funds for Health project. The purpose of this document is to give an EU-wide snapshot of the data collected for this theme and complement the other outputs of the project: the final print publication that provides overall findings from the project across all health themes and countries and country fact sheets and Interreg mapping documents that provide detailed results for each Member State and Interreg programme. All these documents and further information about ESI Funds for Health are available on the website of the project¹.

This mapping document covers both planning and programming of the ESI Funds, particularly the European Social Fund (ESF) and the European Regional Development Fund (ERDF) as well as specific projects selected for funding across the EU-28 as of August 2017 (and July 2018 for certain Member States: Spain, Romania, Italy and Malta²). Section 2 covers the programming stage and summarises the investment priorities and indicators relevant to this theme that have been included in the 2014-2020 Operational Programmes (OPs) for ESI Funds. Section 3 addresses the project level and summarises data regarding all approved projects supporting the theme across the EU-28. The document is structured as follows:

- Introduction;
- Overview of relevant ESI Funds investments at OP level;
- Analysis of identified ESI-funded projects.

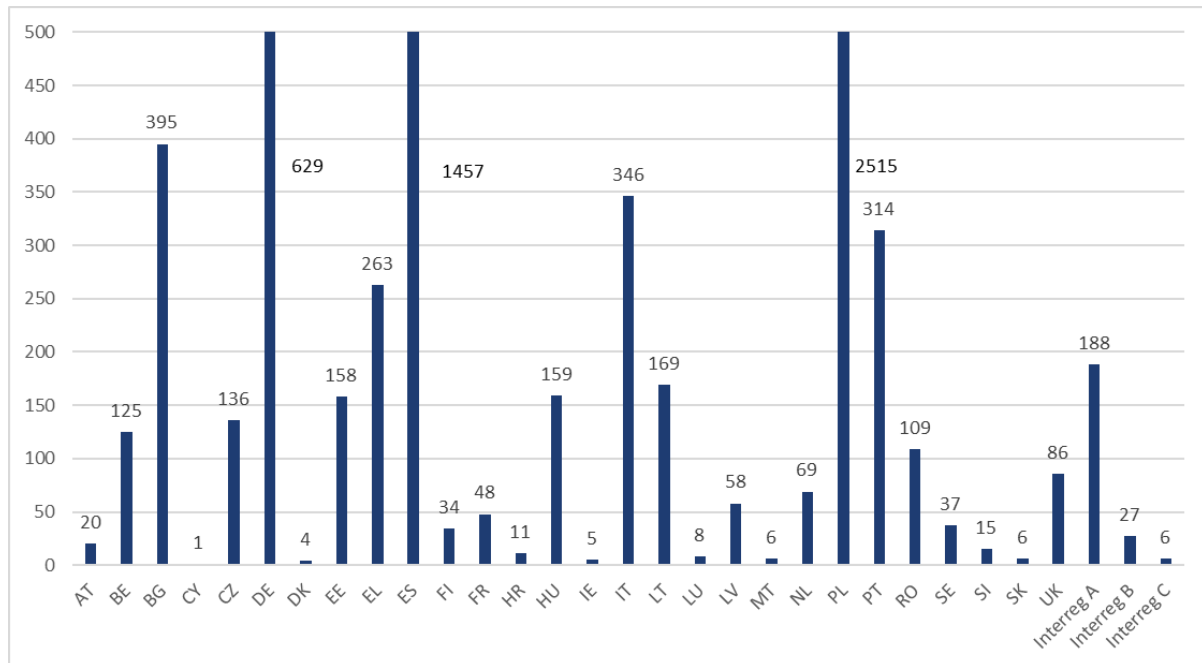
The ESI Funds for Health project focuses on six health themes (or thematic blocks), covering the full range of EU health priorities that can be effectively addressed through the ESI Funds. Across all themes, a total of 7,404 health-relevant projects were identified in the 28 Member States and the three strands of European Territorial Cooperation (ETC) or Interreg programmes. The overall distribution of health-relevant projects across Member States and the Interreg programmes is shown in *Figure 1* below. More than half (57%) of the funding was found to come from the ESF³. Budget information was available for 96% of the health projects identified. The total budget of these health projects is over EUR 8 billion, with an average project size of around EUR 1.2 million.

¹ <http://www.esifundsforhealth.eu/>

² Additional research was carried out for these Member States as information about the projects financed by the OPs was not available for Romania, Spain and some regions of Italy. The research for Malta was updated as no health relevant projects were identified in 2017.

³ ESF - 57%; ERDF - 39%; for 4% of the funding amounts the specific fund was not identified by the Member State.

Figure 1: All health-relevant projects by Member State and Interreg programme



Thematic block 3 focuses on support for e-health and digital solutions in healthcare. E-health refers to tools and services using Information and Communication Technologies (ICTs) that can improve prevention, diagnosis, treatment, monitoring and management of diseases. It includes information and data sharing between patients and health service providers, hospitals, health professionals and health information networks; electronic health records; telemedicine services; portable patient-monitoring devices, operating room scheduling software, robotized surgery and blue-sky research on the virtual physiological human. ESI funds can provide financial support for these technologies which are beneficial for the entire community as they can boost access and quality of care and can thus make the health sector more efficient.

Of the health-relevant projects identified, 225, or around 3%, support the e-health thematic block. The share of all projects across thematic blocks is depicted in Figures 2 and 3. Although this is the thematic block for which the smallest number of projects have been identified, the share of e-health projects in terms of project size is larger. The total budget of thematic block 3 projects is around EUR 0.6 billion or around 7% of all health projects identified.

