essense

Education Supporting Smart Environments for Seniors

Identification of national strategies, policies and agendas in ESSENSE framework.

Erasmus+

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1. Introduction.

This report aims to collect National/Regional Research and Innovation Strategies in European countries. It is focused on different priorities, challenges and needs aligned to ESSENSE topic. It will be useful to elaborate a Blueprint which will define priorities and actions plans during and after the lifelong of the project. The expected impact is to raise awareness of BIM technologies in the building sector, and also a need to create environments free of physical, cognitive and social barriers meeting the needs of an ageing society.

2. Identification of national strategies, policies and agendas.

This point comes up to identify strategies, policies and agendas at regional and national levels in different fields, such as education, labour, health, research or innovation concerning to ESSENSE framework in the countries where partnership is located: North Macedonia, Spain, Germany and Slovenia.

2.1 Strategies, policies and agendas in North Macedonia Education

The Macedonian educational system is decentralized. The management of the primary and secondary schools is under responsibility of the municipalities, except for the secondary schools in the capital Skopje which are under responsibility of City of Skopje. The State provides financial resources for the education in the municipalities in a form of Block Grants. Special priority of the Republic of Macedonia is the adult education, an activity which is regulated with the Law on Adult Education and Law for Vocational Education. The system of adult education is promoted by the Centre for Adult Education, an institution established by the government in order to contribute through the adult education to the achievement of socio-economic needs of Macedonia, to meet the needs of the labour market and to assist individuals in their personal development. The educational system in the Republic of Macedonia consists of three sub-systems: · Primary education (ISCED 1 and ISCED 2): in duration of nine years, free of charge and compulsory for all children aged 6 to 15, with no regards to the gender, religion and nationality.

Secondary education (ISCED 3): general secondary education (Gymnasium) in duration of four years and vocational education (Vocational Schools) in duration of two (vocational education of two years), three (vocational education for professions) or four years (vocational technical education). The secondary education is compulsory and comprises all children in the age cohort 15 to 19 years for the general secondary education, and for the age cohort 15 to 17, 18 or 19 in the VET depending on the selected track. · Higher education (ISCED 5, 6 and 7): is implemented at 3 levels: undergraduate, master and doctoral studies. There are 6 Functional public universities (two of them in Albanian as a language of instruction), 1 private-public University and 9 private universities, and 2 high vocational schools. The Republic of North Macedonia is participating in the Erasmus+ programme as a Programme Country. The country recently has completed the referencing of the National Qualifications Framework to the European Qualification Framework, a process which was implemented by the Ministry of Education and Science with support from the ETF. The republic of North Macedonia has established an Education Strategy for 2018-2025 which is published online[1]

The Strategy mainly targets to the improvement of:

· Quality of education and its relevance to the Macedonia's society development priorities (particularly in terms of having productive and engaged citizens) and the needs of the labour markets, guided towards the expected learning outcomes, as well as acceptance of multiculturalism, interethnic integration, respect for diversity and democratic values;

· Development of generic and core competencies of pupils (and all learners), in order for them to develop into critical thinkers, active and relevant participants in social life;

· Education system infrastructure, including building facilities, equipment and teaching and supportive technologies in order to ensure appropriate learning environment in general and inclusion of persons with special education needs in particular;

[1] http://mrk.mk/wp-content/uploads/2018/10/Strategija-za-obrazovanie-ENG-WEB-1.pdf

· Capacities of human resources including managers, teaching and support staff; · Quality and results of the educational process by means of improving the assessment/evaluation at all education levels: pupil, teacher, school and system;

· Autonomy of institutions in the education, particularly of universities, as well as autonomy of entities in the education process; · Legislation, Management and Funding. More details about the strategy can be found at the provided source[2][3].

Labour

The Labour strategy of North Macedonia is under the management of the Ministry of Labour and Social Policy. According to the published information online[4] and the government programme 2017-2020[5]: The main labour related focus is towards increasing the wages and the living standard of the workers. Stimulating new work positions and stimulating wage increases etc. The reason for this is the high level of unemployment and the large Also as one of the major strategic priorities of the government is the Reforms in the education system and investment in innovation and information technology. According to the published statistics of the Employment agency there are over 164.000 unemployed people which is little over 20% of the work-force age. According to the report of the agency which was made for 2017[6]: The most wanted higher education level work places were: Programmer, Mechanical Engineer, Civil Engineer, Economist, Doctor, Information Engineer, Managing Engineer, Banking Economist, Architect, Computer Science Engineer etc. The most wanted with middle to higher level education: Commercialist, Tech support, Pharmaceutical technician, Electrotechnics technician, Instrumental optician, Sales referent, Medical-scanning equipment operator, Mechanical maintenance operator, Chief Cook, Nurse, Computer Technician etc. The most wanted with middle level education: Sewer, Salesmen, Textile sewer, Machine operator, Construction worker, Truck driver, bartender, Bus driver, Taxi driver, Baker, Civil engineering machine operator, Builder,

[2] https://eacea.ec.europa.eu/national-policies/eurydice/content/former-yugoslav-republic-macedonia_en

[3] http://mrk.mk/wp-content/uploads/2018/10/Strategija-za-obrazovanie-ENG-WEB-1.pdf

[4] https://vlada.mk/node/18029?ln=en-gb
[5] https://vlada.mk/sites/default/files/programa/2017-2020/Programa_Vlada_2017-2020_MKD.pdf
[6] http://av.gov.mk/content/Statisticki%20podatoci/APV%202016-2017%20izvestaj-sumirani%20rezultati.pdf

Carpenter etc. The most wanted with elementary education: General worker, Cleaner, Machine shop worker, Storage room worker, Distributer, Agricultural worker, Shoe repairer, Gardener, Wine yard worker, etc.

