



COMPARISON MATRIX



WPT1 – Harmonization of regulative and incentive-based approaches

Version: V1.0

Lead contributor: ZAG

Date: 16/04/2021

Nature: Report | Diss. level: PU (Public)



This project is supported by the Interreg ADRION Programme funded under the European Regional Development Fund and IPA II fund.



INTERREG V B – Adriatic Ionian
ADRION PROGRAMME – SECOND CALL FOR PROPOSALS

PRIORITY AXIS 2 – Sustainable Region

Project duration: from 01/03/2020 to 31/08/2022

LEADER

ALMA MATER STUDIORUM – University of Bologna – Department of Architecture (IT)

PARTNERS

Institute for Vocational Training of Construction Workers in the province of Bologna – I.I.P.L.E. (IT)

City of Kaštela (HR)

Municipality of Gjirokaster (AL)

Regional development agency Backa (RS)

Slovenian national building and civil engineering institute (SI)

University of Crete (GR)

Region of Crete (GR)

The contents of this page exclusively reflect the authors' opinions and cannot be attributed in any way to the European Commission. The Commission cannot be held responsible for the use that might be made of the information contained herein.

Table of contents

Document Information	8
Document history	10
Definitions & Acronyms	10
Executive summary	11
1. Introduction	13
2. Methodology for collection of documents related to the reduction of seismic vulnerability.....	15
2.1 Selected topics	15
2.2 Methodology.....	16
3. Comparison matrix and basic analyses	17
3.1 Contextual information	19
3.2 Seismic norms	22
3.3 Building regulations	30
3.4 Urban planning regulation	36
3.5 Seismic incentive frameworks.....	43
3.6 Post-earthquake planning.....	50
3.7 Insurance against earthquakes	58
4. Main findings and conclusions	61
References.....	65

List of figures

Figure 1: Timeline of the Activity T1.1.....	17
Figure 2: Comparison between PP countries - country area.....	19
Figure 3: Comparison between PP countries - population.....	20
Figure 4: Number of collected norms/incentives among seismic norms regarding PP countries.	23

Figure 5: Seismic norms – number of documents regarding design (d), assessment (a) and retrofitting (r) of buildings (figure left – analysis of all documents, figure right – analysis by countries)	24
Figure 6: Seismic norms – number of documents regarding year of adoption (figure left – analysis of all documents, figure right – analysis by countries)	24
Figure 7: Seismic norms – number of documents regarding current validity	25
Figure 8: Seismic norms– number of documents regarding reference to the EU regulatory framework.....	25
Figure 9: Seismic norms – number of documents regarding level, at which the norm/incentive is in force	25
Figure 10: Seismic norms – number of documents regarding mandatory/optional norm/incentive.	26
Figure 11: Seismic norms – number of documents regarding target groups	26
Figure 12: Seismic norms – number of documents regarding pre-/post-earthquake period.....	26
Figure 13: Seismic norms – information, if the existing documents refer to cultural heritage	27
Figure 14: Number of collected norms/incentives among building regulations regarding PP countries.	30
Figure 15: Building regulations – number of documents regarding year of adoption (figure left – analysis of all documents, figure right – analysis by countries)	32
Figure 16: Seismic norms – number of documents regarding current validity	32
Figure 17: Building regulations – number of documents regarding reference to the EU regulatory framework.....	32
Figure 18: Building regulations – number of documents regarding level, at which the norm/incentive is in force.....	33
Figure 19: Building regulations – number of documents regarding mandatory/optional norm/incentive.....	33
Figure 20: Building regulations – number of documents regarding target groups	33
Figure 21: Building regulations – number of documents regarding pre-/post-earthquake period....	34
Figure 22: Building regulations – information, if the existing documents refer to cultural heritage .	34
Figure 23: Number of collected norms/incentives among urban planning regulation regarding PP countries.	36



Figure 24: Seismic norms – number of documents regarding year of adoption (figure left – analysis of all documents, figure right – analysis by countries).....	38
Figure 25: Urban planning regulations – number of documents regarding current validity	38
Figure 26: Urban planning regulations – number of documents regarding reference to the EU regulatory framework	38
Figure 27: Urban planning regulations – number of documents regarding level, at which the norm/incentive is in force	39
Figure 28: Urban planning regulations – number of documents regarding mandatory/optional norm/incentive.....	39
Figure 29: Urban planning regulations – number of documents regarding target groups.....	40
Figure 30: Urban planning regulations – number of documents regarding pre-/post-earthquake period.....	40
Figure 31: Urban planning regulations – information, if the existing documents refer to cultural heritage	41
Figure 32: Number of collected norms/incentives among seismic incentive frameworks regarding PP countries.	43
Figure 33: Seismic incentive frameworks – number of documents regarding design (d), assessment (a) and retrofitting (r) of buildings (figure left – analysis of all documents, figure right – analysis by countries)	45
Figure 34: Seismic incentive frameworks – number of documents regarding year of adoption (figure left – analysis of all documents, figure right – analysis by countries)	45
Figure 35: Seismic incentive frameworks – number of documents regarding current validity	46
Figure 36: Seismic incentive frameworks – number of documents regarding reference to the EU regulatory framework	46
Figure 37: Seismic incentive frameworks – number of documents regarding level, at which the norm/incentive is in force	46
Figure 38: Seismic incentive frameworks – number of documents regarding mandatory/optional norm/incentive.....	47
Figure 39: Seismic incentive frameworks – number of documents regarding target groups.....	47
Figure 40: Seismic incentive frameworks – number of documents regarding pre-/post-earthquake period.....	47



Figure 41: Seismic incentive frameworks – information, if the existing documents refer to cultural heritage	48
Figure 42: Number of collected norms/incentives among post-earthquake planning regarding PP countries.	50
Figure 43: Post-earthquake planning – number of documents regarding design (d), assessment (a) and retrofitting (r) of buildings (figure left – analysis of all documents, figure right – analysis by countries)	52
Figure 44: Post-earthquake planning – number of documents regarding year of adoption (figure left – analysis of all documents, figure right – analysis by countries)	52
Figure 45: Post-earthquake planning – number of documents regarding current validity	53
Figure 46: Post-earthquake planning – number of documents regarding reference to the EU regulatory framework	53
Figure 47: Post-earthquake planning – number of documents regarding level, at which the norm/incentive is in force	54
Figure 48: Post-earthquake planning – number of documents regarding mandatory/optional norm/incentive.....	54
Figure 49: Post-earthquake planning – number of documents regarding target groups.....	55
Figure 50: Post-earthquake planning – number of documents regarding pre-/post-earthquake period.....	55
Figure 51: Post-earthquake planning – information, if the existing documents refer to cultural heritage	55

List of tables

Table 1: Definition of TGs.	18
Table 2: Comparison matrix regarding contextual information on PP countries.	21
Table 3: Comparison matrix: seismic norms.....	29
Table 4: Comparison matrix: building regulation.	35

Table 5: Comparison matrix: urban planning regulation.	42
Table 6: Comparison matrix: seismic incentive frameworks.	49
Table 7: Comparison matrix: post-earthquake planning.	57
Table 8: Comparison matrix: insurance against earthquake.	60

Document Information

Project Acronym	ADRISEISMIC
Full title	New approaches for seismic improvement and renovation of Adriatic and Ionian historic urban centres
Project URL	https://adriseismic.adrioninterreg.eu/

Project Coordinator	Simona Tondelli	Email	simona.tondelli@unibo.it
Partner	UNIBO	Phone	+39 0512093166

Deliverable number: T1.1.2	Title	Comparison matrix
Work package number: WPT1	Title	Harmonization of regulative and incentive-based approaches

Delivery date	Expected: 28/02/2021	Actual: 16/04/2021
Status	Version: 1.0	Draft <input type="checkbox"/> Final <input checked="" type="checkbox"/>
Type	Internal Deliverable <input type="checkbox"/> Official Deliverable <input checked="" type="checkbox"/>	
Nature	Report <input checked="" type="checkbox"/> Other (please specify) <input type="checkbox"/>	
Dissemination Level	Public <input checked="" type="checkbox"/> Confidential (Consortium) <input type="checkbox"/>	

Authors	Petra Triller, Maja Kreslin, Andrej Anžlin (ZAG)
Other contributors	Giulia Marzani, Angela Santangelo, Simona Tondelli (UNIBO) Directorate of Urbanistics, Unit of European Integration and Foreign Aid - Municipality of Gjirokastra – Gjirokaster (ALB) City of Kaštela (CRO) Z. Skoula, P. Mochianakis - external collaborators of the University of Crete (GR) Jovana Borozan, Borko Bulajić – RDA Backa (RS)

Description of the deliverable (3-5 lines)	A matrix for comparing and analyzing the collected norms, regulation and incentives has been produced in order to allow the clustering of the common approaches, some shortcomings and good practices.
Key words	Norms; incentives; survey; seismic norms; building regulation, urban planning regulation; seismic incentive frameworks; post-earthquake planning; insurance against earthquakes

Document history

NAME	DATE	VERSION	DESCRIPTION
Deliverable template	10/09/2020	0.1	Template
1 st draft	16/03/2021	0.2	First draft
Deliverable in final version	16/04/2021	1.0	Final version of the deliverable

Definitions & Acronyms

Acronym	Full name
CA	Consortium Agreement
PP	Project Partner
LP	Lead Partner
WPT	Technical Work Package
TG	Target Group

Executive summary

The main purpose of the Technical Work Package 1 is to establish a common reference framework concerning regulative, operational and economic-financial instruments of seismic vulnerability and its reduction in the Adriatic and Ionian area, by harmonizing the different instruments and approaches. To achieve the overall objective of the work package, ADRISEISMIC has firstly developed an in-depth study of the existing regulations in the Countries involved regarding the reduction of seismic vulnerability on existing buildings and related forms of financial and economic incentives.

The Deliverable presents comparison matrices of the existing norms and incentives listed in a two-stage survey and presented in Appendices of the Deliverable T1.1.1. In a one-year period from March 2020 to February 2021 there have been quite a few collection-related activities regarding T1.1. Based on the contributions of all countries, a database of all collected data has been created. The main goal of the comparison matrix is to form the basis for further analyzes of the existing documentation in this work package and to highlight good practices and some shortcomings in PP countries.

In the introduction of the document, a brief description of the methodology of data collection within all participating partner countries: Albania, Croatia, Greece, Italy, Serbia and Slovenia is presented. In order to achieve the goals of the Technical Work Package 1, six specific topics, common to all project partner countries, have been identified, namely seismic norms, building regulations, urban planning regulation, seismic incentive frameworks, post-earthquake planning and insurance against earthquake.

Chapter *Comparison matrix and basic analyses* represents the most extensive section of deliverable. Introductory comparison matrix is dedicated to some contextual information about project partner countries, while further subchapters deal with individual topics among which the norms and incentives have been collected. In each of the subchapters, firstly, there is a comparison matrix with data on the collected norms and incentives among specific topic, followed by a summary of the first findings.

The parameters in the comparisons are: subsection of the norm/incentive, timeframe, period cluster, reference to the EU regulatory framework, level at which the documents is in force, information if the document is mandatory, target groups, referential period and reference to cultural heritage.

Based on the matrix (submatrices), first findings and conclusions have been made. While addressing **contextual information**, the PP countries have many similarities, but also quite a few important differences, especially in terms of the size and population of each country. In the field of **seismic norms**, the document, which is in use in all participating countries, is the European standard Eurocode, where each country has its national supplements. It should be emphasized that the use of the Eurocodes in Italy is voluntary. As some countries have additional existing norms in this category dealing with cultural heritage, this is an opportunity to highlight some good practices and to address shortcomings elsewhere. While analyzing **building regulations**, the preliminary evidence from the investigation conducted so far highlight that territorial scale and responsible authorities vary considerably when it comes to codes for intervening on the building stock. At this stage tailored approaches seem more promising than common approaches valid for all. The preliminary evidence from the investigation conducted so far in the field of **urban planning regulation** highlights that harmonizing the urban planning regulations can be challenging in the framework of the project, as many documents are in

force and, moreover, at different territorial scales. Differences in scale and responsible authorities make difficult to cluster common approaches. Therefore, recommendations to tailor the introduction of considerations on the vulnerability of the built environment in the historical centers seem a more promising strategy in the case of urban planning regulation. In addressing ***seismic incentive frameworks***, none of the documents deals with cultural heritage, which could be a great opportunity for improvement within the project. Therefore, the harmonization of the incentive framework among the project partners involved in ADRISEISMIC project represents one of the more concrete possibilities to enhance the risk awareness in those countries that do not have active programs related to the topic, and also the opportunity to allow the diffusion of economic and financial incentives to intervene on existing buildings by reducing seismic vulnerability. In the category of ***post-earthquake planning*** all the countries listed documents related to Civil Protection activities, therefore they have shown a clear opportunity to cluster and harmonize these types of documents within the activity T1.2, identifying the similarities and the differences among the procedures, addressing the different phases of disaster risk management. While studying the category of ***insurance against earthquakes***, it has been found out that none of the participating partner countries has a compulsory insurance or regulations to determine this topic, while all participating countries, however, collected data on optional earthquake insurance and the data are slightly different on the conditions and characteristics of voluntary earthquake insurance. The preliminary evidence from the investigation conducted so far shows an opportunity to further explore possible improvement and harmonization in this category as well.

The comparison matrix represents the first picture of the situation in the considered area. It should be noted that the matrices have so far included documents collected within PP countries by the end of January 2021 and consequently, are expected to be further supplemented. The comparison matrix will represent the basis for the following activities, within which a report on ADRISEISMIC common normative and regulative advanced standards for seismic vulnerability reduction as well as for the ADRISEISMIC Roadmap for the harmonization of the existing regulative- and incentive-based approaches will be prepared.

1. Introduction

The main purpose of the WPT1 is to establish a common reference framework concerning regulative, operational and economic-financial instruments of seismic vulnerability and its reduction in the Adriatic and Ionian area, by harmonizing the different instruments and approaches.

The reference context is the current European and National legislations and any further reference (i.e. Guidelines, recommendations, fiscal incentives) to reduce seismic vulnerability by programming anti-seismic interventions.

WPT1 consists of three activities through which the main goal will be achieved.

This first activity, **A.T1.1: Collection and systematization of norms and incentives**, aims at collecting, analysing and systematizing current national and/or local planning and regulatory instruments and approaches to seismic norms and incentives, seismic vulnerability standards as well as related financial and economic incentives in each involved Partner State. The aim is to establish a shared approach to the problem of seismic vulnerability and its reduction, in order to allow to plan interventions for vulnerability reduction, to be based on the same reference standards, and therefore ensure a higher security and quality of the living environment, reducing risks for people and the environment.

In the next activity, **A.T1.2: Assessment and systematization of norms and incentives**, the project will systematize the collected norms identifying gaps and good practices in order to share uniform reference standards among the partnership. Thanks to the comparison matrix (D.T1.1.2), the norms and incentives collected during the previous activity will be deeply analysed and gaps and good practices will be identified within the regulative and normative tools of the involved Countries. This activity will lead to the definition of common normative and regulative advanced standards for seismic vulnerability reduction (D.T1.2.1) by capitalizing existing good practices, such as the excellence of some regulative frameworks concerning the recovery of many urban centers and buildings that have been damaged after significant seismic events, as well as notable urban planning tools and regulations, such as the restoration plans of the historical centers. This activity will lead to the definition of 6 Roadmaps (D.T1.2.2), one for each Country involved in ADRISEISMIC, tailored thanks to the local workshops in A.T1.3.

Finally, within the last activity, **A.T1.3: Tailoring and validation of common standards for norms and incentives**, ADRISEISMIC will define specific recommendations for improving norms and incentives for reducing seismic vulnerability of urban centres at national and regional levels, with special regards to those Countries where those instruments will emerge as less effective. This activity runs in parallel with the previous one and is aimed at validating and tailoring the common advanced standards sketched in A.T1.2 within the specific territorial contexts. Notably this activity will finalize the systematization of legislative, regulative and financial instruments performed at national/local level by involving local stakeholders and TGs as well as the Associate Partners through 4 specific local workshops with the aim of assessing the feasibility of the proposed approaches and identifying pathways to influence the current practices and rules for seismic retrofitting and seismic vulnerability reduction in each Country involved. This activity will tailor the contents of the 6 Roadmaps that will be finalized in A.T1.2 (D.T1.2.2).

While all PPs are involved in the collection of norms and incentives in place within their own Countries, the Universities and research centres (LP, PP6-7) will be primarily involved in systematizing and assessing current norms and incentives, while territorial bodies and administrations (PP3,4,5,8) will be primarily involved in identifying how to improve their norms and procedures with the aim of a higher harmonization and standard of the regulations for increasing the effectiveness of seismic retrofitting.

To achieve the overall objective of the work package, Adriseismic has firstly developed an in-depth study of the existing regulations in the Countries involved regarding the reduction of seismic vulnerability on existing buildings and related forms of financial and economic incentives. A particular attention has been paid to collecting specific regulations and tools addressing the historical parts of the cities, intended as the more fragile but at the same time the richest of cultural heritage.

Deliverable T1.1.2 contains comparison matrices of all collected norms and incentives listed in a two-stage survey and presented in Appendices of the Deliverable T1.1.1.

Chapter 2 briefly presents the methodology of data collection within all participating partner countries: Albania, Croatia, Greece, Italy, Serbia and Slovenia. More detailed methodology description can be found in deliverable T1.1.1.