Figure 2: Number of health-relevant projects by thematic block

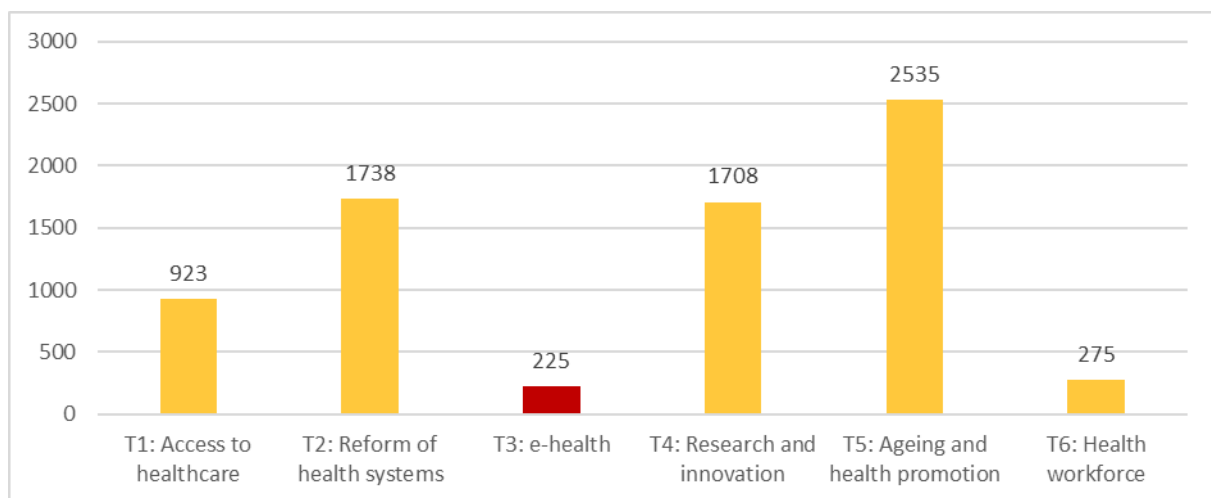
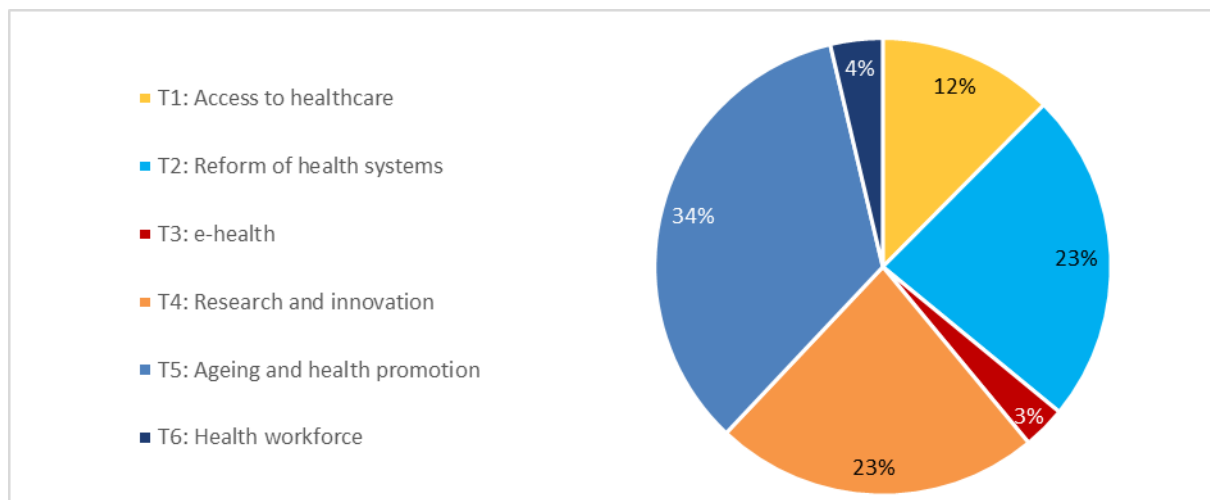


Figure 3: Share of health-relevant projects by thematic block



Overview of relevant ESI Funds investments at OP level

Investment priorities

The planning and programming the use of ESI funds by Member States is structured around Thematic Objectives (TOs) and Investment Priorities (IPs) set forth in the specific regulations governing the funds⁴. Investment priorities relevant for the thematic block 3 can be found primarily under the Thematic Objective 2: ‘Enhancing access to, and use and quality of information and communication technologies’ and 1: ‘Strengthening research, technological development and innovation’. In a few Operational Programmes, the relevant Investment Priorities were found under the Thematic Objectives 3 (SMEs), and 9 (social inclusion) as well as under the TOs 10 and 11. Across these Thematic Objectives, fourteen Investment Priorities defined for the Member States and two Investment Priorities defined specifically for Interreg Programmes have been found to be relevant for the thematic block 3 - these are mainly supported by the ERDF.

Overall, 25 Member States have included these Investment Priorities in their OPs. Three Member States have not included any IPs relevant for this theme in their OPs (these are: AT, LU, and SI). IP 2c focusing on strengthening ICT applications in various sectors including e-health, is the Investment Priority which was most often chosen by Member States for this theme (15 Member States and 1 Interreg programme), followed by IP 1b, ‘Promoting business investment in R&I, developing links and synergies between enterprises, research and development centres and the higher education sector’ (7 Member States and 7 Interreg programmes). Other ‘popular’ Investment Priorities for this theme are the IP 9iv (Enhancing access to affordable, sustainable and high quality services, including health care and social services of general interest), which was included by 4 Member States, IP 1a (Enhancing research and innovation infrastructure and capacities) chosen by 2 Member States and 2 Interreg programmes, and IP 9a (Investing in health and social infrastructure), chosen by Italy and 5 Interreg programmes).