Some work providers gave feedback that there is need of specific competencies especially with the current introduction of technical innovations and progress. Almost all candidates with middle or higher level of skills are required to have knowledge of one foreign language (English, German, Italian etc.) and basic computer skills for MS Office, Auto Cad etc. Work providers emphasize the need for certifications. Also, soft skills are highly appreciated. Ongoing improvements of the educational system to provide adequate workforce for the market are needed according to the study.

Health

According to the published document[7]: The summary of the health strategy states that: The analysis of the health status of the population in the Republic of Macedonia and in the world shows that priority health problems are and will continue to be the chronic non- infectious diseases, the new infectious diseases and the emergency cases. Maintenance and improvement of the health will be the main instrument for improving the health status of the population, especially of the vulnerable groups. The effectiveness and efficiency of the overall health care delivery system will be increased. Primary health care oriented towards the individual, the family and the community, with emphasis on the preventive health care and on satisfying the majority of the health needs of the population, will continue to be the basis of the health care system in the Republic of North Macedonia. The hospital health care will be provided in a defined network of general and specialised hospitals. They will satisfy the needs of the local population in need of secondary health care, thus reducing the pressure on the tertiary health care. The specialized preventive health care of the population (public health) will be provided by way of strengthening and modernizing the Institutes for Health Protection and the occupational medicine services. Human resources are the core of the health care system. Staff expertise and competence will be improved through modernization of the under-graduation and post-graduation studies,

[7] http://www.nationalplanningcycles.org/sites/default/files/planning_cycle_repository/the_former_yugoslav_republic_of_macedonia/health_strategy_2020_eng.pdf

implementation of different forms of continued education, and professional development. The assurance of the quality of health care will be a priority in the period to come, and this will be achieved through the implementation of accreditation and re-accreditation of health care institutions, health care workers, procedures and guidelines for treatment, implementation of internal and external assessment, and greater participation and influence of the consumers of health services. The financing of the health care system will continue to be based on health insurance and on the mutuality, solidarity and equity principles, while providing for its sustainability. The basic benefits package under the health insurance will be defined according to the needs of the population and the available financial resources. The Health Insurance Fund will be modernized in order for it to provide for the implementation of health insurance and of the basic benefits package. On the link[8] there are live information about the current health related issues and the currently treated diagnosis and prescribed medications. It is part of a system for electronic patient scheduling.

Research and Innovation

Government of Republic of North Macedonia adopted Strategy for Innovation of Republic of Macedonia 2012-2020 The strategy document is available online[9]. The Strategy emphasize that young people are often abundant with intellectual capabilities from which potential ideas can emerge with commercial potential. What is needed for the realization of ideas is to create a mechanism that will encourage creativity among the young population, while at the same time animate the business community about the availability of ideas that can enhance their products, services or processes. One way to establish a link between young people and companies is to organize innovation competitions, not only nationally but also internationally. A successful example is the Dream Line competition in Turkey. Ministry of Education and Science with the support of World Bank in 2016 started implementing Skills Development and Innovation Support Project (SDISP). The Project's direct beneficiaries include students, teaching and management staff from technical vocational education and training institutions who would receive a new curriculum and practical training facilities, as well as training on management, planning, and

[8] http://e-health.gov.mk/en/e-health-directorate-2
[9] http://www.fitr.mk/wp-content/uploads/2015/02/Strategija-za-inovacii_final_oktomvri20121.pdf

process improvement capacity; students and staff of universities, research institutions and enterprises will benefit from:

· Implementation of quality assurance mechanisms and financing reform in higher education; · Grants promoting R&D and innovation; and

· Technology commercialization, global know-how absorption, and industry - university collaboration · The Ministry for Education and Science marked the implementation of SDISP by implementing a simulative activity for connecting high schools with business community.

It is a grant program for non-refundable funds awarded for financing projects of vocational high schools in North Macedonia, in partnership with business companies. In the Medium-term program of Fund for Innovation and Technology Development for 2018-2020 an Instrument for the Application of Innovation in the Public Sector is foreseen. The Fund has already piloted this instrument through innovative competitions to find a technological solution to reduce air pollution- O2 Challenge, organized in collaboration with the Ministry of Environment and Physical Planning and the Challenge for Young Researchers - Public Call for Financing Research Projects in Primary and in secondary schools, organized in cooperation with the Ministry of Education and Science. In July 2019, The Fund for Innovation and Technology Development and Macedonian Academy for Science and Arts signed Memorandum of cooperation to foster young people's creative thinking, innovation and entrepreneurship. The Fund is already working on creation of a strategic program to foster creative thinking, innovation and entrepreneurship among young people, called the “Fund for Young Minds”. For that aim, the Fund organized 4 focus groups with organizations who are implementing non-formal education, with teachers, professors and parents, as well as with high school and university students[10].

[10] https://eacea.ec.europa.eu/national-policies/en/content/youthwiki/67-skills-innovation-former-yugoslav-republic-macedonia

2.2 STRATEGIES, POLICIES AND AGENDAS IN SPAIN

EDUCATION

Spanish educational system is classified as: Infant, Primary, Compulsory Secondary Education (ESO), Baccalaureate, Vocational Training (FP), Adult Training and University Teaching. In addition, Language, Artistic and Sports Teaching, considered Special Regime, are offered.