Chapter 3 represents the most extensive section of deliverable. First, the comparison matrix for the contextual information of the participating PP countries is presented. It will help within further activities of the WPT1 to make concrete comparisons of the state of norms and incentives in the PP countries. Further subchapters are dedicated to individual topics among which the norms and incentives have been collected. In each of the subchapters, there is first a comparison matrix with some data on the collected norms and incentives among specific topic, followed by a summary of first findings. Additionally, graphical representations of comparisons of the state of the collected norms and incentives between PP countries according to specific considered parameters are added.

The last chapter (Chapter 4), summarizes the main findings regarding the data in the comparison matrices and highlights the facts that will affect the further development of the project.

2. Methodology for collection of documents related to the reduction of seismic vulnerability

In order to achieve the goal of this deliverable T1.1.2, the main topics connected to seismic vulnerability reduction, among which the existing norms and incentives were collected, have been selected. Besides that, the methodology of collecting the abovementioned documents, has been chosen. Both, the topics as well as methodology are briefly presented below, while a detailed description can be found in the Deliverable T1.1.1: Report on collected norms and incentives [1].

2.1 Selected topics

In order to define, which documents should be collected in order to run the Activity T1.1 within WPT1, specific topics have been identified in order to cover as best as possible the overall situation related to reduction of seismic vulnerability of built environment in all project partner countries. Six topics, common to all project partner countries, have been identified and are briefly described below.

Seismic norms. The topic seismic norms is dedicated to all regulations and other existing documentation dealing with the design of new structures and assessment of existing ones taking into account their seismic resistance. Seismic norms are type of building documents designed to protect property and life in buildings in the event of an earthquake. Seismic norms were created and developed in response to earthquakes that occurred in the past and caused enormous damage, especially to densely populated urban centers.

Building regulations. The topic covers all the documents providing general rules for the construction of new buildings have been collected, together with the procedures that can be applied to the transformation of the building stock. Dealing with a set of rules and mandatory guidelines to be followed when intervening on buildings, this category is the most punctual one when it comes to the definition of the possible interventions on the built environment, often near to the building scale.

Urban planning regulation. The topic includes laws and instruments which are in force to manage the spatial planning and the sustainable development of urban areas. Recently, spatial planning has been considered as one of the most important instruments to reduce the vulnerability of the built environment to natural hazards, to turn cities into more resilient environments, therefore, it is one of the key topics addressed in WPT1.

Seismic incentive frameworks. Economic and financially related barriers, as well as poor awareness of the issue, are one of the most frequent impediments inhibiting seismic retrofitting interventions. In this framework, economic and volumetric incentives represent an important instrument to increase the diffusion of seismic vulnerability reduction interventions, especially if combined with informative campaigns aiming at raising awareness towards seismic safety.

Post-earthquake planning. The topic post-earthquake planning covers all activities related to the optimization of the seismic response and at the same time supports the awareness of various stakeholders about possible scenarios in the event of an earthquake. Disaster preparedness consists of a set of measures undertaken by

governments, organisations, communities or individuals to better respond and cope with the immediate aftermath of a disaster, whether it is man-made or caused by natural hazards. The existing norms, incentives and tools help to reduce seismic vulnerability of built environment. The topic covers a wide area. The latter includes general legislation relating primarily to civil protection and its duties in the event of an earthquake.

Insurance against earthquakes. Insurance against earthquakes is a form of property insurance that pays a policy holder in the event of an earthquake that causes damage to the property. Earthquake insurance can cover damage to a home, personal belongings and some other expenses in a case that earthquake happens. The topic is not of such an architectural-technical type, but significantly contributes to our financial capacity to reduce the seismic vulnerability of the building in the event of possible future earthquakes.

2.2 Methodology

The aim of the first activity within the work package was to collect existing norms and incentives for the purpose of reducing seismic vulnerability in all PP countries. In order to achieve the best possible comparability between countries, while incorporating as much existing documentation as possible and obtaining its detailed data, it was decided to collect the data in the form of a survey. As part of this activity, all the norms and incentives that are currently in force in each PP country have been collected in a form of a two-stage survey. Detailed descriptions as well as blank version of the 2nd stage of the survey are available in Deliverable T1.1.1 [1].

In a one-year period from March 2020 to February 2021 there have been quite a few collection-related activities regarding T1.1, which are briefly presented in Figure 1. The description of individual steps of creating a collection of existing norms and incentives of all partner countries can be found in Deliverable T1.1.1 [1].

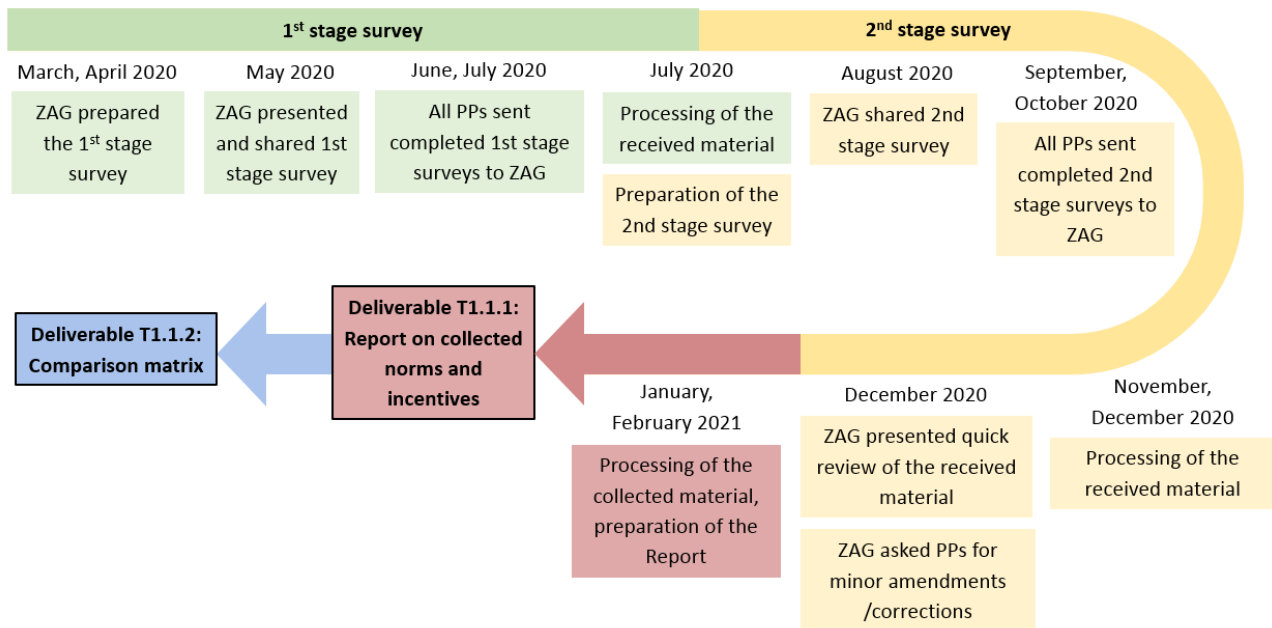


Figure 1: Timeline of the Activity T1.1.

3. Comparison matrix and basic analyses

Based on the contributions of all countries, a database of all collected data has been created. All data collected under activity T1.1 can be found in the appendixes of the Deliverable T1.1.1 [1]. The latter will form the basis for further analysis.

The **basic information** subsection below compares the general characteristics of the participating countries.

The following are the subchapters in which comparisons of the collected material is presented in more detail with regard to the **different topic** (chapter 2.1) and depending on the individual country. The parameters in the comparisons are:

- **Subsection of the norm/incentive**
 - Norm/incentive among seismic norms, may belong to the following subsections:
 - design of new structures
 - assessment of existing structures
 - retrofitting structures
 - Norm/incentive among seismic incentive frameworks may belong to the following subsections:
 - Financial/economic incentive
 - Raising awareness
 - Norm/incentive among post-earthquake planning may belong to the following subsections:
 - general legislation documents relating to civil protection

- organization of earthquake response/rescue
 - training programs for the earthquake
 - planning
 - tools
 - action plans and
 - other
- **Timeframe:** information about when the inserted norm/incentive has been accepted;
 - **Period cluster:** the collected norms and incentives have been divided into the subsequent time periods:
 - before 1980
 - 1981-2000
 - 2001-2010
 - 2011-2015
 - 2016-2021
 - Not accepted yet
 - **Reference to the EU regulatory framework:** information on a possible link to existing European regulations requiring the existence of the norm/incentive in question;
 - **Level at which the documents is in force** (e.g. national, regional, municipal... level);
 - **Information if the document is mandatory;**
 - **Target groups:** for each existing norm and incentive one of 4 TGs has been defined according to the Table 1:

Table 1: Definition of TGs.

TARGET GROUP	SUBGROUPS
Public authority (PA)	Local public authority
	Regional public authority
	National public authority
Sectoral agency (SA)	Sectoral agency
Education/training (ET)	Higher education and research
	Education/training centre and school
Professional fields (PF)	Enterprise, excluding SME
	SME
	Interest groups including NGOs
	Practitioners
General public (GP)	General public

- **Referential period:** period which the norm/incentive refers to pre/post-earthquake period;

- **Reference to cultural heritage:** information if the document in any of its parts explicitly states the cultural heritage or refers to it.

For each topic, the comparison matrix is presented. It comprises data from all countries and above-mentioned parameters.

The first findings, which were made on the basis of the collected norms and incentives and on the basis of their comparisons, are added to the matrices. More detailed analyzes will be prepared within the Activity T1.2

3.1 Contextual information

The countries participating in the project have many similarities, but also quite a few important differences. In the further activities of the work package, the comparison matrix of collected norms and incentives will serve for detailed analysis of shortcomings and good practices among specific topics. In order to make it easier to explain some certain differences between countries, Table 2 shows some general data for each of the countries. In terms of the territorial extension, Italy stands out strongly, as it is more than twice the size of the next, Greece, and as much as 15 times larger than the smallest country, Slovenia, as presented in Figure 2. In terms of population, Italy is “leads” even more - with over 60 million inhabitants it is far ahead of all other PP countries, as there are 5-30 times fewer people living there (Figure).

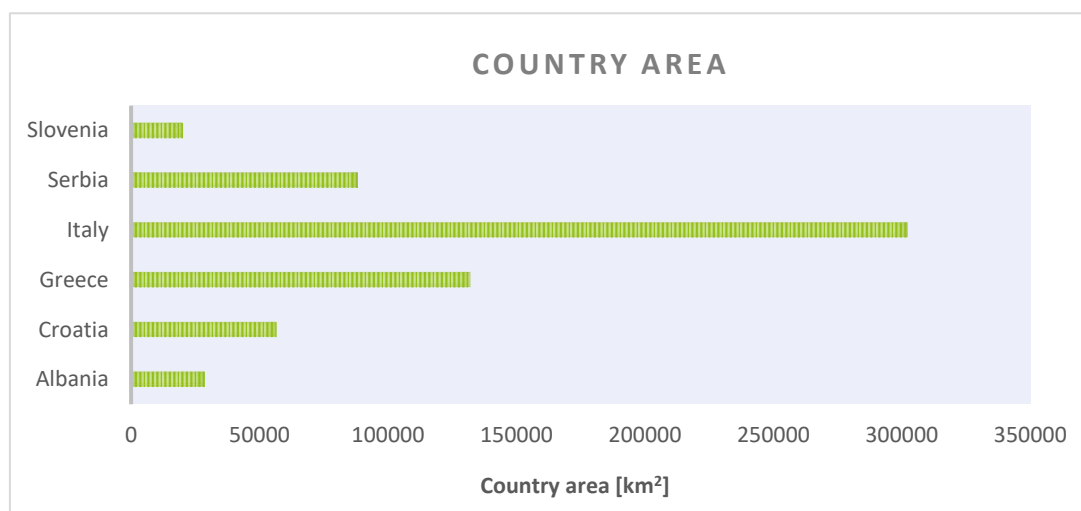


Figure 2: Comparison between PP countries - country area.

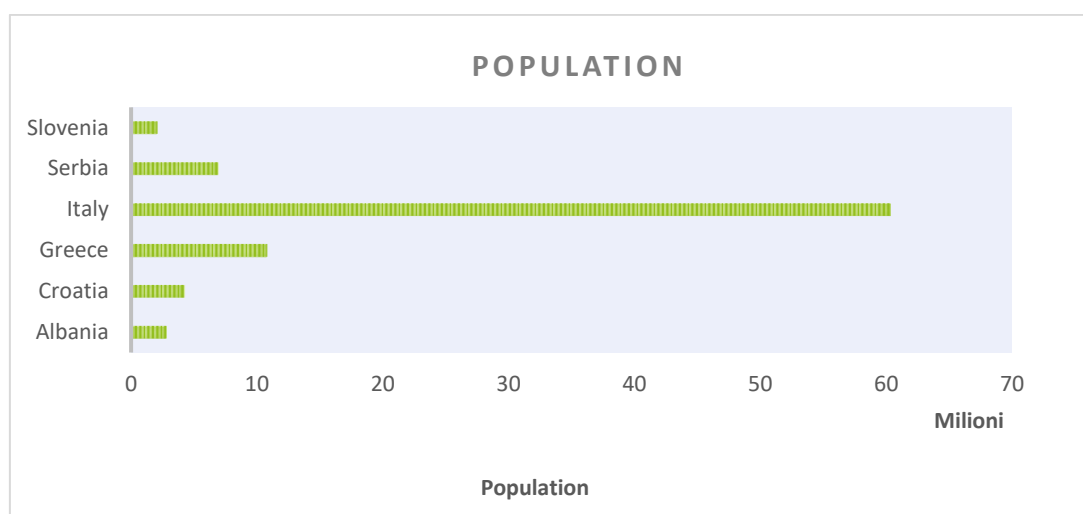


Figure 3: Comparison between PP countries - population.

PP country /Topic		Albania	Croatia	Greece	Italy	Serbia	Slovenia
Project partner name (abbreviation)		PP4 - Municipality of Gjirokaster (Gjirokaster)	PP3 – City of Kaštela (Grad Kaštela)	PP7 – University of Crete (UoC) PP8 – Region of Crete (RoC)	LP – Alma Mater Studiorum, University of Bologna – Department of Architecture (UNIBO-DA) PP2 – Institute for Vocational Training of Construction Workers in the province of Bologna (IIPLE)	PP5 – Regional Development Agency Backa (RDA Backa)	PP6 – National Building and Civil Engineering Institute (ZAG)
Country		Albania	Croatia	Greece	Italy	Serbia	Slovenia
Country area [km2]		28 748	56 594	132 049	302 068	88 361	20 273
Population (Year 2020)		2 845 955	4 284 889	10 816 286	59.641.488	6 963 764	2 094 060
Administrative division of the country	Number of levels	4	3	3	4	3	3
	Divisions	national regional (12) municipal (61) local (373)	national country (20+1) local (555)	national regional (13) local (332)	national regional (20) provincial (107) local (7904)	national regional (5) districts (29) local (174)	national regional (12) local (212)

Table 2: Comparison matrix regarding contextual information on PP countries.

3.2 Seismic norms

Descriptive data on collected documents in the field of *seismic norms* are summarized in Table 3 for all participating countries. They are analyzed according to the following parameters:

- subsection of the norm/incentive (design – d, assessment – a, retrofitting – r),
- timeframe and period cluster,
- reference to the EU regulatory framework,
- level at which the document is in force,
- information if the document is mandatory,
- target groups,
- referential period (pre/post-earthquake),
- reference to cultural heritage;

Results of basic analyses are presented in Figures from 5 to 13.

In the field of *seismic norms*, 24 documents from 6 countries were collected (Figure 4). As expected, all participating countries have at least one document among this topic. Most documents (9) have been collected in Italy; Slovenia has only 1 document, whereas other countries have collected between 2 and 5 documents. The document, which is in use in all participating countries, is the European standard Eurocode, where each country has its national supplements. It should be emphasized that the use of the Eurocodes in Italy is voluntary, as the main document used for the design of new structures and the retrofitting of the existing ones is a document valid at national level. In Italy and Greece, there are still many remaining regulations in force today, which regulate the broader field of seismic legislation and are related to urban planning and post-earthquake planning. All PP countries have listed seismic norms that are in force at national level, while Italy has also some regulations on regional level. Also, Italy and Greece have some regulatory documents that specifically deal with cultural heritage.

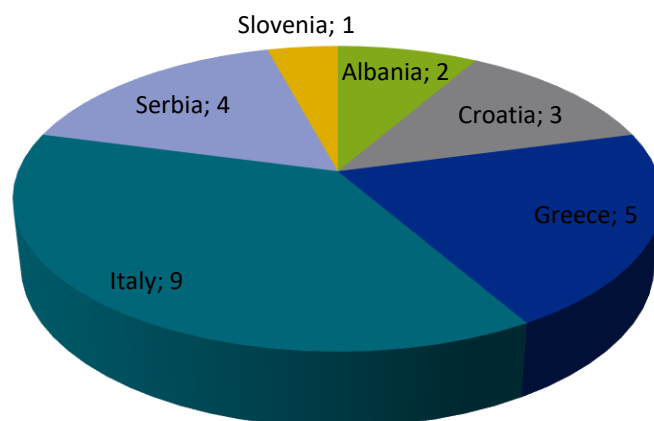


Figure 4: Number of collected norms/incentives among seismic norms regarding PP countries.