Seventeen Interreg A OPs, and 3 Interreg B OPs were found to be relevant for this theme. Five of the Investment Priorities relevant for e-health are common for both nation-wide OPs and ETC programmes, with the IP 9a being selected most often (5 Interreg Programmes used this IP to guide their interventions). Six of the Interreg OPs contained Investment Priorities as defined specifically for cross-border cooperation programmes in a separate Regulation relating to ETC programmes⁵.

The table below shows the selection by Member States of the Investment Priorities relevant for the e-health thematic block in the 2014-2020 OPs, including Interreg programmes.

Table 1: Selection of the Investment Priorities relevant for e-health by Member States and Interreg programmes

Fund	TO	Investment Priority	Member States
ESF	9 (Social inclusion)	9ii. Socio-economic integration of marginalised communities such as the Roma	RO
		9iv. Enhancing access to affordable, sustainable and high quality services, including health care and social services of general interest	FI, RO, HU, IT
	10 (Education)	10iii. Enhancing equal access to lifelong learning for all age groups in formal, non-formal and informal settings, upgrading the knowledge, skills and competences of the workforce, and promoting flexible learning pathways including through career	FI, SE

⁴ Regulation (EU) No 1304/2013 of the European Parliament and of the Council of 17 December 2013 on the European Social Fund and repealing Council Regulation (EC) No 1081/2006 and

Regulation (EU) No 1301/2013 of the European Parliament and of the Council of 17 December 2013 on the European Regional Development Fund and on specific provisions concerning the Investment for growth and jobs goal and repealing Regulation (EC) No 1080/2006.

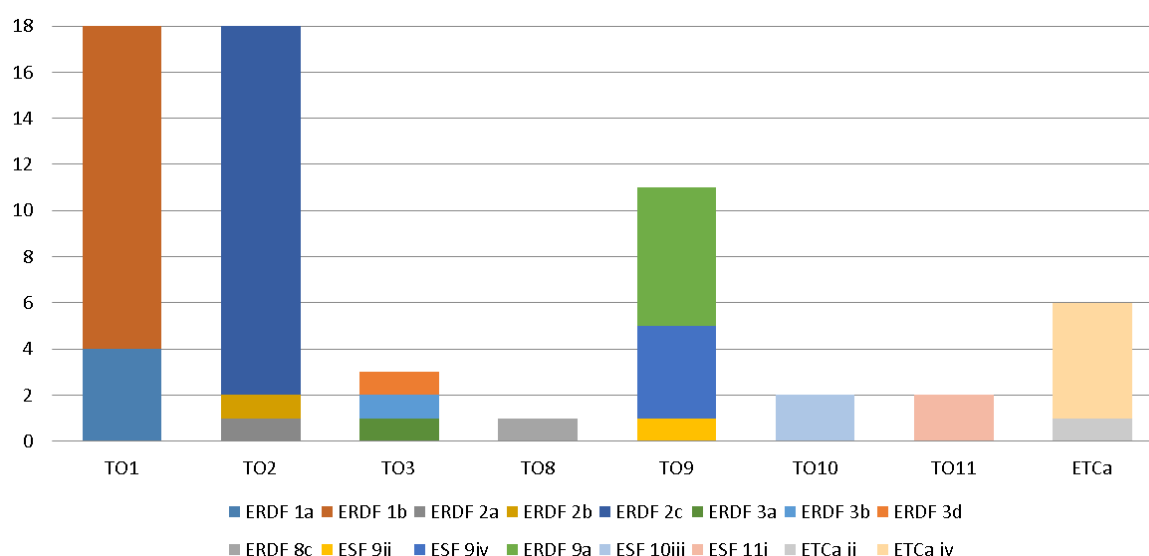
⁵ Regulation No 1299/2013 of 17 December 2013 of the European Parliament and of the Council on specific provisions for the support from the European Regional Development Fund to the European territorial cooperation goal.

Fund	TO	Investment Priority	Member States
		guidance and validation of acquired competences	
	11 (Institutional capacity of public authorities)	11i. Investment in institutional capacity and in the efficiency of public administrations and public services at the national, regional and local levels with a view to reforms, better regulation and good governance	BG, SK
ERDF	1 (R&D)	1a. Enhancing research and innovation (R&I) infrastructure and capacities to develop R&I excellence, and promoting centres of competence, in particular those of European interest	FI, UK INTERREG A: SE-PT, SE-NO
		1b. Promoting business investment in R&I, developing links and synergies between enterprises, research and development centres and the higher education sector, in particular promoting investment in product and service development, technology transfer, social innovation, eco-innovation, public service applications, demand stimulation, networking, clusters and open innovation through smart specialisation, and supporting technological and applied research, pilot lines, early product validation actions, advanced manufacturing capabilities and first production, in particular in key enabling technologies and diffusion of general purpose technologies	CZ, DE, DK, EL, FI, NL, PT INTERREG A: IT-SI, IT-HR, SI-AT, ES-PT INTERREG A: North-West Europe, Northern Periphery and Arctic, Central Europe
	2 (ICT)	2a. Extending broadband deployment and the roll-out of high-speed networks and supporting the adoption of emerging technologies and networks for the digital economy	IE
		2b. Developing ICT products and services, e-commerce, and enhancing demand for ICT	IT
		2c. Strengthening ICT applications for e-government, e-learning, e-inclusion, e-culture and e-health	CY, CZ, EE, EL, ES, HR, IT, LT, LV, MT, PL, PT, SE, SK, EL-CY, RO
	3 (SMEs)	3a. Promoting entrepreneurship, in particular by facilitating the economic exploitation of new ideas and fostering the creation of new firms, including through business incubators	Pt
		3b. Developing and implementing new business models for SMEs, in particular with regard to internationalisation	PT
		3d. Supporting the capacity of SMEs to grow in regional, national and international markets, and to engage in innovation processes	UK