The Organic Law of Education (LOE), of 2006, and the Organic Law for the Improvement of Educational Quality (LOMCE), of 2013 that modifies it, are currently the basic norms that regulate the educational system and define its structure.

Spanish society needs its University system to be in the best possible conditions for its integration into the common European Higher Education space and, as a fundamental principle, the best qualified teachers train students who will assume in the immediate future the increasingly complex professional and social responsibilities.

Hence, the objective of the Organic Law 6/2001, of December 21[11] is the improvement of the quality of the University system as a whole and in each and every one of its aspects. Therefore, the culture of evaluation is deepened through the creation of the National Agency for Quality Assessment and Accreditation and new mechanisms for the promotion of excellence are established.

Taking into account the Recommendation of the European Parliament of April 23, 2008, which advises States to align their qualification systems, our country like the rest of the countries involved in the Bologna Process, has acquired the commitment to design and implement its framework of qualifications for Higher Education that is comparable to its European equivalent.

The Spanish Framework of Qualifications for Higher Education (MECES) unanimously proposed by the Committee incorporates a level referred to other studies of non-university Higher Education, so that a complete itinerary for Higher Education is

[11] https://www.boe.es/buscar/act.php?id=BOE-A-2001-24515

visualized, thus contributing to make the integrating facet that is intended to be provided to all Higher Education, not yet University, more visible, as is the case with vocational training and the rest of the special regime teachings. In this way, the Spanish Qualifications Framework for Higher Education (MECES) is constituted on the basis of a four-level structure that should allow a person to be placed according to their level of acquired and certified learning: Royal Decree 1027/2011, of July 15, which establishes the Spanish Qualifications Framework for Higher Education[12].

During 2018, thousands of Spanish professionals have been trained in BIM. A methodology that has entered fully into our reality, completely transforming the way of working in the Architecture, Engineering and Construction sector.

The data is overwhelming: in 2018 the number of BIM professionals has increased by up to 50% in Spain. Everything indicates that at the end of 2019 many more professionals and companies will make the decision to bet on this training. They do it driven by the desire to prosper and by the mirages generated by thousands of jobs offer that require some so-called "BIM knowledge" as an indispensable requirement. BIM employment situation in the Spanish companies[13]

On august 2, was published the Royal Decree 472/2019, which regulates the direct assignment of grants to various professional associations and general councils of professional associations for training in the BIM methodology during the 2019 budget year.[14]

LABOUR

Employment policies in Spain are regulated by the Law 56/2003, in addition to this legislative framework, other strategies such as the National Employment System or Public State Employment Services become important.

[12] https://boe.es/buscar/act.php?id=BOE-A-2011-13317
[13] https://editeca.com/empleo-bim-empresa-espanola-2018/
[14] https://www.cscae.com/index.php/conoce-cscae/area-tecnica/todas-las-noticias43/5794-ayudas-a-la-formacion-bim-del-ministerio-de-fomento-2019

The National Law 9/2017 of Public Sector Contracts[15], includes the possibility of contracting bodies to “demand tools such as BIM in their public contracts”. And the main difficulty that currently exists is how to introduce the BIM requirements in the Specifications, maintaining all the conditions of the Law. In Section 6 of its Fifteenth Additional Provision, entitled "Rules relating to the means of communication usable in the procedures regulated in this Law", a precise reference to the methodology indicating that "contracting bodies may require the use of electronic tools, such as digital modelling tools for construction information (BIM) or similar tools. In these cases, they will offer alternative means of access as provided in Section 7 of this additional provision until such time that such tools are generally available to economic operators.

Constitution of the *BIM Commission*, announced in July 2015, was the first step towards the implementation of a *National Strategy for the Implementation of BIM* (Building Information Modelling) in Spain. The objective of this initiative, known as BIM, has been since its inception, to serve as a reference to the construction sector in the adoption of this new work methodology, creating the *BIM Bidding Observatory*, where has recently been published the analysis of the Inclusion of BIM Requirements in the Spanish Public Tender.

Disposition of the Commission *We Build the Future*: the ITeC Board of Trustees Advisory Council created in early 2015 to discuss the future of the construction sector and analyse the use of BIM, Lean and IPD (Integrated Project Delivery) technologies among other topics.

The Royal Decree 1515/2018, of December 28[16], establishes the *Interministerial Commission* for the incorporation of the BIM methodology in public procurement. The Commission aims to promote and ensure the coordination of the Administration General of the State and its public bodies and public law entities linked or dependent, in the implementation of the BIM methodology in contracting public.

Others Policies:

[15] https://www.boe.es/buscar/act.php?id=BOE-A-2017-12902

[16] https://www.boe.es/buscar/act.php?id=BOE-A-2007-19966

- Technical Committee for Standardization 41 / SC 13 Organization of Information Models related to Building and Civil Works.
    - o *UNE-EN ISO 19650-1:2019*[17]

Organization and digitalization of information in building and engineering works that use Building Information Modelling. Information management when using Building Information Modelling. Part 1: Concepts and principles (ISO 19650-1: 2018).

- o *UNE-EN ISO 19650-2:2019*[18]

Organization and digitalization of information in building and civil engineering works that use Building Information Modelling. Information management when using Building Information Modelling.