The results of the basic analysis of the collected documents according to the various parameters described above show the following:

- In all countries, the documents cover all subsections in the field of Seismic norms, e.g. design, assessment, and retrofitting of structures (Figure 5). 16 documents are intended for design and 19 for assessment as well as for retrofitting. Most of the documents cover all subsections (d&a&r), whereas there are only 3 documents collected that cover only one subsection.
- Practically half of all documents have been adopted in the last 5 years, e.g. 10 of 24 documents (Figure 6). From 2000 to 2016, 9 documents were issued, the rest documents being older. Out of a total of 24 documents, 20 are in force, and 1 will be adopted shortly. The 3 documents included in the database are older and are no longer valid (Figure 7), but they have had important role in ex-Yugoslavia and could be useful for the next activities within this work package.
- 9 collected documents relate to the EU regulatory framework (Figure 8).
- All documents, except for four Italian norms, are valid at the national level. In Italy, some topics that can be included in the field of the seismic norms are addressed also at regional level, since some competences are demanded from the State to Regions. For the purpose of ADRISEISMIC, Emilia-Romagna region only is considered, which is the one where the pilot case selected in WPT2 is located. Therefore, seismic norms in force in other Italian region are not included in the survey (Figure 9).
- 21 documents are adopted by law, only 3 documents (2 from Croatia and 1 from Greece) present a manual that is not mandatory (Figure 10).
- Documents within the topic “Seismic norms” are mostly used by Professional fields profiles (e.g. enterprise - excluding SME, SME, interest groups including NGOs, practitioners), but documents can also be used by others (general public, public authority) (Figure 11).

- The vast majority of documents cover both, the period before and after the earthquake, only 5 documents are intended for only one referential period - pre or post-earthquake (Figure 12)
- 8 documents from Italy, Greece and Croatia relate to cultural heritage. The rest collected documents do not specifically addressed cultural heritage, including the Eurocode, which is used in almost all countries. Slovenia, Serbia and Albania do not have any document in the field of “Seismic norms” dealing with cultural heritage (Figure 13).

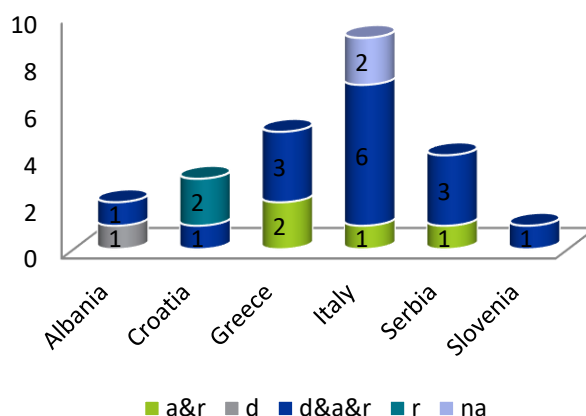
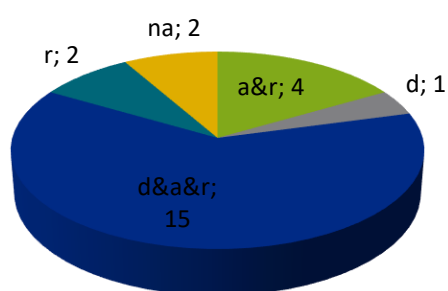


Figure 5: Seismic norms – number of documents regarding design (d), assessment (a) and retrofitting (r) of buildings (figure left – analysis of all documents, figure right – analysis by countries)

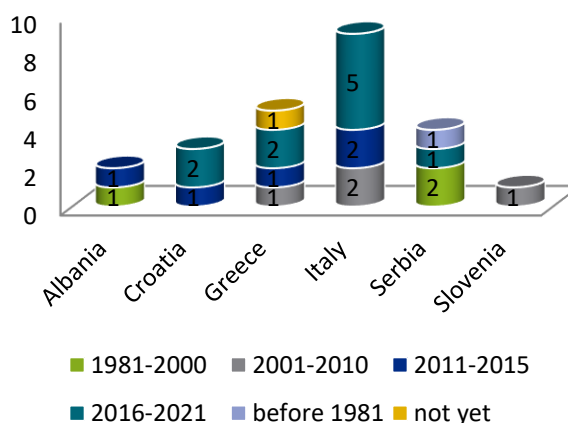
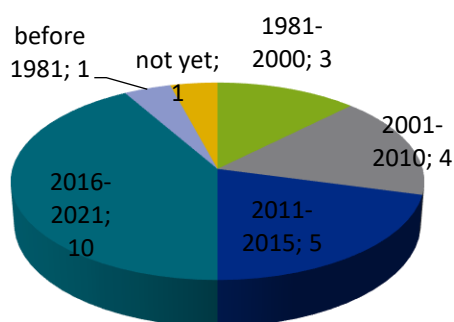


Figure 6: Seismic norms – number of documents regarding year of adoption (figure left – analysis of all documents, figure right – analysis by countries)

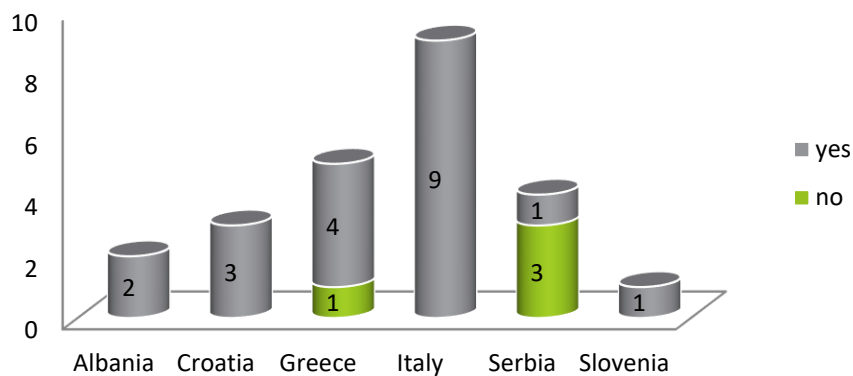


Figure 7: Seismic norms – number of documents regarding current validity

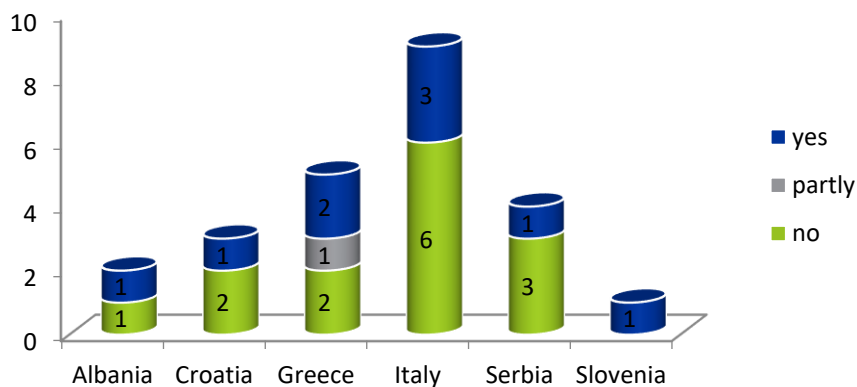


Figure 8: Seismic norms– number of documents regarding reference to the EU regulatory framework

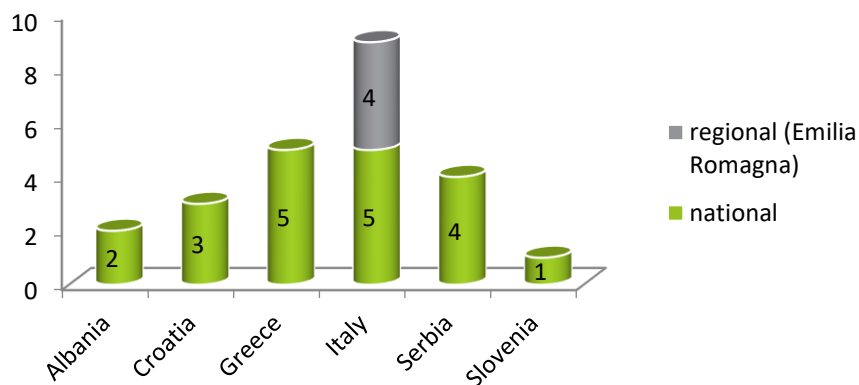


Figure 9: Seismic norms – number of documents regarding level, at which the norm/incentive is in force

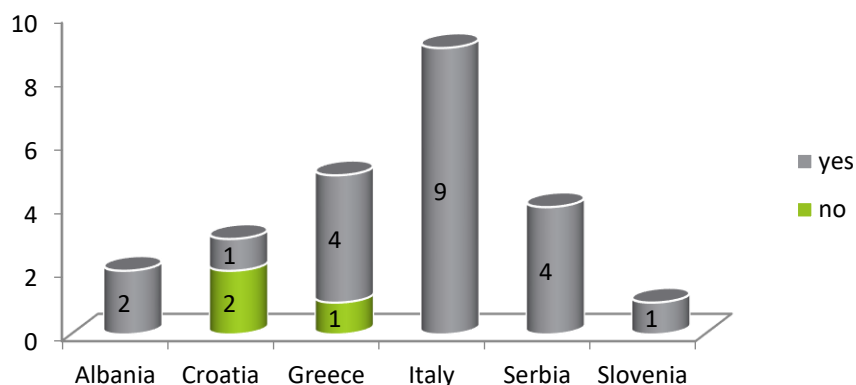


Figure 10: Seismic norms – number of documents regarding mandatory/optional norm/incentive

TARGET GROUP	NUM. OF DOC.
Public authority (PA)	1
Sectoral agency (SA)	/
Education/training (ET)	/
Professional fields (PF)	24
General pubic (GP)	4

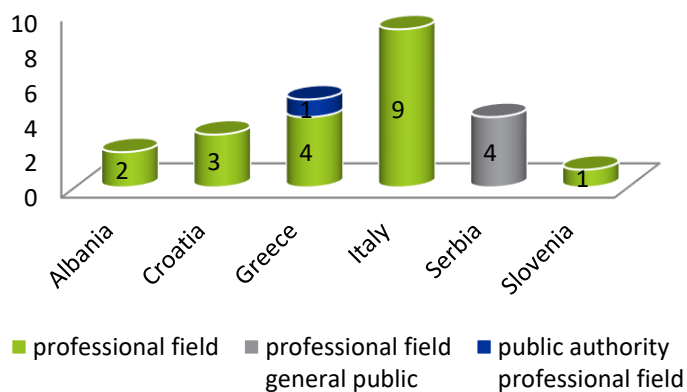


Figure 11: Seismic norms – number of documents regarding target groups

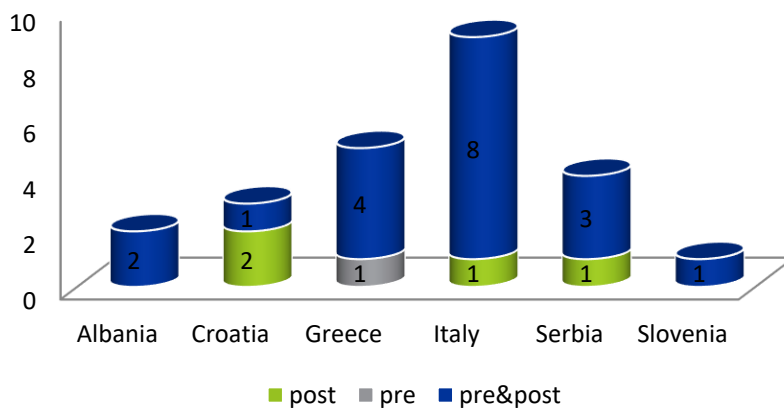


Figure 12: Seismic norms – number of documents regarding pre-/post-earthquake period

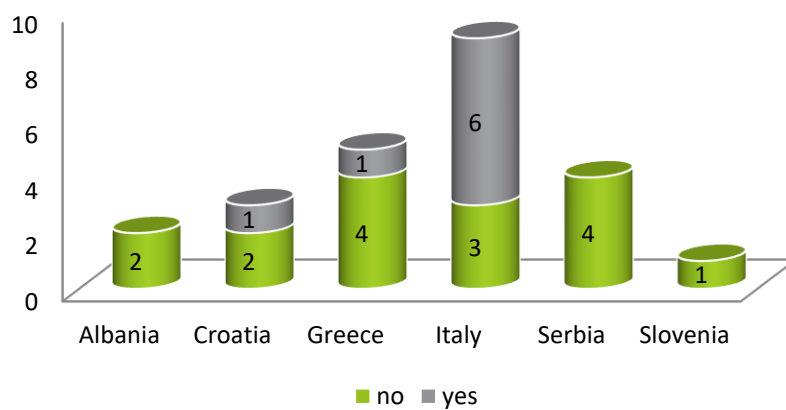


Figure 13: Seismic norms – information, if the existing documents refer to cultural heritage

SEISMIC NORMS													
ID	Country	ID_d	Title	Design/ assessment/ retrofitting	Accepted (year)	Period cluster	Timeframe (currently in force) yes/no/?	Reference to the EU regulatory framework	Level	Mandatory regulation (yes/no/?)	Target groups	Pre/post- earthquake period	Cultural heritage
1	Italy	2.1_IT	NTC 2018 – Technical frameworks for construction	d&a&r	2018	2016-2021	yes	yes	national	yes	professional field	pre&post	yes
2	Italy	2.2_IT	CIRCOLARE ALLE NTC 2018 – Explanatory Circular for NTC 2018 correct application	d&a&r	2019	2016-2021	yes	yes	national	yes	professional field	pre&post	yes
3	Italy	2.3_IT	DPCM (Directive of President of Council Minister) 9/02/2011 - Evaluation and reduction of seismic risk of cultural heritage in according to NTC 2008	a&r	2011	2011-2015	yes	yes	national	yes	professional field	pre&post	yes
4	Italy	2.4_IT	L.R. (Regional Law) n.19/2008 and following changes - Norms for the reduction of seismic risk	d&a&r	2008	2001-2010	yes	no	regional (Emilia Romagna)	yes	professional field	pre&post	yes
5	Italy	2.5_IT	D.G.R. (Decree of Regional Council) n. 2272/2016 Document identifying the interventions of no relevance for the public safety for seismic purposes and in-progress variations, concerning structural parts, which are not of a substantial nature	d&a&r	2016	2016-2021	yes	no	regional (Emilia Romagna)	yes	professional field	pre&post	no
6	Italy	2.6_IT	L.R. (Regional Law) n. 16/2012 Norms for reconstruction in areas affected by the earthquake of 20 and 29 May 2012.	d&a&r	2012	2011-2015	yes	no	regional (Emilia Romagna)	yes	professional field	pre&post	yes
7	Italy	2.7_IT	D.Lgs (Legislative Decree) n.189/2016 and subsequent modifications and additions	d&a&r	2016	2016-2021	yes	no	national	yes	professional field	post	yes
8	Italy	2.8_IT	OPCM (Ordinance of the President of the Council of Ministers) n. 3274/2003 and subsequent modifications and additions- general criteria for seismic classification of national territory	d&a	2003	2001-2010	yes	no	national	yes	professional field	pre&post	no
9	Italy	2.9_IT	DGR (Decree of Regional Council) n. 1164/2018 - seismic classification of municipalities in Emilia-Romagna	d&a	2018	2016-2021	yes	no	regional (Emilia Romagna)	yes	professional field	pre&post	no
10	Croatia	2.1_HR	Eurocode 8	d&a&r	2014	2011-2015	yes	yes	national	yes	professional field	pre&post	no
11	Croatia	2.2_HR	Manual for earthquake restoration of existing masonry buildings	r	2020	2016-2021	yes	no	national	no	professional field	post	no
12	Croatia	2.3_HR	Techniques of repair and reinforcement of masonry buildings	r	2020	2016-2021	yes	no	national	no	professional field	post	yes
13	Albania	2.1_AL	KTP-N2-89	d	1989	1981-2000	yes	no	national	yes	professional field	pre&post	no
14	Albania	2.2_AL	Eurocode 8	d&a&r	2014	2011-2015	yes	yes	national	yes	professional field	pre&post	no
15	Serbia	2.1_RS	Projektovanje seizmički otpornih konstrukcija (SRPS EN 1998) Eng: Eurocode 8: Design of structures for earthquake resistance (EN 1998)	d&a&r	2019	2016-2021	yes	yes	national	yes	professional field general public	pre&post	no
16	Serbia	2.2_RS	Pravilnik o tehničkim normativima za izgradnju objekata visokogradnje u seizmičkim područjima Eng: Technical Regulations for the Design and Construction of Buildings in Seismic Regions	d&a&r	1981	1981-2000	no	no	national	yes	professional field general public	pre&post	no
17	Serbia	2.3_RS	Pravilnik o privremenim tehničkim propisima za građenje u seizmičkim područjima Eng: Provisional Technical Regulations for Construction in Seismic Regions	d&a&r	1964	before 1981	no	no	national	yes	professional field general public	pre&post	no
18	Serbia	2.4_RS	Pravilnik o tehničkim normativima za sanaciju, ojačanje i rekonstrukciju objekata visokogradnje oštećenih zemljotresom i za rekonstrukciju i revitalizaciju objekata visokogradnje Eng: Technical Regulations for Repair, Strengthening and Reconstruction of Building Construction Damaged by Earthquakes and for Reconstruction and Rehabilitation of Building Structures.	a&r	1985	1981-2000	no	no	national	yes	professional field general public	post	no
19	Slovenia	2.1_SI	Eurocode 8: EN 1998-1 (2004)	d&a&r	2008	2001-2010	yes	yes	national	yes	professional field	pre&post	no
20	Greece	2.1_GR	EAK 2000 (Greek Antiseismic Regulations)	d&a&r	2020	2016-2021	yes	partly	national	yes	professional field	pre	no
21	Greece	2.2_GR	KANEPE 2017 (Intervention National Regulations)	a&r	2017	2016-2021	yes	no	national	yes	professional field	pre&post	no
22	Greece	2.3_GR	EUROCODE (6.1, 6.2, 6.3, 7.1, 7.2, 8.1, 8.3, 8.6)	d&a&r	2005	2001-2010	yes	yes	national	yes	professional field	pre&post	no

SEISMIC NORMS													
ID	Country	ID_d	Title	Design/ assessment/ retrofitting	Accepted (year)	Period cluster	Timeframe (currently in force) yes/no/?	Reference to the EU regulatory framework	Level	Mandatory regulation (yes/no/?)	Target groups	Pre/post- earthquake period	Cultural heritage
23	Greece	2.4_GR	Approval of Eurocode use and appliance, in combination with National annexes - ΦΕΚ 1457 Β΄ – 5/6/2014	d&a&r	2014	2011-2015	yes	yes	national	yes	professional field	pre&post	no
24	Greece	2.5_GR	Guidelines for assessment and structural interventions on mansory buildings	a&r	not	not yet	no	no	national	no	public authority professional field	pre&post	yes

Period cluster: before 1980; 1981-2000; 2001-2010; 2011-2015; 2016-2021

Table 3: Comparison matrix: seismic norms.