Fund	TO	Investment Priority	Member States
	8 (Sustainable employment)	8c. Supporting local development initiatives and aid for structures providing neighbourhood services to create jobs, where such actions are outside the scope of Regulation (EU) No 1304/2013 of the European Parliament and of the Council	INTERREG A:FR-CH
	9 (Social inclusion)	9a. Investing in health and social infrastructure which contributes to national, regional and local development, reducing inequalities in terms of health status, promoting social inclusion through improved access to social, cultural and recreational services and the transition from institutional to community-based services	IT, INTERREG A: BE-FR, EL-BG, IT-CH, RO-HU, UK-IE
	ETC a) (IPs under cross-border cooperation)	(ii) Promoting social inclusion, combating poverty and any discrimination by promoting gender equality, equal opportunities, and the integration of communities across borders	INTERREG A: FR-IT
		(iv) enhancing institutional capacity of public authorities and stakeholders and efficient public administration by promoting legal and administrative cooperation and cooperation between citizens and institutions	INTERREG A: DE-DK, HU-HR, IT-AT, SI-HR, ES-PT

The figure below shows the occurrence of selection of Investment Priorities across the Member States and Interreg Programmes.

Figure 4: Number of Member States and Interreg programmes selecting e-health Investment Priorities



In their OPs, Member States define specific objectives that take into account the needs and characteristics of the programme area. In theme 3, the specific objectives typically do not refer to the health sector but health sector-related interventions may fall within their scope. The following are examples of some of the specific objectives defined for this theme:

- Increase of e-services available to citizens and businesses (BG).
- Utilizing ICT to improve public services (CY).
- Increase of public sector bodies and systems where the use of effective e-government methods (EL).

- Promote digital public services, digital literacy, e-learning, e-inclusion and e-health (ES).
- Promote the emergence of innovative public services and digital content and their dissemination (FR).
- Enhanced access to public sector information, e-services and e-administration to citizens and businesses (PL).
- New digital services are established and existing ones are developed so that access to private and public services is improved (SE).
- Strengthen and sustain the networking and provision of cross-border health services to the population (BE-FR).

Indicators

OPs include indicators that enable the monitoring of spending outputs and results; these are especially relevant for cross-cutting issues such as health. Indicators also play an important role in guiding project development. Member States are required to use a set of common indicators for monitoring of the programmes; programme-specific indicators can also be used. There is one required common output indicator relating to health, which specifies the population covered by improved health services; this indicator was not used for this theme.

Member States defined several programme-specific indicators to monitor the performance of the health promotion projects. These indicators typically refer to the number of participants in health programmes or number of such programmes.

Examples of programme-specific indicators used for this thematic block by Member States are:

- Number of projects for development of e-governance sectoral systems (e-procurement, e-health, e-customs, e-archiving, e-insurance, etc.) (BG).
- % Population covered by the Digital Health Services of the National Health Service (ES).
- Number of new digital services available to the public in the areas of health and education (FR).
- ICT solutions addressing the healthy active ageing challenge and e-Health services and applications (including e-Care and ambient assisted living) (HR).
- New e-services applications in the areas of health, environment, customs and interdepartmental services (MT).

Very few Interreg Programmes include monitoring indicators. The following examples have been found with relation to the Thematic Block 3:

- Number of tools/instrument to access health and social services on both sides of the border (BE-FR).
- Number of health ICT systems developed (EL-BG).

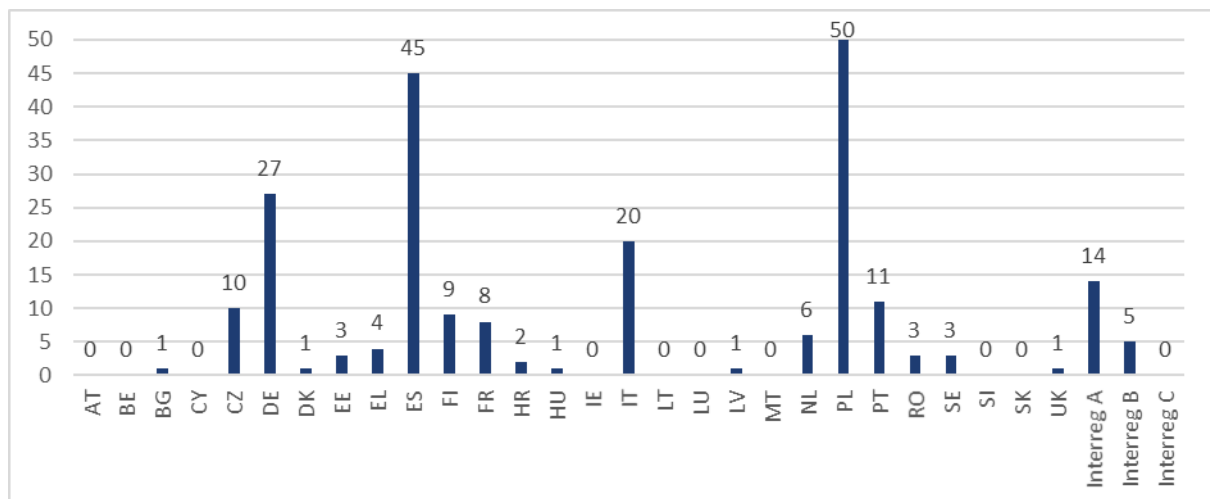
Analysis of identified ESI-funded projects

This section focuses on the project level and summarises the outcomes of the country-level research on the actual projects funded by Member States that will support e-health across the EU. Information about the geographic distribution, sub-themes, intervention fields and funding sources of the projects is presented.