Part 2: Asset development phase. (ISO 19650-2: 2019)

- o *UNE-EN ISO 29481-1:2018*[19] Information modelling of buildings. Information delivery manual. Part 1: Methodology and format. (ISO 29481-1: 2016).

- o *UNE-EN ISO 29481-2:2017*[20] Information modelling of buildings. Information delivery manual. Part 2: Framework for interaction. (ISO 29481-2: 2012)

- o *UNE-EN ISO 12006-3:2017*[21]Edification. Organization of construction work information. Part 3: Object-oriented information framework. (ISO 12006-3: 2007)

- o *UNE-EN ISO 16739:2016*[22] Industry Foundation Classes for data exchange in the construction and real estate management sectors (ISO 16739: 2013) (Ratified by the Spanish Association for Standardization in January 2017).

Regulations on Universal Accessibility

[17] https://www.une.org/encuentra-tu-norma/busca-tu-norma/norma?c=N0062137

[18] https://www.une.org/encuentra-tu-norma/busca-tu-norma/norma?c=N0062138

[19] https://www.une.org/encuentra-tu-norma/busca-tu-norma/norma?c=N0060167

[20] https://www.une.org/encuentra-tu-norma/busca-tu-norma/norma/?c=N0058906

[21] https://www.une.org/encuentra-tu-norma/busca-tu-norma/norma?c=N0058852

[22] https://www.une.org/encuentra-tu-norma/busca-tu-norma/norma?c=N0057650

Universal accessibility is defined as "the condition that must be met by environments, processes, goods, products and services, as well as objects or instruments, tools and devices, to be understandable, usable and practicable by all people in conditions of safety and comfort and in the most autonomous and natural way possible. It presupposes the "design for all" strategy and is understood without prejudice to the reasonable adjustments that must be adopted"(Law 51/2003, of December 2, on Equal Opportunities, Non-Discrimination and Universal Accessibility of Persons with Disabilities, LIONDAU, art. 2).[23]

IMSERSO (Institute of Migration and Social Services, 2002), defines it as a concept that "comes from access, action to reach and approach, or entry or step. Applied to the use of space or objects and technologies, and especially in relation to certain population groups with functional difficulties", directly relating the concept of accessibility with the interaction of the person with the environment.

Guaranteeing access and universally accessible services for all users. Adopting an Universal Accessibility Management System ensures that everyone, regardless of their age or disability, has the same access possibilities to any part of a built environment, transport or city planning, and to the use and enjoy the services that they provide with the highest possible level of autonomy.

The adoption of Standard UNE 170001-2[24] entails the organisation's social commitment to the equality of rights and opportunities for all people, regardless of their capacities. Therefore, any client that wishes to access an environment and receive its services will be able to do so since the organisation will have made all of their spaces and services accessible.

Similarly, the universal accessibility developed in accordance with the Standard UNE 170001-2 for work environments, demonstrates the commitment of organisations to society, creating environments where all workers, regardless of their capabilities, can carry out their work in equal opportunity conditions as the rest of their co-workers. Adopting this standard helps organisations that implement corporate social responsibility to integrate people with disabilities in the job market.

[23] https://www.boe.es/buscar/act.php?id=BOE-A-2003-22066
[24] https://www.une.org/encuentra-tu-norma/busca-tu-norma/norma?c=N0040253

By fulfilling the DALCO requirements of the Standard UNE 170001-1:2007[25], the organisation can guarantee that it is accessible and that its accessibility is not temporary and will remain in place for the foreseeable future.

The territorial model that is configured in the Spanish Constitution with the creation of the Autonomous Communities and the attribution of specific powers over which, in most cases, legislative powers may arise over each community. In this sense, the autonomous community of Murcia and Andalusia, representing this consortium, highlights the laws set forth below in the field of universal accessibility:

- Decree 293/2009, of July 7, which approves the regulation that legislate the rules for accessibility in infrastructure, urban planning, building and transport in Andalusia (box no. 140 Seville, 21 of July 2009. Bug fix no. 219 Seville, November 10, 2009)[26]
- Law 4/2017, of June 27, on Universal Accessibility of the Region of Murcia. Published in BORM n° 148, June 29, 2017.

HEALTH

The Spanish Constitution of 1978 establishes, in Article 43, the right to protection of health care of all citizens. The principles and substantive criteria that allow the exercise of this right are specify in:

- Public financing, universality and free health services at the time of use.
- Rights and duties defined for citizens and powers public
- Political decentralization of health in the autonomous communities.
- Provision of comprehensive health care seeking high levels of quality duly evaluated and controlled.
- Integration of the different structures and public services at the service of health in the National Health System.

[25] https://www.une.org/encuentra-tu-norma/busca-tu-norma/norma?c=N0040253

[26] https://www.boe.es/buscar/pdf/2015/BOJA-b-2015-90573-consolidado.pdf

The National Health System - SNS - is configured as the coordinated set of health services of the State Administration and services of health of the autonomous communities that integrates all the functions and health benefits that, according to the law, are the responsibility of the public powers.