3.3 Building regulations

Descriptive data on collected documents in the field of **building regulations** are summarized in Table 4 for all participating countries. They are analyzed according to the following parameters:

- timeframe and period cluster,
- reference to the EU regulatory framework,
- level at which the document is in force,
- information if the document is mandatory,
- target groups,
- referential period (pre/post-earthquake),
- reference to cultural heritage;

Results of basic analyses are presented in Figures from 15 to 22.

In the field of **building regulations**, 11 documents from 6 countries have been collected (Figure 14). All participating countries have at least one document among this topic. Most documents have been collected in Italy and Greece (3 documents each); Serbia has collected 2 documents, whereas in other countries only one document per country has been listed. All the six countries involved in the survey have listed building regulations in force at national level. All of PP countries have one document that represents “national building law”. Only in Italy, alongside the national legislation, it is possible to find building regulations enacted at a local scale, namely the municipal level. This is due to the fact that in Italy the urban planning subject is a specific competence of Regions and, in particular, urban planning tools include building codes and regulation that are enacted by each municipality. For the purpose of ADRISEISMIC project, only the Municipality of Bologna is considered, which is where the Pilot case is located since in Italy there are a great number of Municipalities, and investigating all of them is out from ADRISEISMIC scope.

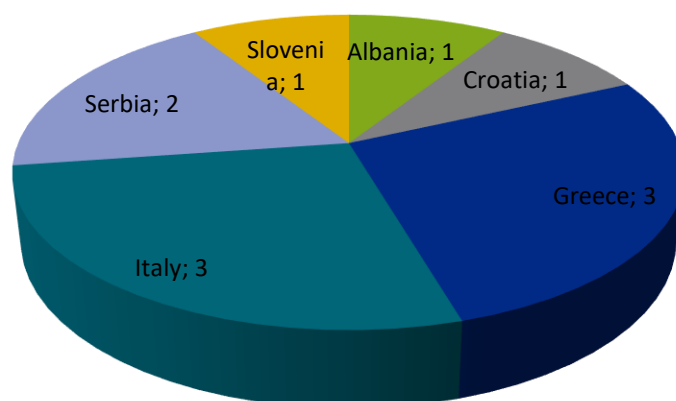


Figure 14: Number of collected norms/incentives among building regulations regarding PP countries.

The results of the basic analysis of the collected documents according to the various parameters described above show the following:

- Practically all documents have been adopted after 2000 – 5 documents in the last 5 years and 5 documents from 2001 to 2015. Only one document, which is from Greece, was accepted in 1989. All documents are currently in force.
- Only Albanian, Croatian and Serbian documents relate to the EU regulatory framework (Figure 17), while the remaining documents do not provide a specific link to the European regulatory framework.
- All documents are accepted at the national level except for two Italian regulations which are enacted at municipal level. In particular, Italy has listed two documents in force for the municipality of Bologna, belonging to Emilia Romagna region (Figure 18). To date, these two documents are both in force because it is a transitory period that stands in the regional process of renovation of the urban planning law, but when the most recent document will be definitively approved by the Municipality it will replace the other regulation listed. Documents from other Italian regions are not included in the survey.
- All documents are adopted by law and represent mandatory norms (Figure 19).
- Documents within the topic building regulations are mostly used by the profiles, which can be listed among professional field (e.g. enterprise - excluding SME, SME, interest groups including NGOs, practitioners). Few documents are also intended for public authorities, while the target group of two of the listed norms is general public (Figure 20).
- Albanian, Greek, Italian and Serbian documents cover both, the period before and after the earthquake. Slovenian and Croatian documents are intended only to pre-earthquake period (Figure 21).
- Half of the collected documents (5 documents from Italy, Serbia and Slovenia) relate to cultural heritage. The remaining norms do not specifically address this parameter (Figure 22).

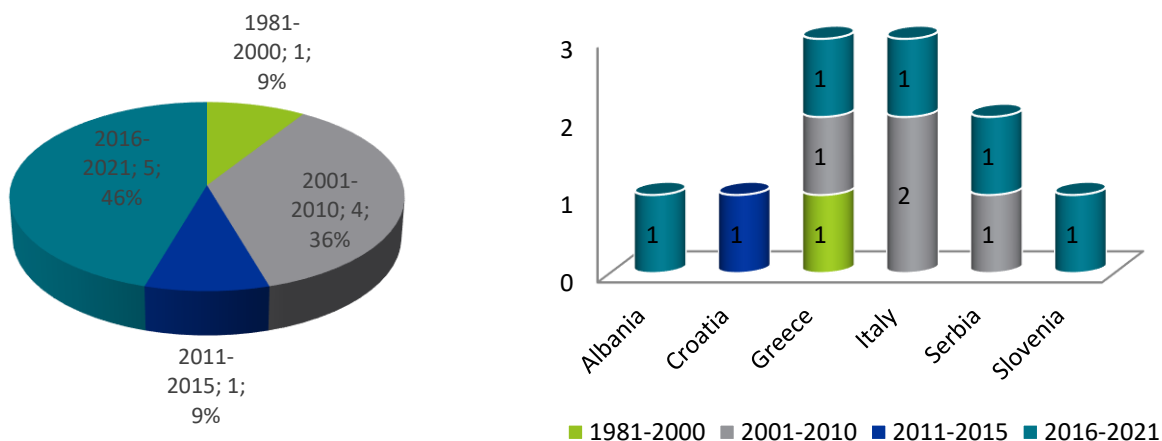


Figure 15: Building regulations – number of documents regarding year of adoption (figure left – analysis of all documents, figure right – analysis by countries)

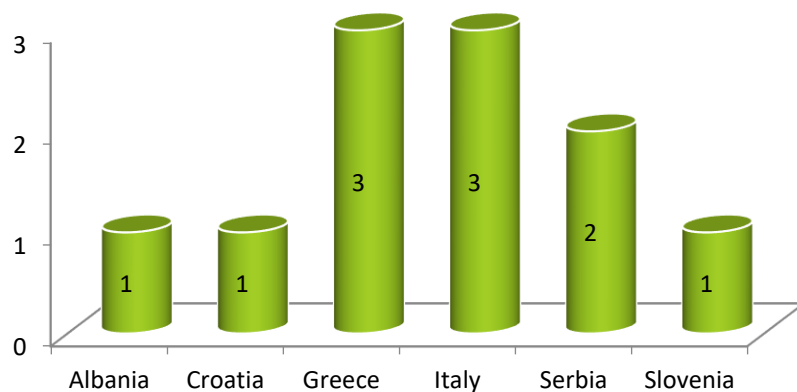


Figure 16: Seismic norms – number of documents regarding current validity

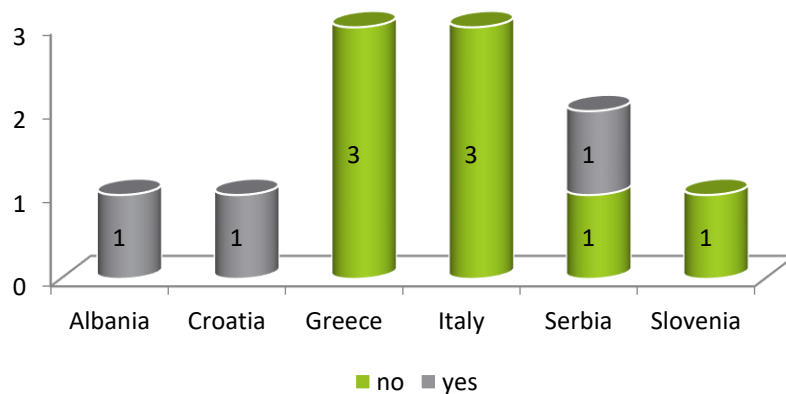


Figure 17: Building regulations – number of documents regarding reference to the EU regulatory framework

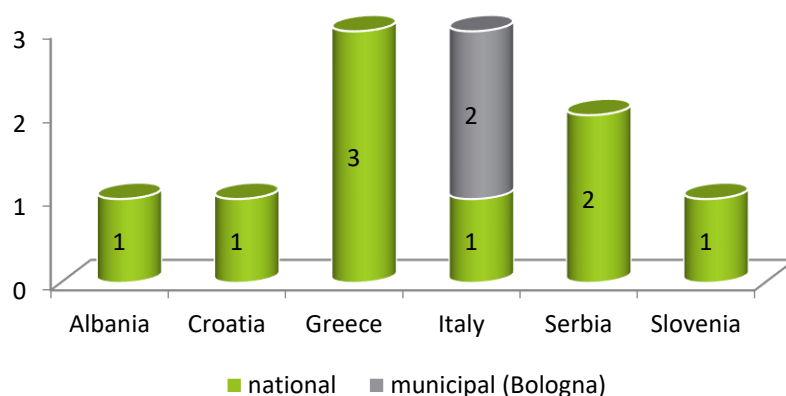


Figure 18: Building regulations – number of documents regarding level, at which the norm/incentive is in force

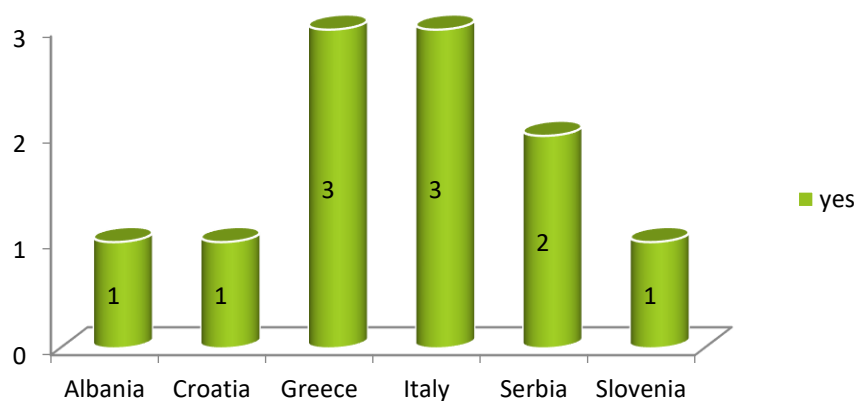


Figure 19: Building regulations – number of documents regarding mandatory/optional norm/incentive

TARGET GROUP	NUM. OF DOC.
Public authority (PA)	3
Sectoral agency (SA)	/
Education/training (ET)	/
Professional fields (PF)	11
General public (GP)	2

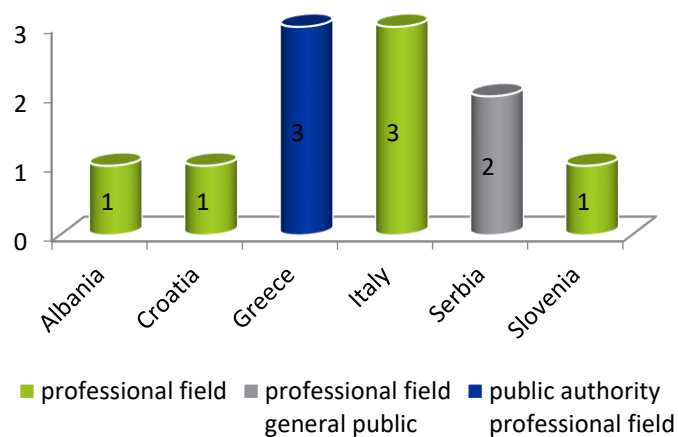


Figure 20: Building regulations – number of documents regarding target groups

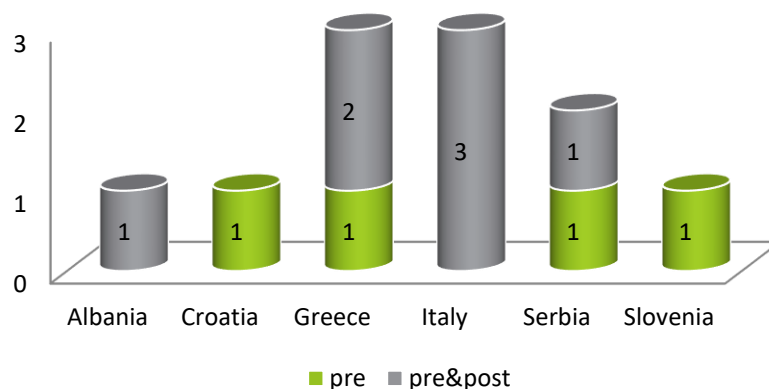


Figure 21: Building regulations – number of documents regarding pre-/post-earthquake period

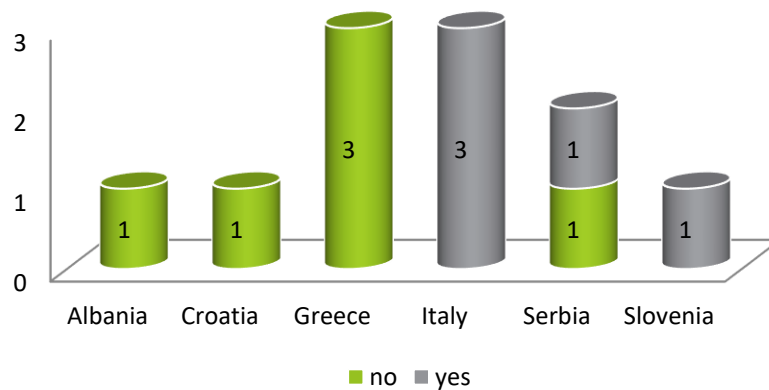


Figure 22: Building regulations – information, if the existing documents refer to cultural heritage

BUILDING REGULATION

ID	Country	ID_d	Title	Accepted (year)	Period cluster	Timeframe (currently in force) yes/no/?	Reference to the EU regulatory framework	Level	Mandatory regulation (yes/no/?)	Target groups (AF)	Pre/post-earthquake period	Cultural heritage
1	Italy	3.1_IT	RUE – urban planning regulations	2009	2001-2010	yes, but will be soon replaced by RE (3.2_IT)	no	municipal (Bologna)	yes	professional field	pre&post	yes
2	Italy	3.2_IT	RE – new urban planning regulation for Bologna Municipality	2021	2016-2021	yes	no	municipal (Bologna)	yes	professional field	pre&post	yes
3	Italy	3.3_IT	D.P.R. (Decree of President of Republic) n. 380/2001 and subsequent modifications and additions	2002	2001-2010	yes	no	national	yes	professional field	pre&post	yes
4	Croatia	3.1_HR	The Construcion Act	2013	2011-2015	yes	yes	national	yes	professional field	pre	no
5	Albania	3.1_AL	Design standards for nurseries, schools, kindergartens and apartments	2017	2016-2021	yes	yes	national	yes	professional field	pre&post	no
6	Serbia	3.1_RS	Zakon o planiranju i izgradnji (Eng: Planning and Building Act (Law on Planning and Construction Serbia))	2009	2001-2010	yes	no	national	yes	professional field general public	pre	yes
7	Serbia	3.2_RS	Pravilnik za građevinske konstrukcije Eng: Technical Regulations for Building Structures	2019	2016-2021	yes	yes	national	yes	professional field general public	pre&post	no
8	Slovenia	3.1_SI	Gradbeni zakon (Eng. Building Law)	2018	2016-2021	yes	no	national	yes	professional field	pre	yes
9	Greece	3.1_GR	Decision No 3046/304/30.1/3.2.1989 ΦΕΚ 59//1989) « (Greek) Building Regulation »	1989	1981-2000	yes	no	national	yes	public authority professional field	pre	no
10	Greece	3.2_GR	Decision No 3328 ΦΕΚ 1561B/2-6-2016 Reinforced Concrete Regulation	2016	2016-2021	yes	no	national	yes	public authority professional field	pre&post	no
11	Greece	3.3_GR	Decision No 92330 GGG 1416/B/17-07-2008 and GGG 2113/B/13-10-2008 Steel Regulation	2008	2001-2010	yes	no	national	yes	public authority professional field	pre&post	no

Table 4: Comparison matrix: building regulation.

3.4 Urban planning regulation

Descriptive data on collected documents in the field of **urban planning regulation** are summarized in Table 5 for all participating countries. They are analyzed according to the following parameters:

- timeframe and period cluster,
- reference to the EU regulatory framework,
- level at which the document is in force,
- information if the document is mandatory,
- target groups,
- referential period (pre/post-earthquake),
- reference to cultural heritage;

Results of basic analyses are presented in Figures from 24 to 31.