Number of projects and budget

So far, there have been 225 projects in 19 Member States funded in support of the e-health thematic block. Nearly half of these projects (42%) are in Poland and Spain. No projects supporting the e-health thematic block were found in Austria, Belgium, Cyprus, Ireland, Lithuania, Luxembourg, Malta, Slovenia and Slovakia. 19 relevant projects are also financed under the Interreg A and B cooperation programmes. Further details are presented in *Figure 5*.

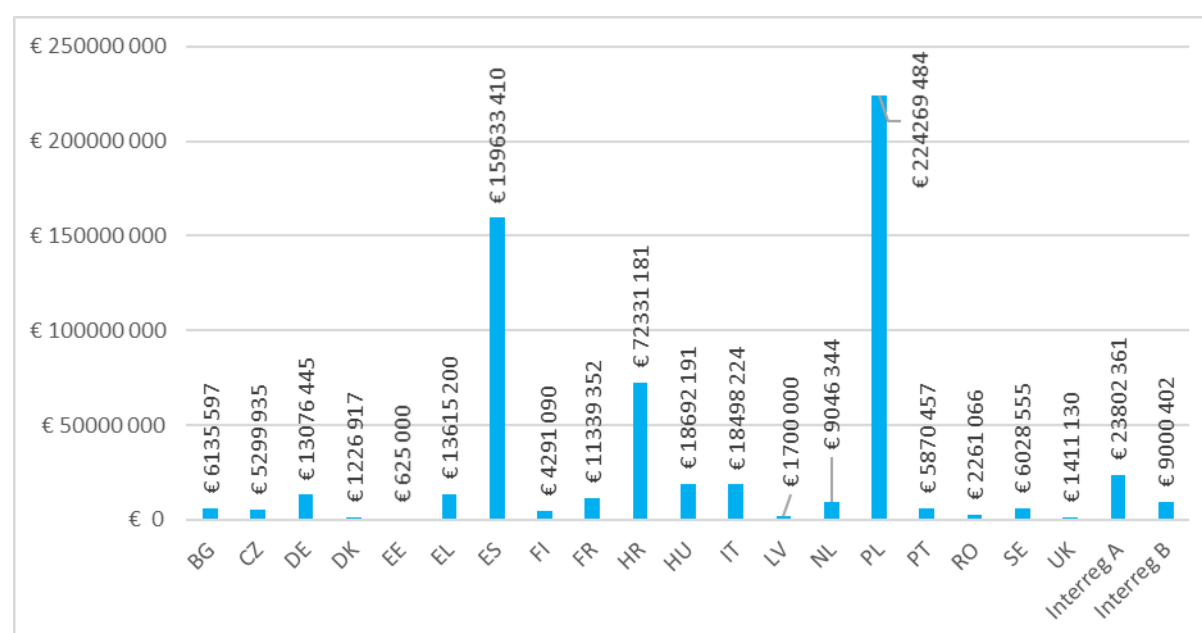
Figure 5: E-health projects by Member State and Interreg programme



Budget information is available for all of the thematic block 3 projects. The total budget of all e-health projects is around EUR 608 million, while the average project budget is approximately EUR 2.7 million. The largest spending on e-health projects is in Poland, around EUR 224 million. Spain has the second largest budget for thematic block 3 projects of nearly EUR 160 million. A significant budget, nearly EUR 33 million, for e-health projects is actually distributed through the Interreg A and B cooperation programmes. Further details about the total budgets of thematic block 3 projects are presented in *Figure 6*.

In terms of average project size, the largest projects are found in Croatia (around EUR 36 million), however the country has only two e-health projects identified which are of fairly large size and it is not clear if these amounts are only earmarked or actually spent. The average project sizes in the countries with the most projects are approximately EUR 4.5 million (Poland), EUR 3.5 million (Spain), EUR 0.5 million (Germany) and EUR 0.9 million (Italy). The smallest average budget for e-health projects is found in Estonia, around EUR 0.2 million.

Figure 6: Total budget of the e-health projects by Member State and Interreg programme