We highlight below the most aligned strategies with ESSENSE that have been developed from the Ministry of Health:

Among the strategies created in order to guarantee accessibility to improve the wellbeing and the quality of life of older adult in Spain are:

- Ministry of Health, Consumer Affairs and Social Welfare creates the Accessible Home Automation Demonstrators Network (Redda).
  Redda It is a network of entities that have demonstrators or home automation solutions in their facilities to improve accessibility, used today.[27]

- Ceapat-Imserso participates in the Network of Friendly Cities and Environments with the elderly in coordination with the Ministry of Health, Social Services and Equality. [28]
- The Andalusian Tele-Assistance Service (SAT) of the Ministry of Health and Social Welfare of the Andalusian is a strategy which guarantee the security at home through the reception of calls sent by older adults.[29]

- LIVING LAB-participation of end users:
  Living lab has up-to-date didactic methods which are used for research in everyday environment.
  The lab offers a comprehensive and direct service providing customized solutions for research
  projects and in the development and innovation of products and services related to the Ageing
  challenge. Living Lab is a tool enabling the end user to be actively involved, from

[27] http://www.ceapat.es/ceapat_01/redes/proy_redda/index.htm
[28] http://www.ceapat.es/ceapat_01/redes/eip_aha/index.htm

[29] https://www.juntadeandalucia.es/agenciadeserviciossocialesydependencia/es/programas/sat2/prueba/wfprogramitem_view_pub

their own everyday environment, in the design process, redesign of projects, products and services, as well as in the pilot stage.

RESEARCH AND INNOVATION

The State Plan is the main instrument of the General State Administration for the development and achievement of the objectives of the Spanish Science and Technology and Innovation Strategy 2013-2020 and the Europe 2020 Strategy, and includes state aid for the I+D+R, which are preferably granted through calls under competitive competition. The next EU research & innovation investment programme (2021 – 2027) Based on the Commission Proposal for Horizon Europe, is being developed.

The previous Ministry of Economy, Industry and Competitiveness, through the Ministry of Research, Development and Innovation, developed the State Plan with public research centres, Universities, technology centres, business associations, technology platforms and experts from the scientific, technical and business community. Proposals received during the public consultation held during July 2017 have also been incorporated.

The State Plan 2017-2020, like the one corresponding to the 2013-2016 period, is made up of four state programs that correspond to the general objectives established in the Spanish Strategy for Science and Technology and Innovation 2013-2020: promotion of talent and its employability, knowledge generation and strengthening of the system, business leadership oriented to society's challenges. The Council of Ministers, has approved a Royal Decree establishing the Interministerial Commission for the incorporation of the BIM methodology (Building Information Modelling) in public procurement, with the nature of a collegiate administrative body, regulating its functions, composition and rules of operation.

The Interministerial Commission, which is attached to the Ministry of Development, will be composed of representatives of several Ministries and will be constituted within one month of the entry into force of its Royal Decree of creation. Its purpose is to promote and guarantee the coordination of the General State Administration and its public bodies and public law entities linked or dependent, in the incorporation of the BIM methodology in public procurement.

In addition, within the Commission, a Technical Committee and other working groups will be created to assist it in its functions, as well as a Territorial Committee to facilitate the participation of the Autonomous Communities and Local Entities through the Spanish Federation of Municipalities and Provinces, and exchange information about BIM between the different Public Administrations.

Other Strategies

- Introduction of collaborative processes in Construction. 88 steps to BIM[30]
- Academic digital magazine 'Journal BIM & Construction Management' ISSN: 2659-6962.[31]

2.3 STRATEGIES, POLICIES AND AGENDAS IN GERMANY

EDUCATION

Education in Germany is strongly determined by the country's federal structure. Responsibilities for education are distributed between the Federal Government (Bund) and Germany's Federal States (Bundesländer). Each Federal State has its own education system and school laws.[32]

The scope of the Federal Government's responsibilities in the field of education is defined in the Basic Law [33]. Unless the Basic Law awards legislative powers to the Federation, the Länder have the right to legislate. Within the education system, this applies to the school sector, the Hgher Education sector, adult education and continuing education. Administration of the education system in these areas is almost exclusively a matter for the Länder.[34]

The German school system is divided into 5 levels:

[30] https://itec.es/wp-content/uploads/2017/11/CCF-88Pasos_v2.pdf
[31] https://journalbim.org/index.php/jb

[32] https://eacea.ec.europa.eu/national-policies/en/content/youthwiki/62-administration-and-governance-germany
[33] https://eacea.ec.europa.eu/national-policies/eurydice/content/legislation-25_en#ConstitutionLawFederalLaw
[34] https://eacea.ec.europa.eu/national-policies/en/content/youthwiki/6-education-and-training-germany

Compulsory Education

As a rule, general compulsory schooling begins for all children in the Federal Republic of Germany in the year in which they reach the age of six and involves nine years of full-time schooling. Those young people who do not attend a full-time general education school or vocational school at upper secondary level once they have completed their period of compulsory general schooling must still attend part-time schooling (compulsory Berufsschule attendance – Berufsschulpflicht). This usually lasts three years.

Primary Education

As a rule, in the year in which children reach the age of six, they are obliged to attend primary school. All pupils in Germany enter the Grundschule which in almost all Länder covers grades 1 to 4 (in Berlin and Brandenburg grades 1 to 6).

Secondary Education

Following the primary school stage, secondary education in the Länder is characterised by division into the various educational paths with their respective leaving certificates and qualifications for which different school types are responsible. Once pupils have completed compulsory schooling they move into upper secondary education. The range of courses on offer includes full-time general education and vocational schools, as well as vocational training within the duales System (dual system).

Tertiary Education

The tertiary sector encompasses institutions of Higher Education (Universities, Fachhochschulen, colleges of art and music) and other establishments that offer study courses qualifying for entry into a profession to students who have completed the upper secondary level and obtained a Higher Education entrance qualification.