In the field of **urban planning regulation**, 11 documents from all 6 PP countries have been collected (Figure 23). As expected, all participating countries have at least one document in this category. Most documents were collected by Serbia - 3 documents. Albania, Greece and Slovenia listed 2 documents each, while Croatia and Italy cited one norm. In Italy there are several urban planning laws since each Region has the power of legislating on spatial and urban planning. In this survey, Emilia-Romagna Region only has been included, considering it is one of the Regions included in ADRION Programme and it is where the project Pilot case is located. Some documents that have been included among the topic, do not address the earthquake hazard yet, however they represent key documents which will certainly be useful within the further activities of the work package.

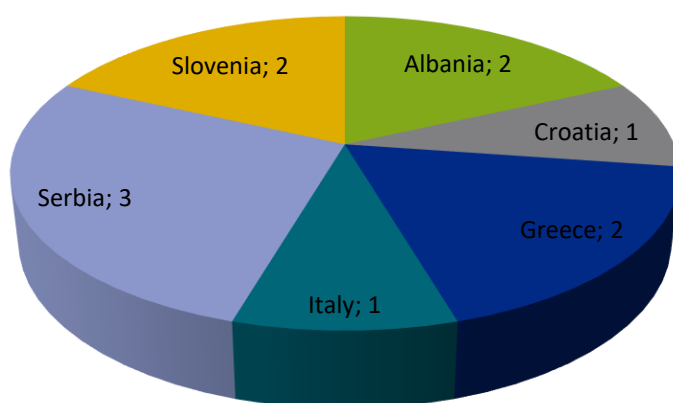


Figure 23: Number of collected norms/incentives among urban planning regulation regarding PP countries.

The results of the basic analysis of the collected norms/incentives according to the various parameters described above show the following:

- Most of all documents (73 %) have been adopted in the last 5 years, e.g., 8 of 11 documents (Figure 24). One document was issued in the period between 1981 and 2000, one between 2001 and 2010 and one between 2011 and 2016. All of the norms listed among urban planning regulation, are currently in force in PP countries (Figure 25).
- Half of the collected norms (6 documents) relate to the EU regulatory framework, which means that the content of these documents is in some way linked to European regulations (Figure 26).
- All of the countries except of Italy listed norms, which are in force at national level and present the main national act in the field of urban planning. Italy, Greece and Albania have listed one document each, which is in force at regional level (e.g. in Emilia Romagna region, Region of Crete, Gjirokastra Municipality) (Figure 27).
- The vast majority of the collected norms among urban planning regulation is adopted by law, only 1 Slovenian document presents a manual that is not mandatory (Figure 28).
- Documents within the topic urban planning regulation are mostly used by public authorities and by profiles from the professional field (e.g. enterprise - excluding SME, SME, interest groups including NGOs). One document is also intended to be used by general public (Figure 29).
- The vast majority of the collected norms are related to both, pre- and post-earthquake period, which means that deal with the reduction of seismic vulnerability and also with seismic response. The contents of few documents from Serbia and Slovenia relate to the period before the earthquake (Figure 30).
- While analyzing the relation between the collected norms and incentives among urban planning regulation and cultural heritage it was found out that all of the listed documents are in a way related to cultural heritage (Figure 31).

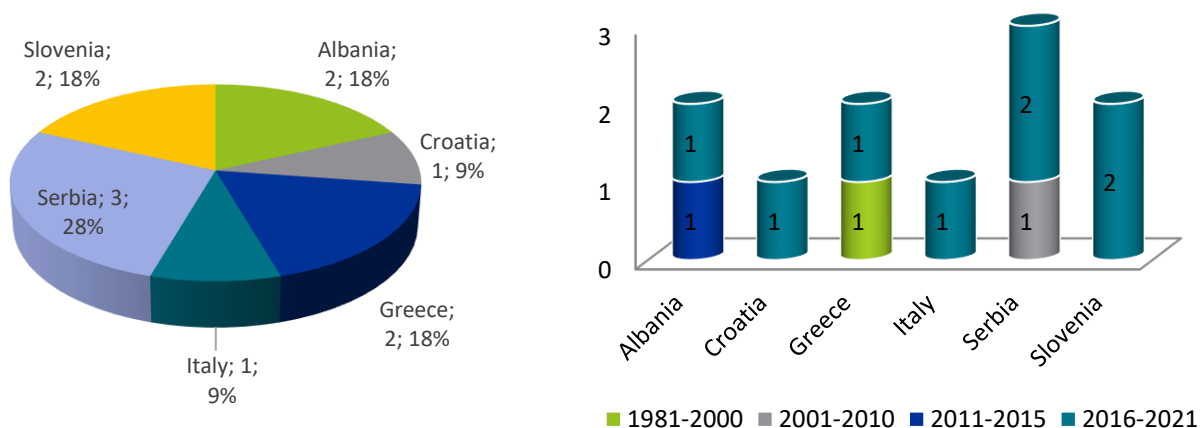


Figure 24: Seismic norms – number of documents regarding year of adoption (figure left – analysis of all documents, figure right – analysis by countries)

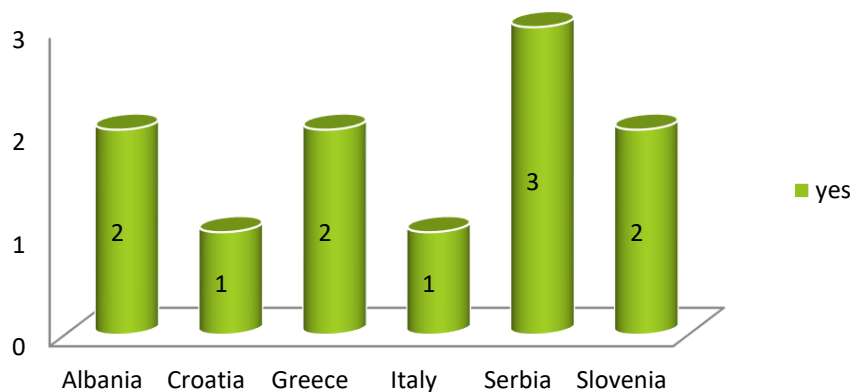


Figure 25: Urban planning regulations – number of documents regarding current validity

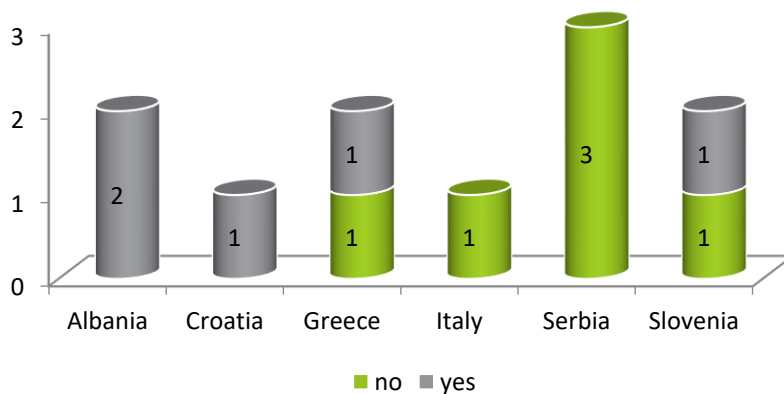


Figure 26: Urban planning regulations – number of documents regarding reference to the EU regulatory framework

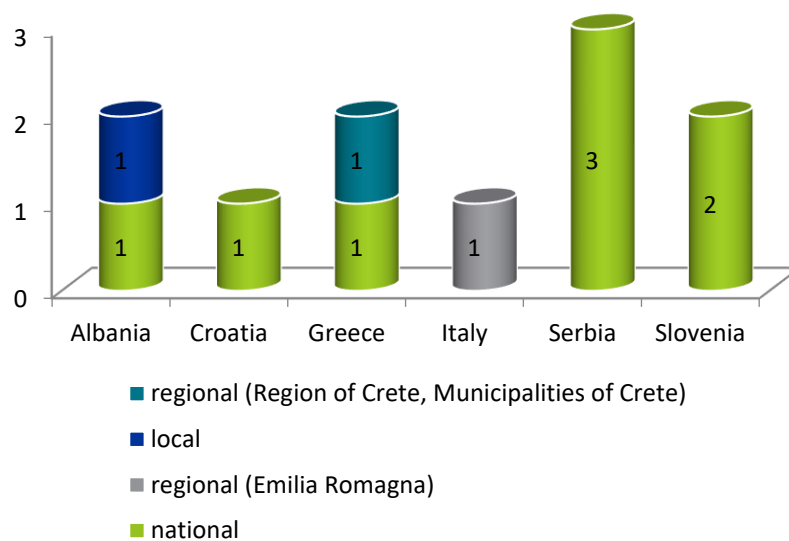


Figure 27: Urban planning regulations – number of documents regarding level, at which the norm/incentive is in force

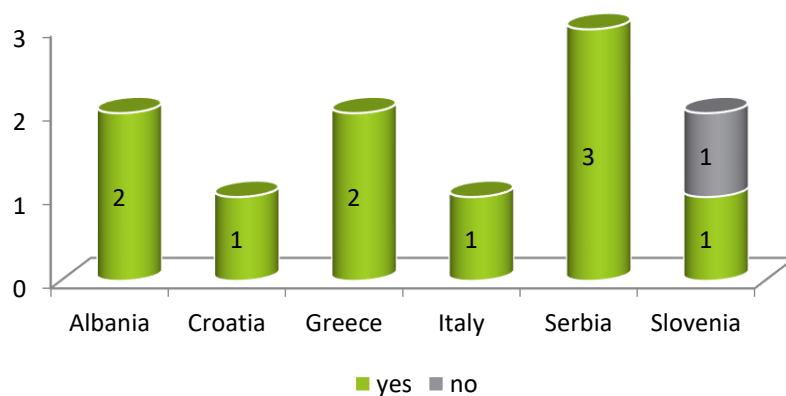


Figure 28: Urban planning regulations – number of documents regarding mandatory/optional norm/incentive

TARGET GROUP	NUM. OF DOC.
Public authority (PA)	5
Sectoral agency (SA)	/
Education/training (ET)	/
Professional fields (PF)	8
General public (GP)	4

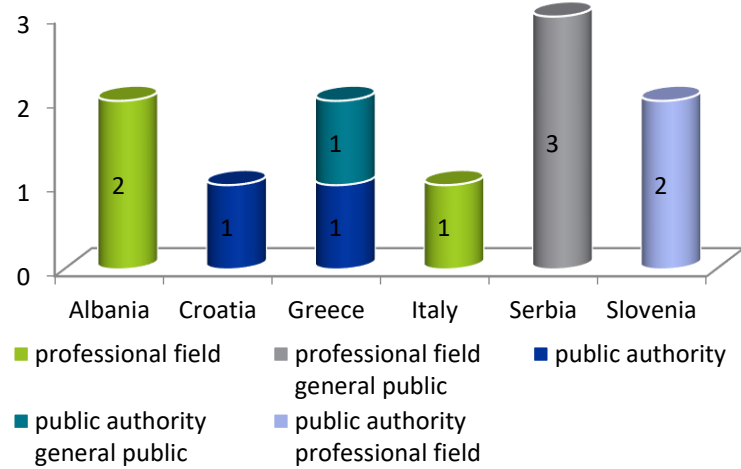


Figure 29: Urban planning regulations – number of documents regarding target groups

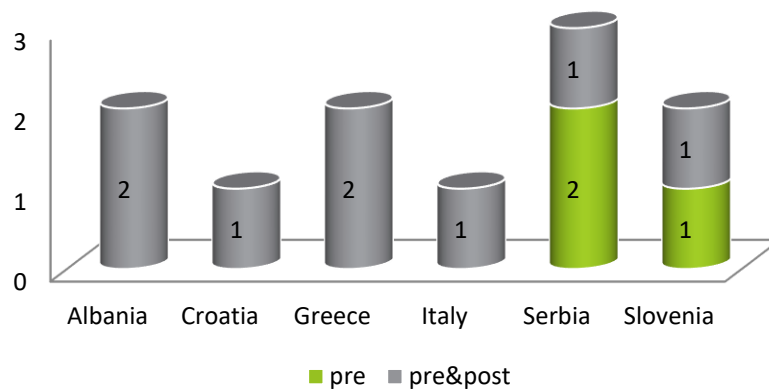


Figure 30: Urban planning regulations – number of documents regarding pre-/post-earthquake period

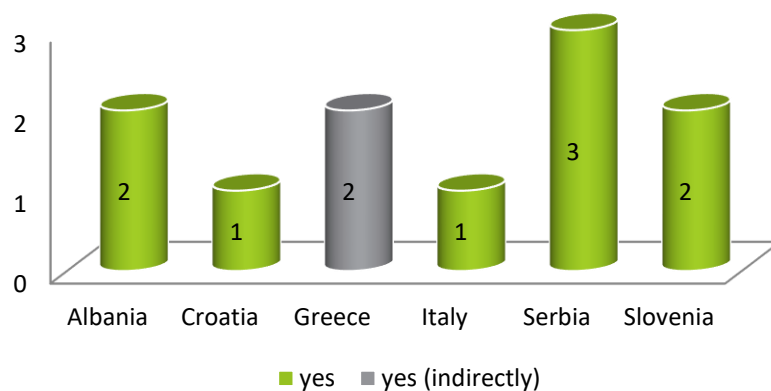


Figure 31: Urban planning regulations – information, if the existing documents refer to cultural heritage

URAN PLANNING REGULATION												
ID	Country	ID_d	Title	Accepted (year)	Period cluster	Timeframe (currently in force) yes/no/?	Reference to the EU regulatory framework	Level	Mandatory regulation (yes/no/?)	Target groups (AF)	Pre/post-earthquake period	Cultural heritage
1	Italy	4.1_IT	L.R. (Regional Law) n. 24/2017	2017	2016-2021	yes	no	regional (Emilia Romagna)	yes	professional field	pre&post	yes
2	Croatia	4.1_HR	The law on spatial planning	2020	2016-2021	yes	yes	national	yes	public authority	no	yes
3	Albania	4.1_AL	Law No. 107 dated 31.07.2014 "For Territorial Planning and Development"	2014	2011-2015	yes	yes	national	yes	professional field	pre&post	yes
4	Albania	4.2_AL	GENERAL LOCAL PLAN, Gjirokastra Municipality	2016	2016-2021	yes	yes	local	yes	professional field	pre&post	yes
5	Serbia	4.1_RS	Zakon o planiranju i izgradnji (Eng: Planning and Building Act (Law on Planning and Construction Serbia))	2009	2001-2010	yes	no	national	yes	professional field general public	pre	yes
6	Serbia	4.2_RS	Pravilnik o sadržini, načinu i postupku izrade dokumenata prostornog i urbanističkog planiranja Eng: Regulations on the content, methods and procedures for compilation of spatial and urban planning documents	2019	2016-2021	yes	no	national	yes	professional field general public	pre	yes
7	Serbia	4.3_RS	Strategija održivog urbanog razvoja Republike Srbije do 2030. Godine Eng: Sustainable urban development Strategy of the Republic of Serbia until 2030	2019	2016-2021	yes	no	national	yes	professional field general public	pre&post	yes
8	Slovenia	4.1_SI	Zakon o urejanju prostora (ZUreP-2) (Eng.: Spatial Planning Act (ZUreP-2))	2017	2016-2021	yes	yes	national	yes	public authority professional field	pre&post	yes
9	Slovenia	4.2_SI	Regulacijski elementi (Eng: Regulatory elements)	2020	2016-2021	yes	no	national	no	public authority professional field	pre	yes
10	Greece	4.1_GR	Decision No 42284/13.10.2017 “ Revised Regional Spatial Framework”	2017	2016-2021	yes	yes	regional (Region of Crete, Municipalities of Crete)	yes	public authority general public	pre&post	yes (indirectly)
11	Greece	4.2_GR	General Urban Plans (N. 2508/1997, N.1337/1983)	1997	1981-2000	yes	no	national	yes	public authority	pre&post	yes (indirectly)

Table 5: Comparison matrix: urban planning regulation.

3.5 Seismic incentive frameworks

Descriptive data on collected documents in the field of *seismic incentive frameworks* are summarized in Table **Errore. L'origine riferimento non è stata trovata.** for all participating countries. They are analyzed according to the following parameters:

- subsection of the norm/incentive (economic/financial incentives, raising awareness),
- timeframe and period cluster,
- reference to the EU regulatory framework,
- level at which the document is in force,
- information if the document is mandatory,
- target groups,
- referential period (pre/post-earthquake),
- reference to cultural heritage;

Results of basic analyses are presented in Figures from 33 to 41.

In the field of *seismic incentive frameworks*, 10 documents from Greece, Italy and Slovenia have been collected (Figure 32). Some of the documents represent economic and financial incentives, which directly contribute to the reduction of seismic vulnerability. Other documents, listed among this topic represent raising awareness documents, which indirectly contribute to increasing people's knowledge in this field. As a consequence, people take appropriate action in order to achieve seismic vulnerability reduction. Most of the documents - 6 have been collected in Italy, where half of the documents present economic or financial incentives. The rest of the Italian as well as all Greek and Slovenian documents fall into the category of raising awareness.

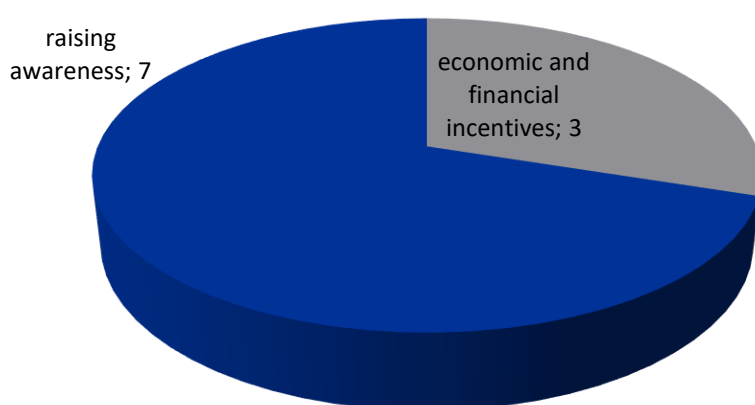


Figure 32: Number of collected norms/incentives among seismic incentive frameworks regarding PP countries.