Sub-themes and intervention fields

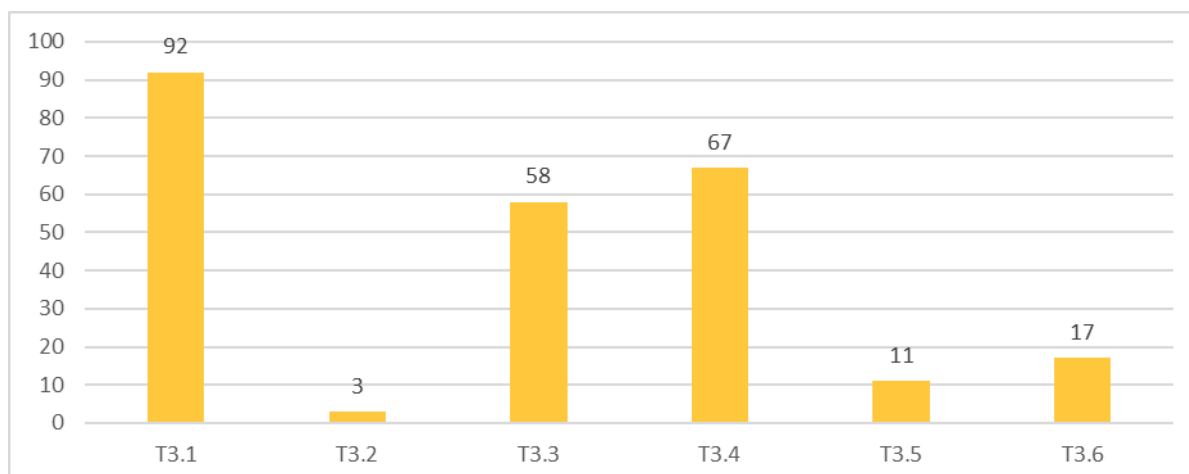
Six sub-themes were identified for the e-health thematic block, covering key areas of focus in EU and national policy priorities. Projects were assigned to multiple sub-themes where appropriate. The breakdown of projects by sub-theme is shown in the table and figure below.

Table 2: Sub-themes for e-health

Code	Description	Number of projects
T3.1	Electronic health records (used by healthcare professionals)	92
T3.2	Personal health records (used by patients)	3
T3.3	Health information exchange	58
T3.4	Telehealth	67
T3.5	mHealth	11
T3.6	Other	17

Note: For 23 of the T3 projects more than one relevant sub-theme was assigned; the number of projects here is therefore greater than the total number identified.

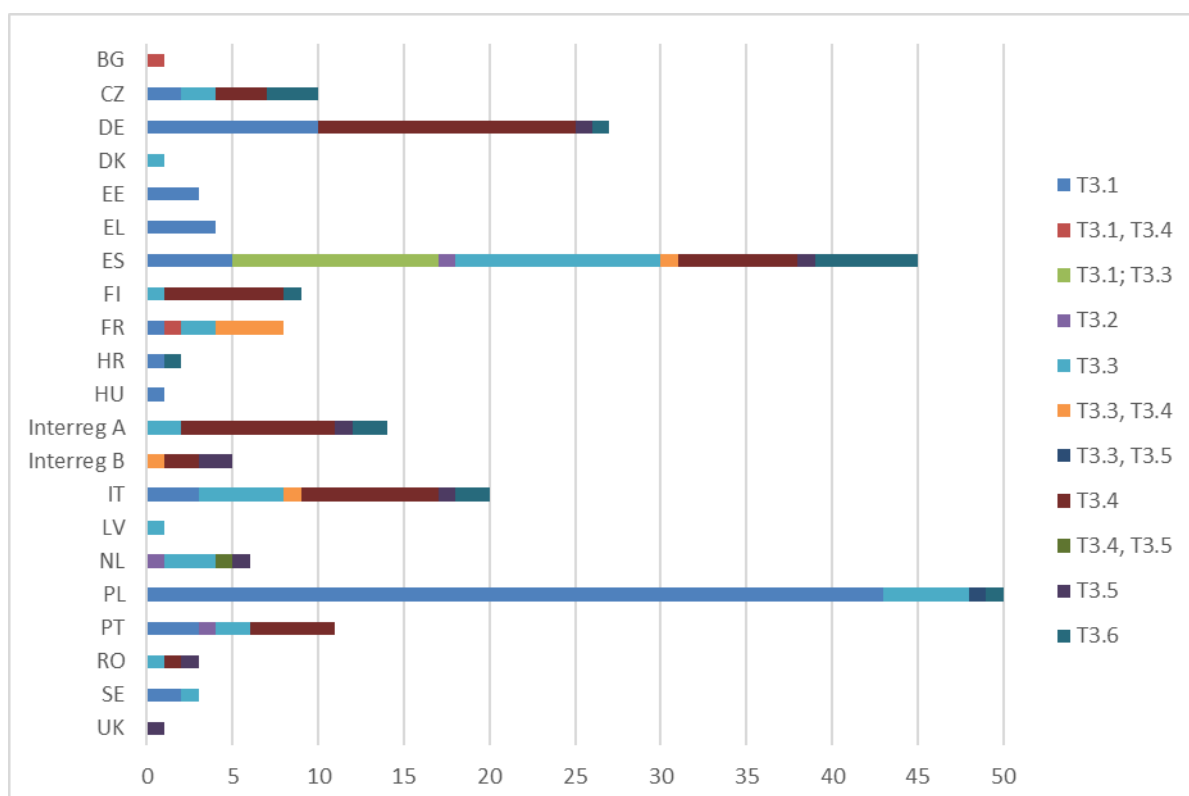
Figure 7: Number of e-health projects by sub-theme



Note: For 23 of the T3 projects more than one relevant sub-theme was assigned; the number of projects here is therefore greater than the total number identified.

The health projects identified under the e-health thematic block cover mainly sub-themes 3.1 and 3.4, also in a combination, as many of the projects concern the development of digital solutions for healthcare professionals' different needs. The thematic block 3 projects also often include projects that support the sharing of health information either through digital solutions (sub-themes 3.3 and 3.4) or through mobile applications (sub-themes 3.3 and 3.5). The following figures give a more detailed picture of the sub-themes and combinations addressed by projects supported in the Member States and the Interreg programmes.

