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Workshop on SASPARM2.0

Support Action for Strengthening PAlestine capabilities for seismic Risk Mitigation

May 18, 2016 – Multimedia Room, Eucentre Foundation Pavia, Italy

AGENDA

10.30-10.40	*Opening and welcoming remarks*
10.40-12.20	**First session: Overview of the SASPARM2.0 project**
10.40-11.00	Development of the Web-Based Platform for seismic risk analysis and mitigation **Dr. Barbara Borzi (Eucentre)**
11.00-11.20	Collection of structural data by Palestinian practitioners to implement the vulnerability models **Prof. Jalal Dabbeek (ANNU)**
11.20-11.40	Training courses on seismic risk and seismic risk mitigation **Dr. Ricardo Monteiro (IUSS)**
11.40-12.00	Tools and guidelines to quantify and reduce seismic risk in Palestine **Dr. Paola Ceresa (IUSS)**
12.00-12.20	Social-economic impact – Questionnaire to stakeholders **Prof. Alberto Monti (IUSS)**
12.20-12.40	*Visit to the TREES Lab*
12.40-14.00	*Lunch*
14.00-15.20	**Second session: Support actions by international stakeholders for strengthening Mediterranean and EU Neighbouring countries capabilities for seismic risk mitigation**
14.00-14.20	**Mr. Danilo Bilotta** (Italian Department of Civil Protection – International Relations Unit)
14.20-14.40	**Ms. Luna Abu Swaireh** (UNISDR – Head of Regional Office for Arab States)
14.40-15.00	**Eng. Roberto Schiliro** (DG Echo - Civil Protection Policy Unit)
15.00-15.20	**Eng. Luigi Ronsivalle** (President of the Study Centre of National Council of Engineers)
15.20-16.00	**Third session: Round table on issues and challenges, lessons learned and recommend solutions and adjustments for the remaining duration of the project**

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Support Action for Strengthening PAlestine capabilities for seismic Risk Mitigation

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Development of the Web-Based Platform for Seismic Risk analysis and mitigation

Barbara Borzi
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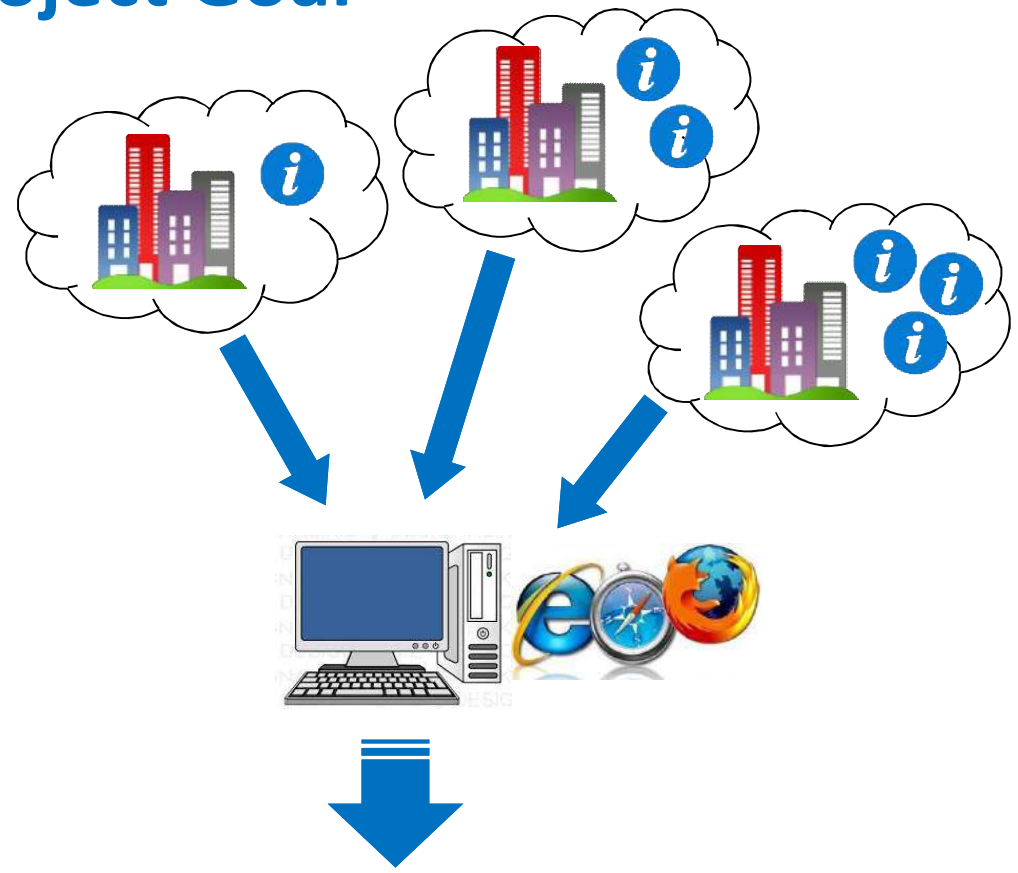
Project Goal