The results of the basic analysis of the collected norms/incentives according to the various parameters described above show the following:

- Greece, Italy and Slovenia have listed documents among seismic incentive frameworks, while Albania, Croatia and Serbia have no existing seismic incentives. Italy has 3 economic/financial incentives directly influencing seismic vulnerability reduction. 3 Italian documents, 3 Greek documents and one Slovenian document represent indirect incentives which trigger seismic awareness (Figure 33).
- Most of the incentives are quite new, as they have been in force less than 10 years. Two Greek incentives, which help in raising awareness, have been accepted in years between 2001 and 2010 (Figure 34). All of the documents listed among this topic are currently in force (Figure 35).
- When analysing the reference of the listed documents to the EU regulatory framework, it has been found out that all three Greek and one Italian incentive partially relate to EU acts (Figure 36).
- All documents, except of the Italian one, are valid at the national level. For Italy, one document is in force at regional level, namely in the Emilia Romagna region. Documents from other regions exist but are not included in the survey (Figure 37).
- Approximately half of the collected incentives are adopted by law. The remaining incentives are documents that encourage anti-seismic behavior and raise the awareness in connection of seismic vulnerability reduction; however, the latter are not binding (Figure 38).
- Documents within the topic seismic incentive frameworks are mostly intended for the profiles, which can be listed among public authorities and professional field. Few documents are also intended for education and training as well as for general public (Figure 39).
- All of the direct as well as indirect incentives cover pre-earthquake period, while half of them include contents which is related to post-earthquake period (Figure 40).
- None of the documents listed among seismic incentive frameworks specifically deals with cultural heritage (Figure 41). Thus, this could be a great opportunity for improvement within the project.

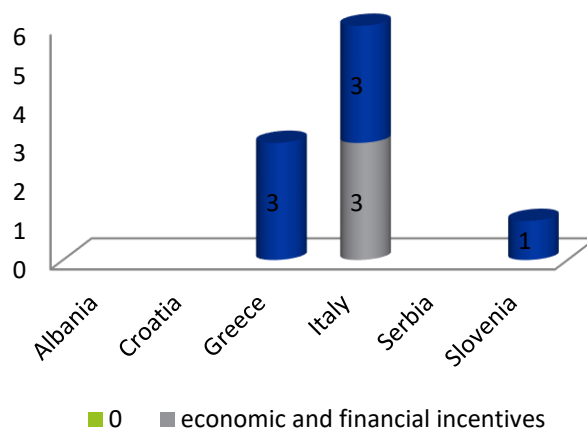
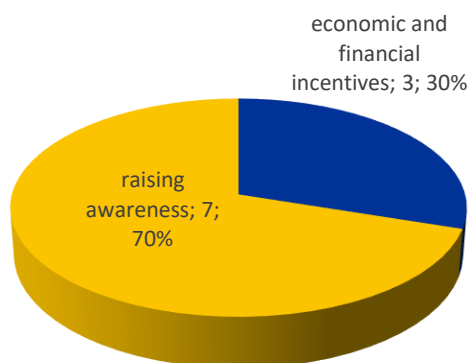


Figure 33: Seismic incentive frameworks – number of documents regarding design (d), assessment (a) and retrofitting (r) of buildings (figure left – analysis of all documents, figure right – analysis by countries)

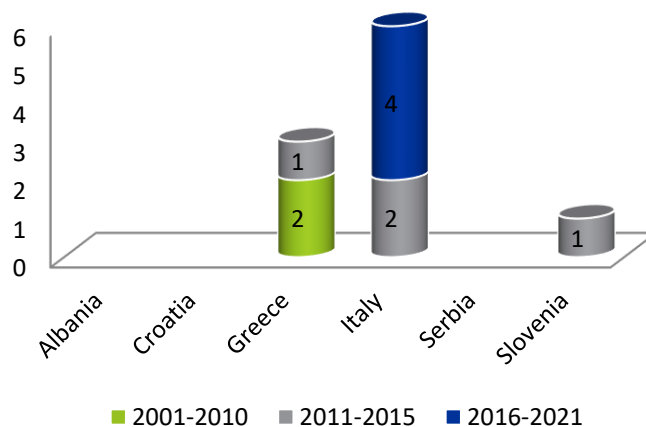
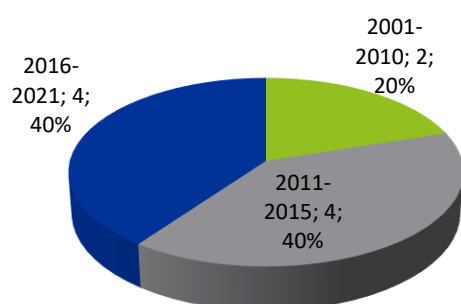


Figure 34: Seismic incentive frameworks – number of documents regarding year of adoption (figure left – analysis of all documents, figure right – analysis by countries)

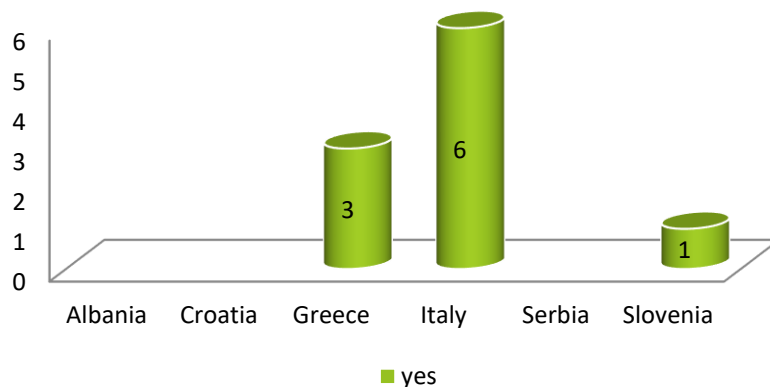


Figure 35: Seismic incentive frameworks – number of documents regarding current validity

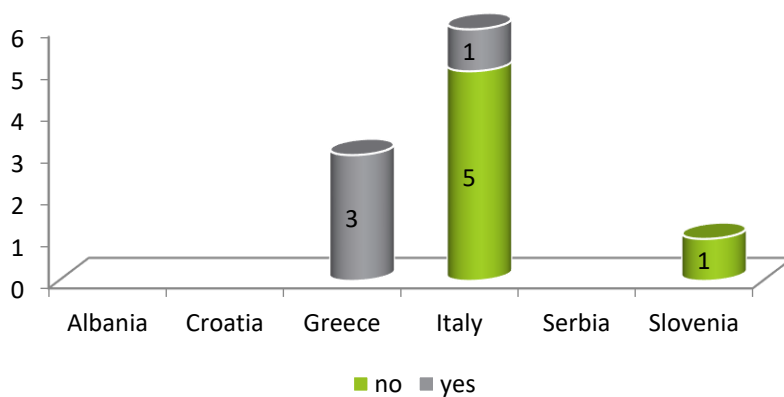


Figure 36: Seismic incentive frameworks – number of documents regarding reference to the EU regulatory framework

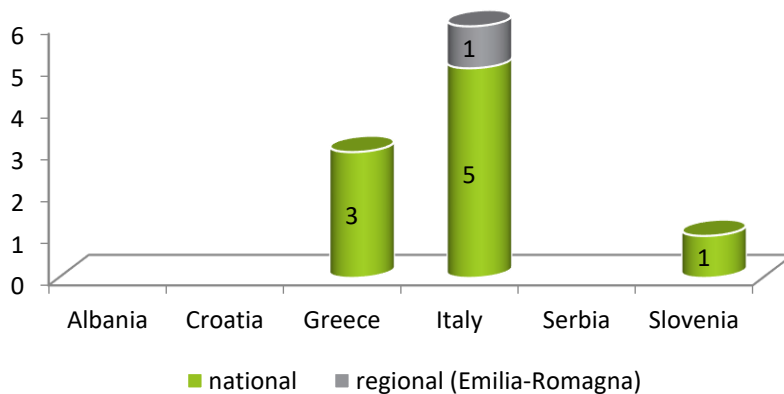


Figure 37: Seismic incentive frameworks – number of documents regarding level, at which the norm/incentive is in force

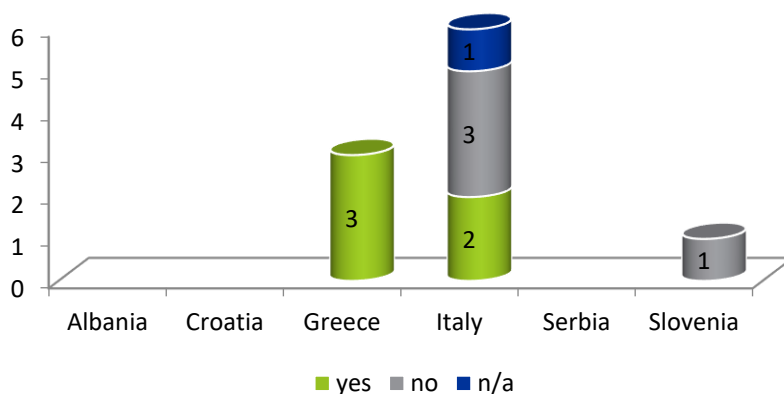


Figure 38: Seismic incentive frameworks – number of documents regarding mandatory/optional norm/incentive

TARGET GROUP	NUM. OF DOC.
Public authority (PA)	4
Sectoral agency (SA)	/
Education/training (ET)	1
Professional fields (PF)	3
General pubic (GP)	2



Figure 39: Seismic incentive frameworks – number of documents regarding target groups

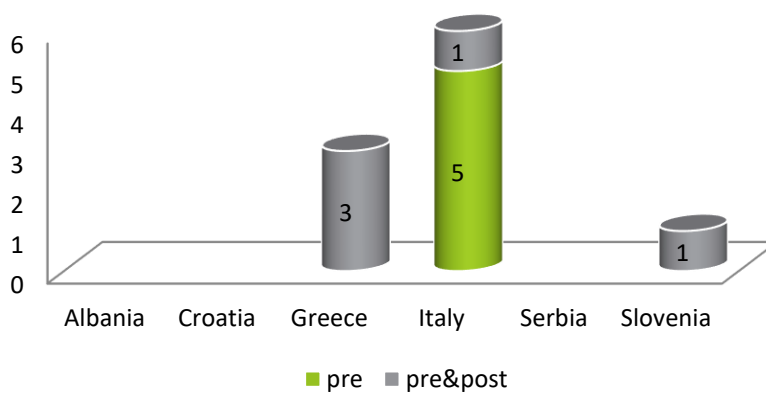


Figure 40: Seismic incentive frameworks – number of documents regarding pre-/post-earthquake period

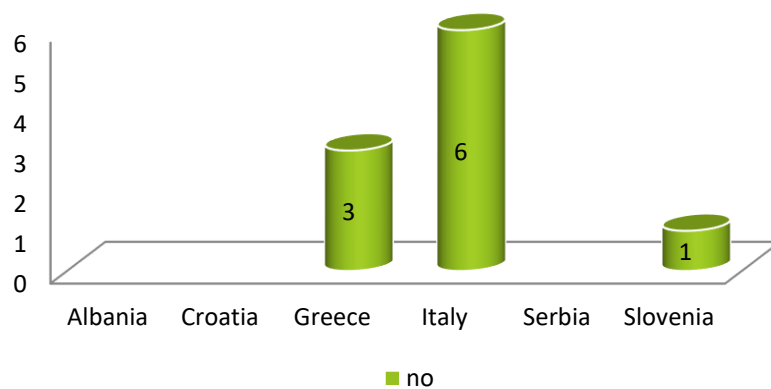


Figure 41: Seismic incentive frameworks – information, if the existing documents refer to cultural heritage

SEISMIC INCENTIVE FRAMEWORKS													
ID	Country	ID_d	Title	Subsection	Accepted (year)	Period cluster	Timeframe (currently in force) yes/no/?	Reference to the EU regulatory framework	Level	Mandatory regulation (yes/no/?)	Target groups (AF)	Pre/post-earthquake period	Cultural heritage
1	Italy	5.1_IT	D.L. (Legislative Decree) n. 63/2013 and subsequent modifications made by D.L. n. 34/2020	economic and financial incentives	2020	2016-2021	yes	yes	national	yes	professional field	pre	no
2	Italy	5.2_IT	D.M. (Minister Decree) n. 58/2017 and subsequent modifications and additions	economic and financial incentives	2017	2016-2021	yes	no	national	yes	professional field	pre	no
3	Italy	5.3_IT	“IO NON RISCHIO” – “I don’t take risks”	Raising awareness (Training programmes for the earthquake)	2011	2011-2015	yes	no	national	no	general public	pre&post	no
4	Italy	5.4_IT	Volumetric incentives for seismic retrofitting interventions	planning (economic incentives)	2017	2016-2021	yes	no	regional (Emilia-Romagna)	n/a	professional field	pre	no
5	Italy	5.5_IT	“EDURISK”	raising awareness	2011	2011-2015	yes	no	national	no	education/training	pre	no
6	Italy	5.6_IT	"SICURO+"	raising awareness	2020	2016-2021	yes	no	national	no	general public	pre	no
7	Slovenia	5.1_SI	Aplikacije POTROG (Eng. POTROG applications)	Raising awareness	2013	2011-2015	yes	no	national	no	public authority	pre&post	no
8	Greece	5.1_GR	Framework for pre-earthquake monitoring of public utility buildings	Raising awareness (Building monitoring program)	2001	2001-2010	yes	Yes, it hosts various EU regulations EC8	national	yes	public authority	pre&post	not specifically
9	Greece	5.2_GR	Pre-seismic monitoring of schools LAW.3027/28.06.2002)	Raising awareness (Building monitoring program)	2002	2001-2010	yes	Yes	national	yes	public authority	pre&post	not specifically
10	Greece	5.3_GR	Law 3852/2010 article section 25 94 paragraph 4 connected with Law 1894/1990 article 5 paragraph 12	Raising awareness (Building monitoring program)	2011	2011-2015	yes	yes	national	yes	public authority	pre&post	not specifically

Table 6: Comparison matrix: seismic incentive frameworks.

3.6 Post-earthquake planning

Descriptive data on collected documents in the field of *post-earthquake planning* are summarized in Table **Errore. L'origine riferimento non è stata trovata.** for all participating countries. They are analyzed according to the following parameters:

- subsection of the norm/incentive (general legislation documents relating to civil protection, organization of earthquake response/rescue, training programs for the earthquake, planning, tools, action plans and other),
- timeframe and period cluster,
- reference to the EU regulatory framework,
- level at which the document is in force,
- information if the document is mandatory,
- target groups,
- referential period (pre/post-earthquake),
- reference to cultural heritage;

Results of basic analyses are presented in Figures from 43 to 51.

In the field of *post-earthquake planning*, 32 documents from 6 countries have been collected (Figure 42). As expected, all participating countries have documents among this topic. More specifically, Albania indicated 2 documents, Serbia 4, Italy 5, Croatia 6, Slovenia 7 and Greece 8 documents. The inserted norms deal with various subtopics, where planning, preparation, response and rehabilitation prevail. In all of the PP countries, there is in force regulation at national, regional and/or municipal level that represents action plan in case earthquake/natural disasters happen. Some of the laws refer to reconstruction of specific territory after an earthquake. Most of the regulatory documents among the topic of post-earthquake planning refer to the civil protection.

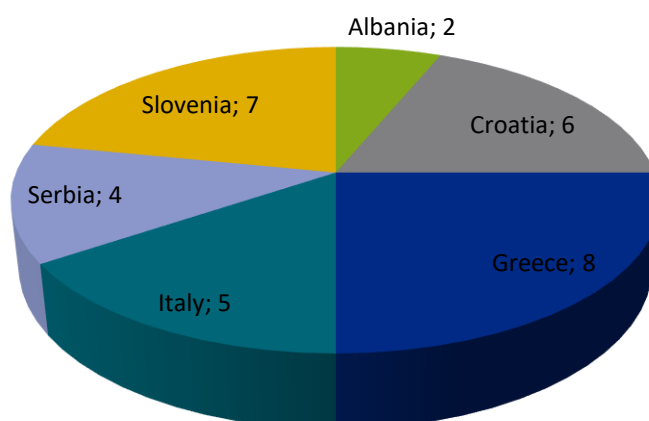


Figure 42: Number of collected norms/incentives among post-earthquake planning regarding PP countries.