Adult Education and Lifelong Learning

The activities of the state in the field of continuing education are, for the most part, restricted to laying down principles and to issuing regulations relating to organisation

and financing. Such principles and regulations are enshrined in the legislation of the Federal Government and the Länder. State regulations are aimed at establishing general conditions for the optimum development of the contribution of continuing education to lifelong learning.[35]

Education Strategy - Creating equitable opportunities for quality education

The 2018 education report mentions the following challenges: Increasing number of individuals in education, tendency towards higher education, sustained disparities between educationally disadvantaged individuals and academic high performers, growing heterogeneity in educational institutions, different development perspectives between educational regions (Bildungsregionen), expansion and reorganisation of educational regions, and personnel development and expansion.[36]

LABOUR

Radical labour market reforms were implemented in Germany between 2002 and 2005, reforms that overturned the received idea that Germany was suffering from "reform paralysis". However, the part of these reforms that specifically concerned labour law was very small; their main purpose was to overhaul the social security and activation system for the unemployed and others of working age who are in need of support in line with a "work first" strategy. These reforms were extremely controversial and changed the party-political landscape in Germany.

Shortly after the reforms were introduced, a trend reversal took place on the German labour market: unemployment fell, employment with mandatory social insurance contributions picked up again, and the German labour market proved extraordinarily resilient through the 2008-2009 financial and economic crisis. Since then, the German economy has been so strong as to arouse increasing concern about economic imbalances within Europe. At the same time, however, neighbouring European countries are endeavouring to emulate Germany's supposed path to success by

[35] https://eacea.ec.europa.eu/national-policies/eurydice/content/germany_en
[36] https://www.bildungsbericht.de/de/bildungsberichte-seit-2006/bildungsbericht-2018/bildung-in-deutschland-2018

implementing "structural reforms" along the lines of the German model, in the hope of achieving similar results. [37]

HEALTH

Health care policy in Germany is dominated by economic (cost-containment), institutional and supply issues. Public health in general is low on the political agenda with much scope for improvement. Better health as an objective in itself has by and large been a neglected issue. Health targets are conceived of as the most promising instruments for bringing the health issues back in.

After a failed attempt to introduce health targets by the federal government in the 1980s, various states introduced or started planning health target programmes in the 1990s. These programmes vary widely in scope and focus. Meanwhile, the competent actors in the health policy arena have picked up the concept in order to make it fruitful for health care and bridge the gap between public health and health care. Moreover, health targets have reappeared on the federal political agenda. Conclusions: While the health target movement in Germany is gaining momentum the crucial issue of finding a political balance between the federal, Länder and local institutional levels remains unsolved. The future prospect of health targets in Germany will depend on solving this problem. [38]

The strategy includes initiatives in the following key action areas:

- Improving prevention and promoting health
- Promoting equity in health
- Reducing health risks
- Monitoring the current situation, carrying out basic research and identifying risk and protection factors

[37] https://www.eesc.europa.eu/en/our-work/publications-other-work/publications/impact-labour-legislation-reform-germany-labour-market-reforms-and-jobs-miracle-germany
[38] https://academic.oup.com/eurpub/article/10/suppl_4/38/483946

RESEARCH AND INNOVATION

In Germany, responsibility for education lies largely with the Federal States, which is why there is no uniform concept for innovation in formal education. The education standards to safeguard quality and innovation (Bildungsstandards zur Sicherung von Qualität und Innovation im föderalen Wettbewerb der Länder) contain some approaches and notes on innovation, as do the resolution of the Standing Conference of the Ministers of Education and Cultural Affairs (Kultusministerkonferenz, KMK) on cultural youth education (Beschluss der Kultusministerkonferenz zur kulturellen Jugendbildung) and the KMK strategy on education in the digital world (Strategie der Kultusministerkonferenz ‚Bildung in der digitalen Welt'). For instance, North Rhine-Westphalia amended its school legislation in 2006 to highlight the responsibility to be carried by the schools themselves. In 2012, a circular (Runderlass) was adopted to encourage more innovative projects by schools. Amongst other things, the circular opens up an opportunity for schools to trial innovative lesson organisation methods.

From the 2017/2018 school year onwards, starting with eight model schools Bavaria will develop and trial blueprint concepts for the systematic use of digital learning and working in schools. The project is known as Digital school 2020 (Digitale Schule 2020). The project is implemented by Stiftung Bildungspakt Bayern, with exclusive support from the Bavarian Industry Association (Vereinigung der Bayerischen Wirtschaft e.V., VBW). [39]

[39] https://eacea.ec.europa.eu/national-policies/en/content/youthwiki/67-skills-innovation-germany

2.4. STRATEGIES, POLICIES AND AGENDAS IN SLOVENIA

EDUCATION

The BIM Association Slovenia (siBIM)[40] is an organisation connecting professionals and enthusiasts that are interested in building information modelling (BIM). The organization aims to facilitate professional development by organizing training and the exchange of experience. Its other objectives include preparing guidelines and regulations related to BIM and representing the interests of the Slovenian construction industry in the field of BIM at the international level.

LABOUR

Slovenian government is currently developing an action plan[41] that will encourage and regulate digitalization in the built environment in Slovenia. The action plan recognises the importance of BIM in all stages of the construction process and emphasises the advantages of using BIM on several fronts: project quality, financial management, energy efficiency, and sustainability, among others. The execution of the action plan, resulting in a more common use of BIM, is expected to save more than 10% of funds dedicated to the building projects, as the number of errors and redundant work are expected to decrease.