Figure 8: E-health sub-themes as addressed by projects across Member States and Interreg programmes



All projects supported by ESI Funds are also assigned to different intervention fields in accordance with Regulation 215/2014⁶ and the EU nomenclature of intervention field codes established in it. Where this was indicated by the Member States in the information they published regarding projects funded, we have tracked it per project. A full list of the intervention fields assigned to thematic block 3 projects is given in *Table 3*.

Table 3: Intervention fields assigned to the e-health projects

Code	Description
1	Generic productive investment in small and medium-sized enterprises ('SMEs')
4	Productive investment linked to the cooperation between large enterprises and SMEs for developing information and communication technology ('ICT') products and services, e-commerce and enhancing demand for ICT
48	ICT: Other types of ICT infrastructure/large-scale computer resources/equipment (including e-infrastructure, data centres and sensors; also where embedded in other infrastructure such as research facilities, environmental and social infrastructure)
53	Health infrastructure
56	Investment in infrastructure, capacities and equipment in SMEs directly linked to research and innovation activities
58	Research and innovation infrastructure (public)
60	Research and innovation activities in public research centres and centres of competence including networking
61	Research and innovation activities in private research centres including networking
62	Technology transfer and university-enterprise cooperation primarily benefiting SMEs
64	Research and innovation processes in SMEs (including voucher schemes, process, design, service and social innovation)
66	Advanced support services for SMEs and groups of SMEs (including management, marketing and design services)
67	SME business development, support to entrepreneurship and incubation (including support to spin offs and spin outs)
78	E-Government services and applications (including e-Procurement, ICT measures supporting the reform of public administration, cyber-security, trust and privacy measures, e-Justice and e-Democracy)
79	Access to public sector information (including open data e-Culture, digital libraries, e-Content and e-Tourism)
81	ICT solutions addressing the healthy active ageing challenge and e-Health services and applications (including e-Care and ambient assisted living)
82	ICT Services and applications for SMEs (including e-Commerce, e-Business and networked business processes), living labs, web entrepreneurs and ICT start-ups)
88	Risk prevention and management of non-climate related natural risks (i.e. earthquakes) and risks linked to human activities (e.g. technological accidents), including awareness raising, civil protection and disaster management systems and infrastructures
96	Institutional capacity of public administrations and public services related to implementation of the ERDF or actions supporting ESF institutional capacity initiatives
102	Access to employment for job-seekers and inactive people, including the long-term unemployed and people far from the labour market, also through local employment initiatives and support for labour mobility

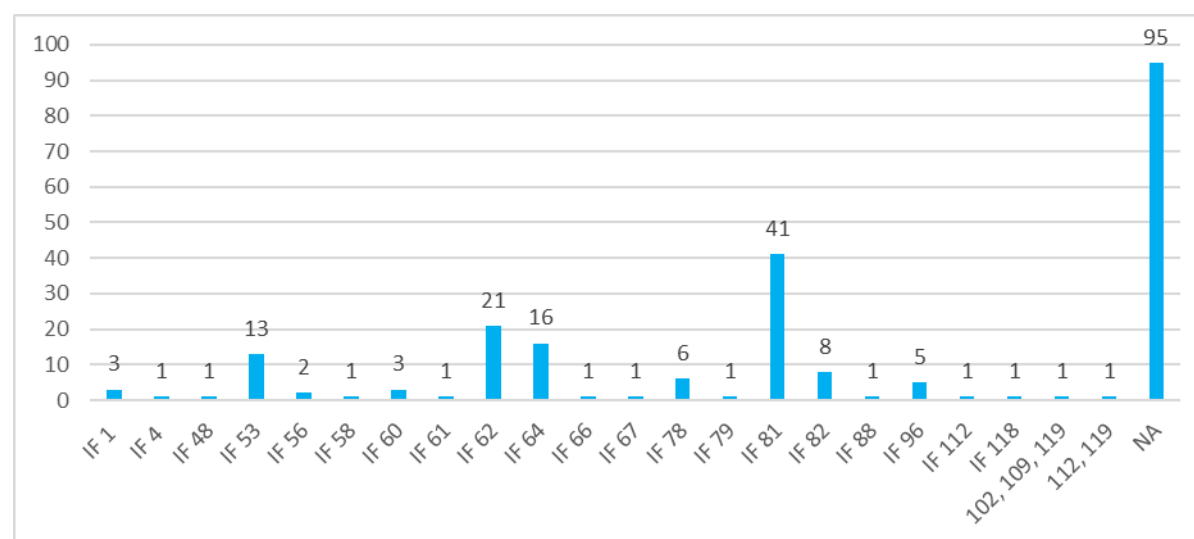
⁶ Regulation (EU) No 215/2014 laying down rules for implementing Regulation (EU) No 1303/2013 [...]

Code	Description
109	Active inclusion, including with a view to promoting equal opportunities and active participation, and improving employability
112	Enhancing access to affordable, sustainable and high-quality services, including health care and social services of general interest
118	Improving the labour market relevance of education and training systems, facilitating the transition from education to work, and strengthening vocational education and training systems and their quality, including through mechanisms for skills anticipation, adaptation of curricula and the establishment and development of work-based learning systems, including dual learning systems and apprenticeship schemes
119	Investment in institutional capacity and in the efficiency of public administrations and public services at the national, regional and local levels with a view to reforms, better regulation and good governance

Source: Annex I of Regulation 215/2014.