The results of the basic analysis of the collected norms/incentives according to the various parameters described above show the following:

- In the PP countries, the documents listed among post-earthquake planning cover different subtopics. Most of the documents deal with planning, preparation, response and short-term rehabilitation. For some documents, no specific subtopics have been attributed, so this will need to be explored as part of the further activities within this work package (Figure 43).
- Vast of the collected documents have been adopted within the last 5 years, e.g. 18 of 32 documents. Three Greek documents are quite old as they have been in force from 1981-2000 period. The rest of the documents were accepted between 2001 and 2015 (Figure 44). All of the documents with exception of one document from Italy and one from Serbia are currently in force (Figure 45).
- 11 collected documents relate to the EU regulatory framework (Figure 46).
- Most of the collected norms are in force at the national level. In Croatia, there is one document, in force at country (Krapina-Zagorje and Zagreb) and one at municipal level (Kaštela). In Italy and Slovenia, one document per regional (Emilia Romagna Region, Ljubljana Region), and one per municipal level (Bologna, Ljubljana) have been listed (Figure 47).
- Vast of the documents, listed among post-earthquake planning are mandatory, while some documents from Croatia, Greece, Italy and Serbia are optional (Figure 48).
- Documents within the topic post-earthquake planning are mostly used by Professional fields profiles (e.g. enterprise - excluding SME, SME, interest groups including NGOs, practitioners) and by public authorities, while one documents is intended also for general public (Figure 49).
- Half of the norms listed among post-earthquake planning cover pre- and post-earthquake period. Three documents cover pre-earthquake period and 10 documents refer to post-earthquake period (Figure 50).
- When analysing the reference of the collected documents to cultural heritage, it has been found out that in average approximately half of the documents relate to cultural heritage. Specifically, all Slovenian documents and none of the Italian relate to cultural heritage. The contents of the remaining documents from other PP countries refer to cultural heritage in half of the cases (Figure 51).

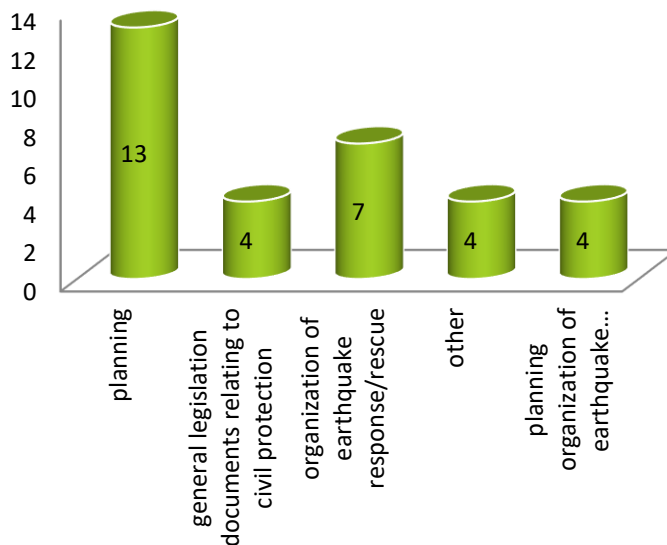
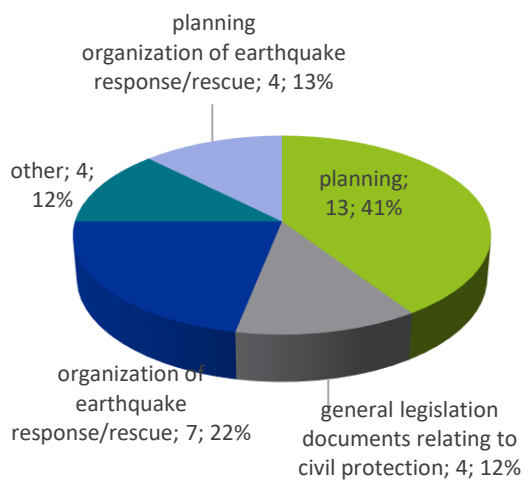


Figure 43: Post-earthquake planning – number of documents regarding design (d), assessment (a) and retrofitting (r) of buildings (figure left – analysis of all documents, figure right – analysis by countries)

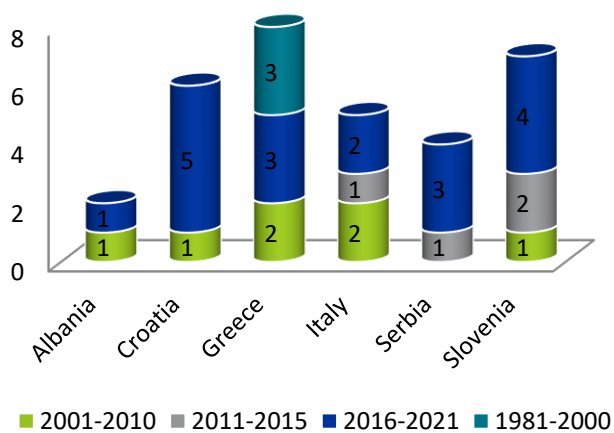
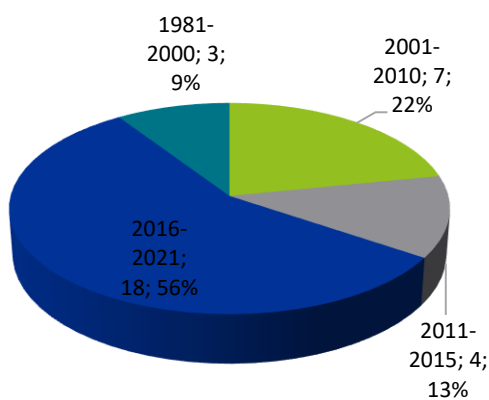


Figure 44: Post-earthquake planning – number of documents regarding year of adoption (figure left – analysis of all documents, figure right – analysis by countries)

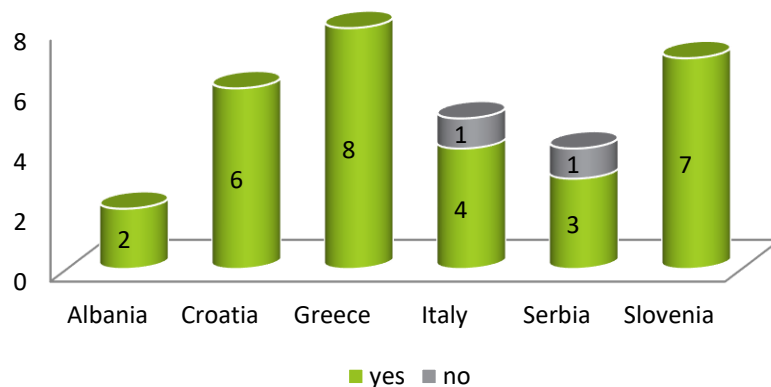


Figure 45: Post-earthquake planning – number of documents regarding current validity

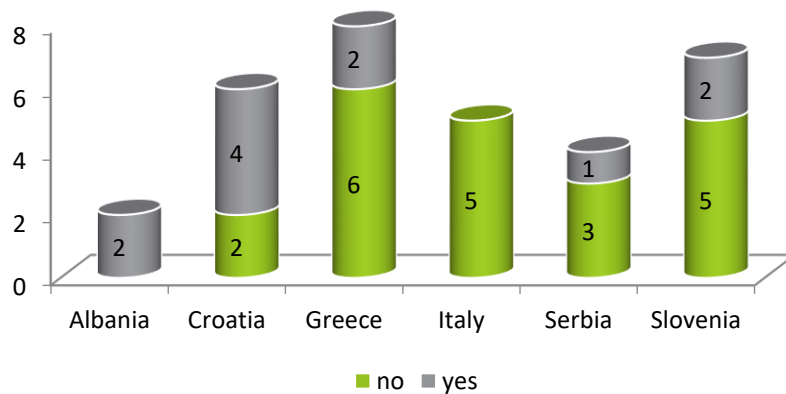


Figure 46: Post-earthquake planning – number of documents regarding reference to the EU regulatory framework

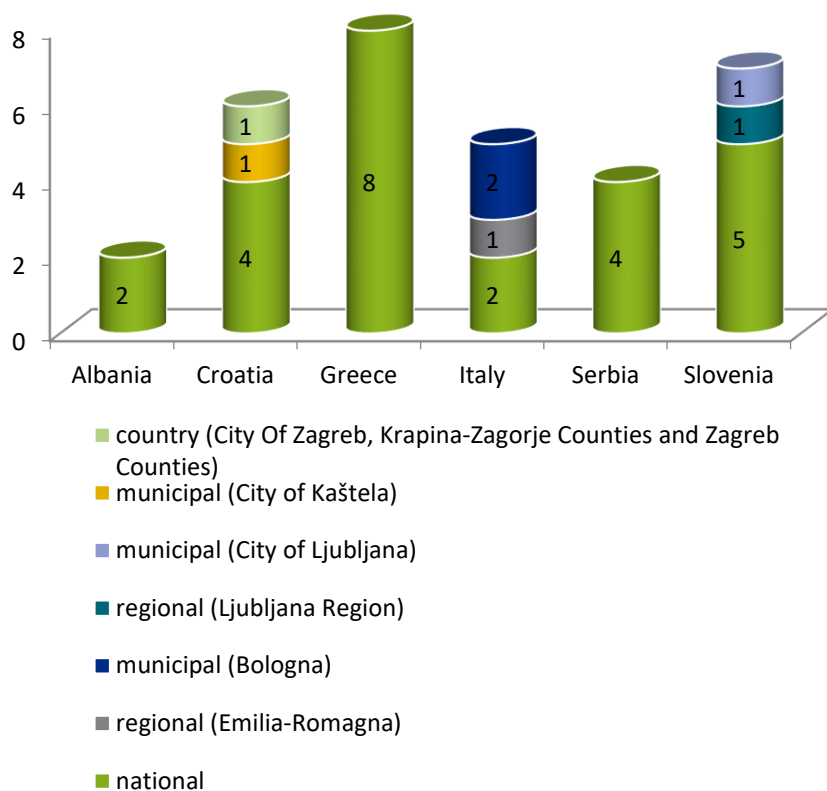


Figure 47: Post-earthquake planning – number of documents regarding level, at which the norm/incentive is in force

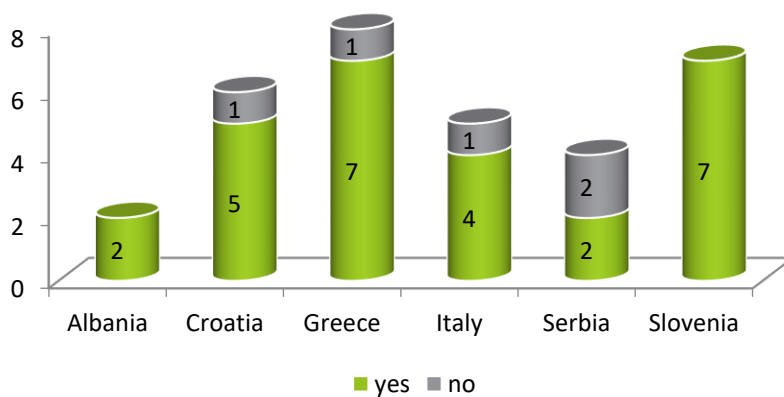


Figure 48: Post-earthquake planning – number of documents regarding mandatory/optional norm/incentive



TARGET GROUP	NUM. OF DOC.
Public authority (PA)	24
Sectoral agency (SA)	/
Education/training (ET)	/
Professional fields (PF)	21
General public (GP)	1



Figure 49: Post-earthquake planning – number of documents regarding target groups

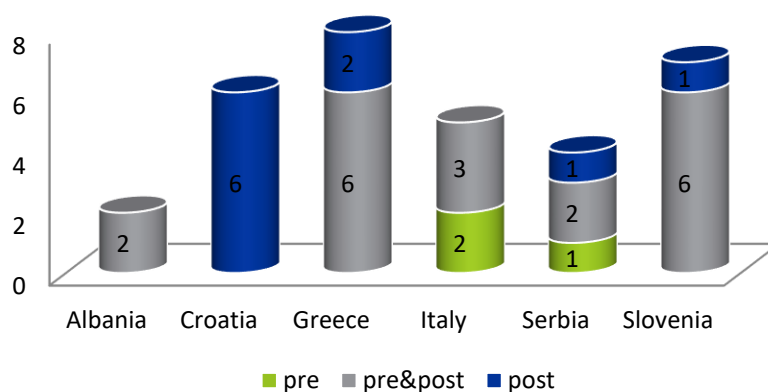


Figure 50: Post-earthquake planning – number of documents regarding pre-/post-earthquake period

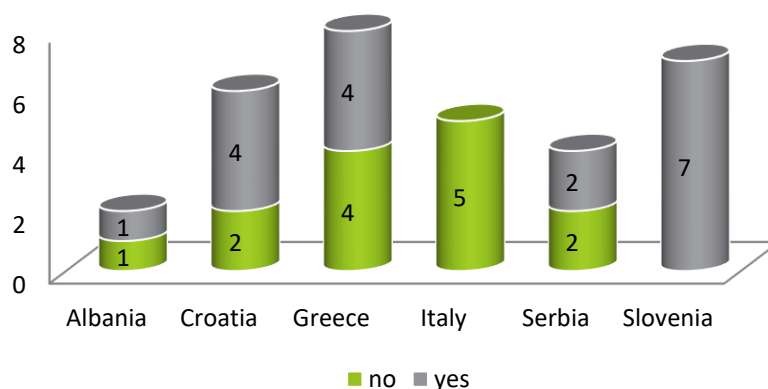


Figure 51: Post-earthquake planning – information, if the existing documents refer to cultural heritage

POST-EARTHQUAKE PLANNING													
ID	Country	ID_d	Title	Subsection	Accepted (year)	Period cluster	Timeframe (currently in force) yes/no/?	Reference to the EU regulatory framework	Level	Mandatory regulation (yes/no/?)	Target groups (AF)	Pre/post-earthquake period	Cultural heritage
1	Italy	6.1_IT	National plan for the prevention of seismic risk L. 77/2009 – art. 11	planning	2009	2001-2010	no	no	national	yes	professional field	pre	no
2	Italy	6.2_IT	National seismic risk rescue program DPCM 14/01/2014	planning	2014	2011-2015	yes	no	national	yes	professional field	pre&post	no
3	Italy	6.3_IT	Annex II of National emergency plan In the framework of the National seismic risk rescue program	planning	2019	2016-2021	yes	no	regional (Emilia-Romagna)	yes	professional field	pre&post	no
4	Italy	6.4_IT	Municipal Civil Protection Plan	general legislation documents relating to civil protection	2016	2016-2021	yes	no	municipal (Bologna)	yes	professional field	pre	no
5	Italy	6.5_IT	Analysis of the Emergency Limit Condition (CLE) and Seismic Microzonation (MS)	organization of earthquake response/rescue	2009	2001-2010	yes	no	municipal (Bologna)	no	professional field	pre&post	no
6	Croatia	6.1_HR	Emergency seismic reconstruction program	planning	2020	2016-2021	yes	yes	national	yes	public authority	post	yes
7	Croatia	6.2_HR	Plan for the development of the civil protection system in the area of the City of Kaštela	planning	2016	2016-2021	yes	no	local	yes	public authority	post	no
8	Croatia	6.3_HR	Protection and rescue plan for the territory of the Republic of Croatia	planning	2010	2001-2010	yes	yes	national	yes	public authority	post	yes
9	Croatia	6.4_HR	Civil Protection System Act	general legislation document relating to civil protection	2020	2016-2021	yes	yes	national	yes	public authority	post	yes
10	Croatia	6.5_HR	Law on reconstruction of earthquake buildings in the area of the City Of Zagreb, Krapina-Zagorje Counties and Zagreb Counties	planning	2020	2016-2021	yes	yes	country	yes	professional field	post	yes
11	Croatia	6.6_HR	The Manual for Emergency Seismic Reconstruction Program	organization of earthquake response/rescue	2020	2016-2021	yes	no	national	no	professional field	post	no
12	Albania	6.1_AL	Law No. 45/2019 “For civil protection”	/	2019	2016-2021	yes	yes	national	yes	public authority	pre&post	yes
13	Albania	6.2_AL	National Planning of Civil Protection	/	2004	2001-2010	yes	yes	national	yes	public authority	pre&post	no
14	Serbia	6.1_RS	Zakon o obnovi nakon elementarne i druge nepogode (Eng: Law on Reconstruction Following Natural and Other Hazards)	0	2015	2011-2015	yes	no	national	yes	professional field general public	post	no
15	Serbia	6.2_RS	Zakon o smanjenju rizika od katastrofa i upravljanja vanrednim situacijama Eng: The Law on Disaster Risk Reduction and Emergency Management	0	2018	2016-2021	yes	no	national	yes	public authority	pre&post	yes
16	Serbia	6.3_RS	Procena rizika od katastrofa u Republici Srbiji Eng: Catastrophe Risk Assessment in the Republic of Serbia	planning (earthquake risk assessment)	2019	2016-2021	yes	yes	national	no	public authority	pre	yes
17	Serbia	6.4_RS	Akcioni plan za sprovođenje Nacionalnog programa upravljanja rizikom od elementarnih nepogoda Eng: Action Plan for the Implementation of the National Disaster Risk Management Programme	Planning (earthquake risk assessment), legislation document relating to civil protection, response and rescue	2017	2016-2021	no	no	national	no	public authority	pre&post	no
18	Slovenia	6.1_SI	Zakon o varstvu pred naravnimi in drugimi nesrečami (ZVNDN) (Uradni list RS, št. 51/06 – uradno prečiščeno besedilo, 97/10 in 21/18 – ZNOrg) (Eng: Protection Against Natural and Other Disasters Act)	General legislation documents relating to civil protection	2019	2016-2021	yes	yes	national	yes	public authority professional field	pre&post	yes
19	Slovenia	6.2_SI	Resolucija o nacionalnem programu varstva pred naravnimi in drugimi nesrečami v letih od 2016 do 2022 (Uradni list RS, št. 75/16) Eng: Resolution on the National Programme for Protection against Natural and Other Disasters 2016-2022	General legislation documents relating to civil protection	2016	2016-2021	yes	yes	national	yes	public authority professional field	pre&post	yes
20	Slovenia	6.3_SI	Uredba o organiziranju, opremljanju in usposabljanju sil za zaščito, reševanje in pomoč Eng. Decree on the Organization Equipment and Training of Protection and Aid Forces	Organization of earthquake response/rescue	2003	2001-2010	yes	no	national	yes	public authority professional field	post	yes
21	Slovenia	6.4_SI	Uredba o organiziranju, opremljanju in usposabljanju sil za zaščito, reševanje in pomoč	Organization of earthquake response/rescue	2017	2016-2021	yes	no	national	yes	public authority professional field	pre&post	yes
22	Slovenia	6.5_SI	Državni načrt zaščite in reševanja ob potresu (Eng. National plan for civil protection and disaster relief in case of earthquake)	Planning	2020	2016-2021	yes	no	national	yes	public authority professional field	pre&post	yes
23	Slovenia	6.6_SI	Regijski načrt zaščite in reševanja ob potresu na območju ljubljanske regije (Eng. Regional earthquake protection and rescue plan in the Ljubljana region)	Planning	2015	2011-2015	yes	no	regional	yes	public authority	pre&post	yes