Slovenia's Smart Specialization Strategy (S4)[42] aims to strengthen the competitiveness of the economy by enhancing innovation, diversifying existing industries and services, and boosting growth of new businesses. "Healthy working and living environment" is one of the three priority areas of the S4. Within this area, a lot

[40] http://sibim.si/

[41] http://sibim.si/f/docs/dokumenti/Akcijski_nacrt_uvedbe_digitalizacije_na_podrocju_grajenega_okolja_v_RS_7_5_2018.pdf

[42] http://www.onlines3.eu/wp-content/uploads/RIS3_strategy_repository/SI_S4_dokument_2015_october_eng_clean_lekt.pdf

of focus is placed on smart housing units and appliances, modern building management systems, and advanced building materials.

Strategic Research & Innovation Partnership on Smart Cities[43] and Communities aims to advance the use of modern digital technologies to improve performance and overall quality of life. Among other topics, the partnership focuses on Internet of Things related to smart homes, communication solutions for smart environments, and healthy and active living. Another goal is to upgrade the infrastructure with the integration of ICT and smart algorithms[44], where implementing sensors and combining diverse data is important.

Strategic Research & Innovation Partnership (SRIP) on Health and Medicine[45] aims to improve the social and economic value of the sector. Encouraging active and healthy ageing is one of its key objectives. The partnership emphasises the need for novel and adapted services in combination with smart devices for assisted living.

HEALTH

Slovenian National Institute for Public Health (NIPH)[46] recognizes that wellbeing of older adults represents an increasing public health concern. In their recent extensive report[47] focusing on falls, they outline internal and external risk factors as well as possible interventions that can mitigate the issue. The effects of interventions that adapt the indoor environment to the needs of older adults are evaluated in a particularly positive light. The ongoing project MoST ("Model of a holistic approach to improve health and decrease health inequality in local communities") has been assessing the risk factors and interventions related to falls at 25 health centres in Slovenia. The project's results will form a basis for the fall prevention programme that

[43] http://pmis.ijs.si/wp-content/uploads/2016/12/Key-orientations-%E2%80%93-Focus-areas-of-Horizontal-ICT-network.pdf
[44] http://pmis.ijs.si/wp-content/uploads/2016/12/Key-orientations-of-verticals.pdf
[45] https://www.sis-egiz.eu/mma/abstract_srip_health__medicinepdf/2018021211241288/
[46] https://www.nijz.si/en
[47] https://www.nijz.si/sites/www.nijz.si/files/publikacije-datoteke/padci_pri_starejsih_2019_publikacija_oblikovano_2020_koncna_mrs.pdf

is intended for all of the health centres in Slovenia (although the implementation will mostly depend on policy makers).

RESEARCH AND INNOVATION

Concern for health in older adults is reflected in the increased interest in relevant projects. For example, a recent project call[48] ("Healthy ageing with the support of digital solutions") exemplifies a recent trend of projects in the area of ambient-assisted living (AAL). A similar international ongoing project (Ithaca[49]) aims to create modern national strategies to improve healthcare, with the focus on long term care of older adults (including care at home).

This research trend is also reflected in the development of a new scientific journal based in Slovenia. The peer-reviewed journal Interdisciplinary Perspectives on the Built Environment (IPBE)[50], although not specifically focusing on older adults, welcomes research on the topic of advancing human health in the built environment, including the topics at the intersection of building information modelling, AAL, and health.

University of Primorska will begin offering a PHD programme called "Renewable Materials for Healthy Built Environments" in 2020, which covers the topics of Active Healthy Ageing, Ambient Assisted Living, Occupant Health in the Built Environment, and BIM.

Research interest can also be observed in the field of BIM. A recent article[51] analysed the current state of BIM use in Slovenia and compared it to the progress in the UK, where the use of BIM became mandatory in public infrastructure. The article concludes that the BIM use is comparable between the two countries but emphasizes

[48] https://www.gov.si/novice/2020-01-15-najava-javnega-razpisa-aal-za-sofinanciranje-ikt-projektov-na-podrocju-aktivnega-staranja/
[49] https://www.interregeurope.eu/ithaca/
[50] https://ipbe.innorenew.eu/ipbe
[51] http://zpm.si/projektna-mreza-slovenije/wp-content/uploads/2019/04/KIRALY_STARE_8-april-2019-SLO.pdf

room for improvement and the role of Slovenian government in actively implementing BIM in public building projects.

3. STRATEGIES, POLICIES AND AGENDAS IN EUROPE

European Policies which can help to address the ESSENSE topic: the use of BIM/AAL technologies forward the design of accessible environment for older adult are presented below:

EDUCATION

On February 26, 2014, the European Directive European Parliament and Council 2014/24 / EU[52] was approved, which imposes the following three-phase roadmap for all member countries of the European Union:

- March 12, 2018: recommended use of BIM in Public Tenders.
- December 17, 2018: mandatory use of BIM in Public Building Tenders.
- July 26, 2019: mandatory use of BIM in Public Infrastructure Tenders.