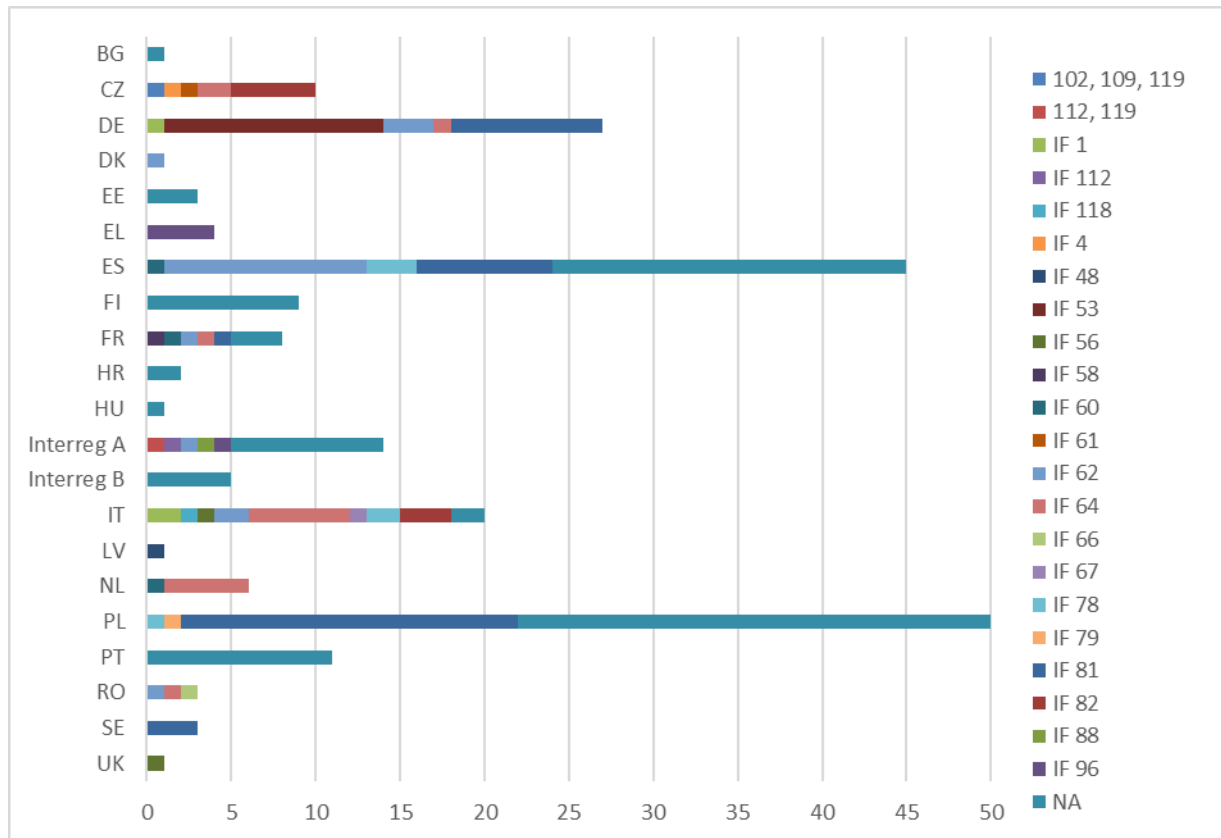
The most relevant intervention fields are 78-82 which concern demand stimulation, application and services of ICT. These are by far also the intervention fields most assigned to the e-health projects identified (with the exception of intervention field 80). However, as evidenced by the large variety of intervention fields assigned to the e-health projects, other categories can also be indirectly relevant for thematic block 3. For instance, a considerable number of projects have been assigned to intervention fields 53 'Health infrastructure', 62 'Technology transfer and university-enterprise cooperation primarily benefiting SMEs' and 64 'Research and innovation processes in SMEs (including voucher schemes, process, design, service and social innovation)'. All projects and intervention fields for which data were available are shown in the following figures.

Figure 9: Number of e-health projects by intervention field



Note: NA = Not available.

Figure 10: Intervention fields assigned to the e-health projects across Member States and Interreg programmes

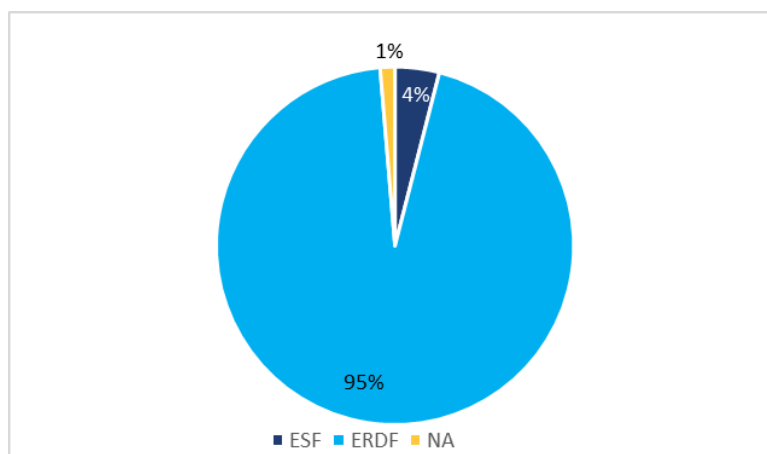


Note: NA = Not available.

Origin of funding

The majority of the e-health projects are financed by the ERDF - 213 projects or 95% (Figure 11). The average co-financing rate of the EU funding for the T3 projects is 67%⁷. The lowest co-financing rate is 18% and is found in France, while the highest co-financing rate is 100% and can be found in Hungary and the Sweden-Norway Interreg A Cooperation Programme.

Figure 11: Split of ESF/ERDF funding across e-health projects



Note: NA = Not available.

⁷ This is the average for the projects for which the co-financing rate was reported, in total 120 projects. For 105 projects the co-financing rate was not available.