POST-EARTHQUAKE PLANNING													
ID	Country	ID_d	Title	Subsection	Accepted (year)	Period cluster	Timeframe (currently in force) yes/no/?	Reference to the EU regulatory framework	Level	Mandatory regulation (yes/no/?)	Target groups (AF)	Pre/post-earthquake period	Cultural heritage
24	Slovenia	6.7_SI	Načrt Mestne občine Ljubljana za zaščito in reševanje ob potresu (Eng. Plan of the City of Ljubljana for earthquake protection and rescue)	Planning	2015	2011-2015	yes	no	local (municipality)	yes	public authority	pre&post	yes
25	Greece	6.1_GR	General Civil Protection Plan code name "Xenokratis" (Ministry Decision 1299/2003)	planning	2003	2001-2010	yes	no	national	yes	public authority professional field	pre&post	yes (indirectly)
26	Greece	6.2_GR	Law 4662/2020 " National Disaster Management Mechanism, reformation of Genaral Secretary of Civil Protection , CP volyntary system and reform of the Fire Unit"	Planning, preparation, response and short term rehabilitation	2020	2016-2021	yes	yes	national	yes	public authority professional field	pre&post	yes (indirectly)
27	Greece	6.3_GR	General Civil Protection Plan concerning earthquakes 1st edition, code name Engelados	Planning, preparation, response and short term rehabilitation	2020	2016-2021	yes	yes	national	yes	public authority professional field	pre&post	yes
28	Greece	6.4_GR	Law 3013/2002 "Upgrade of Civil Protectin	Planning, preparation, response and short term rehabilitation	2002	2001-2010	yes	no	national	yes	public authority professional field	pre&post	yes (indirectly)
29	Greece	6.5_GR	Guidelines for planning anf execution of civil protection drills (2nd edition)	Planning, preparation, response and short term rehabilitation	2020	2016-2021	yes	no	national	no	public authority professional field	pre&post	no
30	Greece	6.6_GR	Law 1283 FEK114A/19-9-1982:Provisions for lending to citisens affected by earthquake incidents	Earthquake rehabilitation regarding the 1978 earthquake in Thessaloniki Northern Greece	1982	1981-2000	yes	no	national	yes	public authority professional field	pre&post	no
31	Greece	6.7_GR	Law 867 FEK24A/7-2-1978:Aditonal Provisions for lending to citisens affected by earthquake incidents in northern Greece	Earthquake rehabilitation regarding the 1978 earthquake in Thessaloniki Northern Greece	1982	1981-2000	yes	no	national	yes	public authority professional field	post	no
32	Greece	6.8_GR	LAW 1190 ΦΕΚ Α'203/30.7.1981	Establishment of the Earthquake Rehabilitation Agency	1981	1981-2000	yes	no	national	yes	public authority professional field	post	no

Table 7: Comparison matrix: post-earthquake planning.

3.7 Insurance against earthquakes

In the field of insurance against earthquakes, none of the participating partner countries has a compulsory insurance or regulations to determine this topic. All participating countries, however, collected data on optional earthquake insurance. The latter is presented in detail in the appendices of the Deliverable T1.1.1. PP countries provided slightly different data on the conditions and characteristics of voluntary earthquake insurance. Below, summaries of the collected data performed research in the matrix (Table 8).

Based on the collected answers of insurance companies, the first conclusions regarding: conditions for taking out optional earthquake insurance and about Insurance packages and insurance premiums are listed below:

- In most countries, a condition that has to be fulfilled in order to take out optional earthquake insurance is that building is pre-insured in case of fire. The latter is a very common condition, but it is not stated in all cases;
- Construction of the property in accordance with seismic codes is sometimes one of compulsory conditions for the possibility of taking out optional earthquake insurance, but not in all cases as such restrictions are not stated in all countries.
- In some PP countries, buildings for which a building permit has not been issued can also be insured against earthquakes, while in others a building permit is a condition for taking out insurance.
- In all PP countries, in the case of multi-apartment buildings, it is also possible to insure an individual unit (e.g. apartment). In addition, it is often possible to secure a proportionate share of common areas. Optional earthquake insurance premium is generally not dependent on the level of the apartment
- Types of optional earthquake insurance packages that insurance companies offer differ from each other: Mostly seismic insurance represents an extension of fire insurance. There is basic earthquake insurance, which means insurance of real estate, but many other options exist, e.g. movable property insurance, insurance in case of loss of business in case of an earthquake etc.
- Mostly the optional earthquake insurance (premium) depends on the age and quality of the facility / building. For example, in the former Yugoslavia countries, buildings are divided into two groups depending on whether they were built before or after the issuance of the first seismic norms. The group to which the building belongs then affects the amount of insurance premium.
- The location of the property usually affects the insurance premium. It means that the insurance premium is higher if the insured building is located in the area with higher seismic hazard.
- The property area also affects the insurance premium. In some cases directly, but more often in an indirect way that the property area affects the fire premium, which is the basis for the calculation of the earthquake premium.
- Damage caused during the earthquake is reimbursed in a certain amount. The latter depends on the selected option at the time of taking out insurance against earthquake. Normally, the damage is

reimbursed in full, whereby the insured participates in each damage with a deduction of 2, 5, 10 % or even 20 % of the sum insured. Most often, policyholders decide to take out insurance with a 2%, 5% or 10% deductible from the sum insured. Before the transfer, a deductible is first deducted from the calculated premium insurance.

- The damage recovered mostly does not depend on the intensity of an earthquake. However, there are some exceptions: some insurance companies state, that the damage is covered only if an earthquake with intensity equal to or greater than the 6th degree according to the EMS at the insured place is measured.
- The definition of the damage that is covered by optional earthquake insurance. First of all, seismic damage is often assessed in the field (on site damage inspection). All damage that is insured is reimbursed. This, of course, depends on whether the insurance was taken out only for real estate or also for movable property, etc.
- Due to the expected catastrophe of the event, the insurance companies disperse the risk among many reinsurance companies. Notwithstanding the above, the insurance company surely pays the damage to the insured.

Country		Italy	Croatia	Albania			Serbia			Slovenia					Greece	
Insurance company		General info	Insurance company 1	Insurance company 1	Insurance company 2	Insurance company 3	Insurance company 1	Insurance company 2	Insurance company 3	Insurance company 1	Insurance company 2	Insurance company 3	Insurance company 4	Insurance company 5	General info - Athens	General info - Crete
Conditions for taking out OPTIONAL EARTHQUAKE INSURANCE	Is there any condition that has to be fulfilled in order to take out optional earthquake insurance?	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
	Is construction of the property in accordance with seismic codes one of compulsory conditions for the possibility of taking out optional earthquake insurance?	yes	no	yes	yes	yes	yes	no	no	no	no	no	no	no	yes	Yes
	Is it possible to take out optional earthquake insurance for the building that does not have a building/occupancy permit?	no	yes	no	no	no	yes	yes	yes	yes	yes	yes	yes	yes	no	no
	Multistorey residential buildings: is it possible to take out optional earthquake insurance only for a single apartment or the entire building has to be insured?	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
	What about optional earthquake insurance of common areas?	Yes	yes	not known	not known	not known	not known	not known	not known	yes	yes	yes	yes	yes	not known	yes
	Is optional earthquake insurance premium dependent on the level of the apartment (e.g. ground floor, the top floor...)?	not known	no	not known	no	no	no	not known	no	no	no	no	not known	no	not known	no
Insurance packages and insurance premiums	Do optional earthquake insurance (premium) depend on the age and quality of the facility/building?	yes	yes	yes	yes	no	no	no	no	yes	yes	yes	yes	yes	yes	yes
	Does optional earthquake insurance (premium) depend on the location of the property? For example, is an optional earthquake insurance premium higher in areas with a higher earthquake hazard?	yes	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	no
	Does the optional earthquake insurance (premium) depend on the property area?	yes	yes	yes	yes	not known	not known	not known	yes	yes	yes	yes	yes	yes	not known	not known
	Does the damage recovered depend on the intensity of an earthquake?	no	no	yes	yes	yes	no	no	no	no	no	no	yes	no	not known	no

Table 8: Comparison matrix: insurance against earthquake.

4. Main findings and conclusions

The Deliverable presents comparison matrix of the existing norms and incentives, which were collected as part of T1.1 activities and presented in the Deliverable T1.1.1. The main goal of the comparison matrix is to form the basis for further analyzes of the existing documentation in this work package and to highlight good practices and some shortcomings in PP countries.

In the introduction, the background of the activities within WP T1 is explained. It is followed by a brief presentation of the methodology of data collection within all participating partner countries: Albania, Croatia, Greece, Italy, Serbia and Slovenia.

Chapter *Comparison matrix and basic analyses* represents the most extensive section of deliverable. First, the comparison matrix for the contextual information of the participating PP countries is presented as it will help make concrete comparisons of the state of norms and incentives in the PP countries. Further subchapters are dedicated to individual topics among which the norms and incentives have been collected. In each of the subchapters, a comparison matrix with characteristics on the collected norms and incentives among specific topic is presented, followed by a summary of the first findings. Additionally, graphical representations of comparisons of the state of the collected norms and incentives between PP countries according to specific considered parameters are added.

In a one-year period from March 2020 to February 2021 there have been quite a few collection-related activities regarding T1.1. Based on the contributions of all countries, a database of all collected data has been created. The result of the data collection is an extensive comparison matrix, which was in order to enable greater transparency, divided into several sub-matrices, with each sub-matrix dedicated to one of the following topics: seismic norms, building regulations, urban planning regulation, seismic incentive framework and post-earthquake planning. Each submatrix includes information on the listed norm/incentive such as: Subsection of the norm/incentive, timeframe, period cluster, possible reference to the EU regulatory framework, level at which the documents is in force, information if the document is mandatory, target groups, referential period and possible reference to cultural heritage.

Based on the matrix (submatrices), the following findings and conclusions can be made:

- **Contextual information:** the PP countries have many similarities, but also quite a few important differences. In terms of the size of each country, Italy stands out strongly, as it is more than twice the size of the next, Greece, and as much as 15 times larger than the smallest country, Slovenia. In terms of population, Italy is “leads” even more - with about 60 million inhabitants it is far ahead of all other PP countries, as there are 5-30 times fewer people living there.
- **Seismic norms:** 24 documents from 6 countries have been collected. All participating countries have at least one document among this topic. The documents cover all subsections in the field of seismic norms, e.g., design, assessment, and retrofitting of structures. The document, which is in use in all participating countries, is the European standard Eurocode, where each country has its national supplements. It should be emphasized that the use of the Eurocodes in Italy is voluntary. All PP countries have listed seismic norms that are in force at national level, while Italy has also some regulations on regional level. Also, Italy and Greece have some regulatory documents that specifically

deal with cultural heritage. Practically half of all documents have been adopted in the last 5 years. Quite a few norms relate to the EU regulatory framework. The vast majority of the collected norms is mandatory and covers both, the period before and after the earthquake. The target groups, which use collected norms, belong to the professional field.

- ***Building regulations:*** 11 documents from 6 countries have been collected. All participating countries have at least one document among this topic, where the norms from Italy and Greece prevail. All the norms listed are adopted by law. All the six countries involved in the survey have listed building regulations in force at national level and have a document that represents “national building law”. In Italy, alongside the national legislation, it is possible to find building regulations enacted at a local scale. Almost all documents have been adopted after 2000. With the exception of Albania, Croatia and Serbia, no country has cited a document that would be related to the EU regulatory framework. The inserted norms are mostly used by the profiles, which can be listed among the professional field. All the documents cover pre-earthquake period, some of them are intended also to post-earthquake period. Half of the collected documents include to some extent specific provisions for cultural heritage. The preliminary evidence from the investigation conducted so far highlight that territorial scale and responsible authorities vary considerably when it comes to codes for intervening on the building stock. At this stage tailored approaches seem more promising than common approaches valid for all.
- ***Urban planning regulation:*** 11 documents have been collected. All participating countries have at least one document among this topic. Some documents that have been included among the topic, do not address the earthquake yet, but represent key documents which will certainly be useful within the further activities of the work package. Three-quarters of all collected norms have been adopted in the last 5 years, e.g., 8 out of 11 documents. All of the norms listed among urban planning regulation, are currently in force and half of them is in some way linked to European regulations. Collected norms are in force at national or at regional level (Italy, Greece and Albania). The vast majority of the collected norms is adopted by law. The collected documents are mostly used by public authorities and by profiles from the professional field. Half of the collected norms are related to both, pre- and post-earthquake period, while the contents of few documents relate to the period before the earthquake. All of the listed documents are in some way related to cultural heritage. The preliminary evidence from the investigation conducted so far highlight that harmonizing the urban planning regulations can be challenging in the framework of the project, as many documents are in force and, moreover, at different territorial scales. Differences in scale and responsible authorities make difficult to cluster common approaches. Therefore, recommendations to tailor the introduction of considerations on the vulnerability of the built environment in the historical centers seem a more promising strategy in the case of urban planning regulation.
- ***Seismic incentive frameworks:*** 10 documents from Greece, Italy and Slovenia have been collected, while Albania, Croatia and Serbia do not have existing documents in this area. Some of the documents represent economic and financial incentives, which directly contribute to the reduction of seismic vulnerability. Other documents, listed among this topic represent raising awareness documents, which indirectly contribute to increasing people's knowledge in this field. Most of the documents - 6 have

been collected in Italy, where half of the documents present economic or financial incentives. The rest of the Italian as well as all Greek and Slovenian documents fall into the category of raising awareness. Most of the incentives are quite new, as they have been in force less than 10 years. All Greek and one Italian incentive are partially related to EU acts. All documents, except of the Italian one (in force at regional level), are valid at the national level. Approximately half of the collected incentives are mandatory. Documents within the topic are mostly intended for the profiles, which can be listed among public authorities and professional field. All of the incentives cover pre-earthquake period, while some of them also include contents, related to post-earthquake period. None of the documents deals with cultural heritage, which could be a great opportunity for improvement within the project. Therefore, the harmonization of the incentive framework among the PPs involved in ADRISEISMIC project represents one of the more concrete possibilities to enhance the risk awareness in those countries that do not have active programs related to the topic, and also the opportunity to allow the diffusion of economic and financial incentives to intervene on existing buildings by reducing seismic vulnerability.

- **Post-earthquake planning:** 32 documents from 6 countries have been collected. All participating countries have listed documents among this topic. The inserted norms deal with various subtopics, where planning, preparation, response and rehabilitation prevail. In all of the PP countries, there is in force regulation at national, regional and/or municipal level that represents action plan in case earthquake/natural disasters happen. Vast of the collected documents have been adopted within the last 5 years and vast of the norms is mandatory. 11 collected documents relate to the EU regulatory framework. Documents within this topic are mostly used by professional field profiles and by public authorities. Half of the norms listed among post-earthquake planning cover pre- and post-earthquake period. Three documents cover pre-earthquake period and 10 documents refer to post-earthquake period. Approximately half of the documents relate to cultural heritage. All the countries listed documents related to Civil Protection activities, therefore they have shown a clear opportunity to cluster and harmonize these types of documents within the activity T1.2, identifying the similarities and the differences among the procedures, addressing the different phases of disaster risk management.
- **Insurance against earthquakes:** none of the participating partner countries has a compulsory insurance or regulations to determine this topic. All participating countries, however, collected data on optional earthquake insurance and the data are slightly different on the conditions and characteristics of voluntary earthquake insurance. In most countries, a condition that has to be fulfilled in order to take out optional earthquake insurance is that building is pre-insured in case of fire. Construction of the property in accordance with seismic codes is sometimes one of compulsory conditions for the possibility of taking out optional earthquake insurance. In some PP countries, buildings for which a building permit has not been issued can also be insured against earthquakes. In all PP countries, it is possible to insure an individual unit (e.g. apartment) in the case of multi-apartment building. In addition, it is often possible to secure a proportionate share of common areas. There is basic earthquake insurance, which means insurance of real estate, but many other options exist (e.g. movable property insurance, insurance in case of loss of business in case of an earthquake

etc.). Mostly the optional earthquake insurance (premium) depends on the age and quality of the facility. The location of the property as well as the property area usually affects the insurance premium. Seismic damage is often assessed in the field. Normally, the seismic damage is reimbursed in full, whereby the insured participates in damage with a predetermined deduction. However, some insurance companies state, that the damage is covered only if an earthquake with intensity equal to or greater than the 6th degree according to the EMS at the insured place is measured. Due to the expected catastrophe of the event, the insurance companies disperse the risk among many reinsurance companies and therefore are certainly able to cover all insured damage.

References

- [1] Deliverable T1.1.1: Report on collected norms and incentives. Project ADRISEISMIC, April 2021.