Active and healthy ageing (AHA)[53] is one of the societal challenges we will be facing in the upcoming decades as demographic ageing heavily impacts on society and economy. Finding innovative and sustainable solutions to help individuals of advanced old age to continue living at home independently is critical in the context of both demographic change and budgetary constraints. Policies on ageing may perceive 'old age' as a status rather than the result of a process and change of paradigm is needed. In order to gain the ability to remain active, the individual needs to invest in this process throughout the life course. Overview of existing policies and current practices gives insight about societal structures and awareness-raising actions that would enable persons to live an active life-style as long as possible:

- Strategy and action plan for healthy ageing in Europe, 2012–2020
- Age friendly cities of WHO104 is a network the encouraging the development of age-friendly cities

[52] https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex%3A32014L0024

[53] https://ec.europa.eu/eip/ageing/home_en

- A European Innovation Partnership on Active and Healthy Aging (EIPAHA platform is a communication and information hub for all actors involved in Active and Healthy Ageing throughout Europe
- Smart cities: digital solutions for a more liveable future108 state that after a decade of experimentation, smart cities are entering a new phase

ACTIVE ASSISTED LIVING[54] is a European programme supporting de development of innovation designed to improve quality of life for older people.

The AAL has funded the development of many new products and services designed to help us continue to live our lives the way we want to as we get older.

The development of innovative technology and the innovative use of existing technology means we can live happier, more independent lives for as long as possible.

European Master in Building Information Modelling (BIM A+) is an European Initiative granted by Erasmus+ programme[55] whose objective is to offer an advanced education programme on BIM integrated design, construction and operation processes, with a strong focus on the collaborative practices that are the cornerstone of such integration. The Master combines the diversity of expertise at leading European Universities in the relevant fields (Univ. Minho, Ljubljana, Milan), and 25 Associated Partners from academia, R&D and industry, offering education oriented to a multidisciplinary understanding of virtual construction through the involvement of experts from complementary fields (engineers, architects, programmers and others). Students gain top level knowledge on BIM in a research-oriented environment, with close cooperation with the industry and with a strong focus on problem solving. The course will combine the recent advances in research and development with activities practical applications. After successful completion of the BIM A+ a student will gain competences to compete in a highly demanding market as a BIM Manager/Strategist/Consultant/Modeller, furthermore, students may consider engaging in a further degree of studies towards (PhD) research on the BIM proficiency level.

[54] http://www.aal-europe.eu
[55] http://www.bimaplus.org/

LABOUR

As an initial boost, the European Union adopted initiatives to encourage the adoption of BIM in the public sector. EUBIM, co-funded by the EU, is a task group combining national efforts into a common and aligned European approach. EUBIM aims to encourage the use of BIM in public works with the common goal of improving value for money, quality, and sustainable competitiveness of the construction sector.

EUBIM published the Handbook[56] for the introduction of Building Information Modelling (BIM) by the European Public Sector - Strategic action for construction sector performance: driving value, innovation and growth.
This has been published in 18 languages and provides a central reference point for the introduction of BIM by the European public sector. It addresses public policy users, national and local clients, procurers and operators. The handbook aims to equip Government and public sector construction clients with the knowledge to provide the necessary leadership to its industrial supply chain. In particular, section 3.1 introduces recommendations for the adoption of BIM as part of a national strategy for each member state.

Other standardisation work includes:

- Data dictionaries (International Framework for Dictionaries Libraries) and processes (data delivery manuals). ISO/TC 59/SC 13 "Organization of information about construction works",
- A subcommittee of the International Organization for Standardization (ISO) on the worldwide and CEN/TC 442 "Building Information Modelling",
- A technical committee of European Committee for Standardisation (CEN) on the European level develop and maintain standards in the BIM domain.
- Directive of the European Parliament and of the Council on the approximation of the laws, regulations and administrative provisions of the Member States as regards the accessibility requirements of products and services. COM (2015) 615 final - 2015/0278 (COD).
- Directive (EU) 2019/882 of the European Parliament and of the Council of April 17, 2019 on the accessibility requirements of products and services.

[56] http://www.buildup.eu/en/practices/publications/handbook-introduction-bim-european-public-sector-.

HEALTH

The most important European policies concerning BIM/AAL for a healthy ageing in health sector are:

- Council Directive 2000/78/EC that prohibits discrimination on the grounds of disability, age, sexual orientation and religion or belief in employment and occupation[57]
- The European Pilar of Social Rights (2017)[58]
- Digital Inclusion for a better EU Society[59]
- European Parliament publication: Assistive technologies to support people with disabilities[60]

RESEARCH AND INNOVATION

The most important European policies concerning BIM/AAL for a healthy ageing in research and innovation sector are

- The European Norm EN 16234:2016 ''e-Competence Framework (e-CF) – A common European Framework for ICT Professionals in all industry sectors – Part 1: Framework [61]
- CEN Technical Committee CEN/TC 428 ''Digital Competences and ICT Professionalism'' (http://www.ecompetences.eu/cen-tc-428/)

[57] htttps://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32000L0078:en:HTML.
[58] https://ec.europa.eu/commission/publications/european-pillar-social-rights-booklet_en
[59] https://ec.europa.eu/digital-single-market/en/digital-inclusion-better-eu-society
[60] https://www.europarl.europa.eu/EPRS/EPRS-Briefing-559513-Assistive-technologies-support-people-with-disabilities-FINAL.pdf)
[61] https://standards.cen.eu/dyn/www/f?p=204:110:0::::fsp_project,fsp_org_id:41798,1218399&cs=17b0e0f8cabcdbddb8066a46fa937510b)