The project goal is to create a web portal where different users (**students/citizens/practitioners**/GO and NGO **stakeholders**) will be able to input and manage all the data on buildings, with increasing level of detail, and obtain information about the corresponding seismic risk.



SEISMIC RISK

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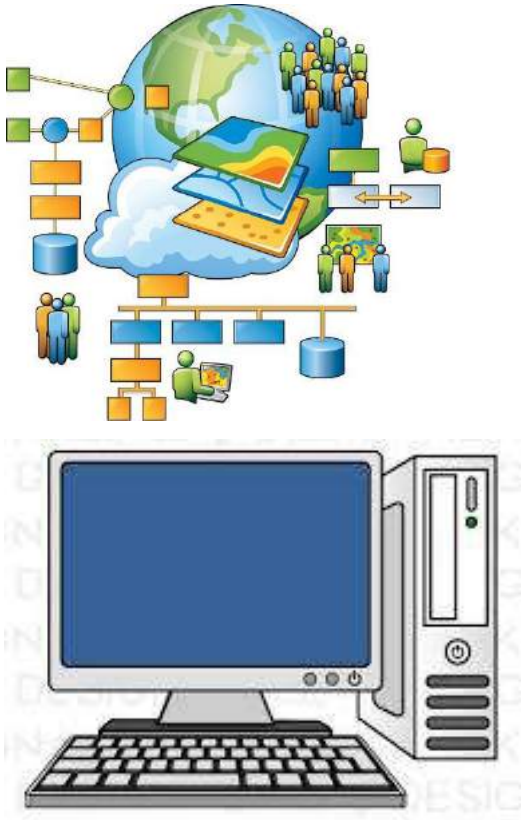
WebGIS platform

A Web platform has been developed. By managing the structural data collected on field, the vulnerability and the seismic risk are assessed. Mitigation measures, as a function of the identified vulnerabilities, are suggested through the platform.

The platform is also equipped with GIS functionalities (WebGIS). Hence, the stakeholders can have the possibility to identify the analyzed buildings on the map .



Data collection

The in situ data collection has been done through:

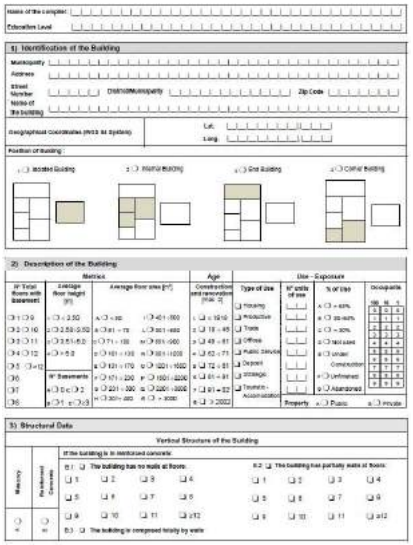
- Form for citizens
- Form for practitioners

Every form is supplemented with a short compilation guide.

A more comprehensive manual on the compilation of the forms is however available on the project website.

All the information collected through the forms has been used to identify the vulnerability class of the buildings according to their structural typology.

Data collection



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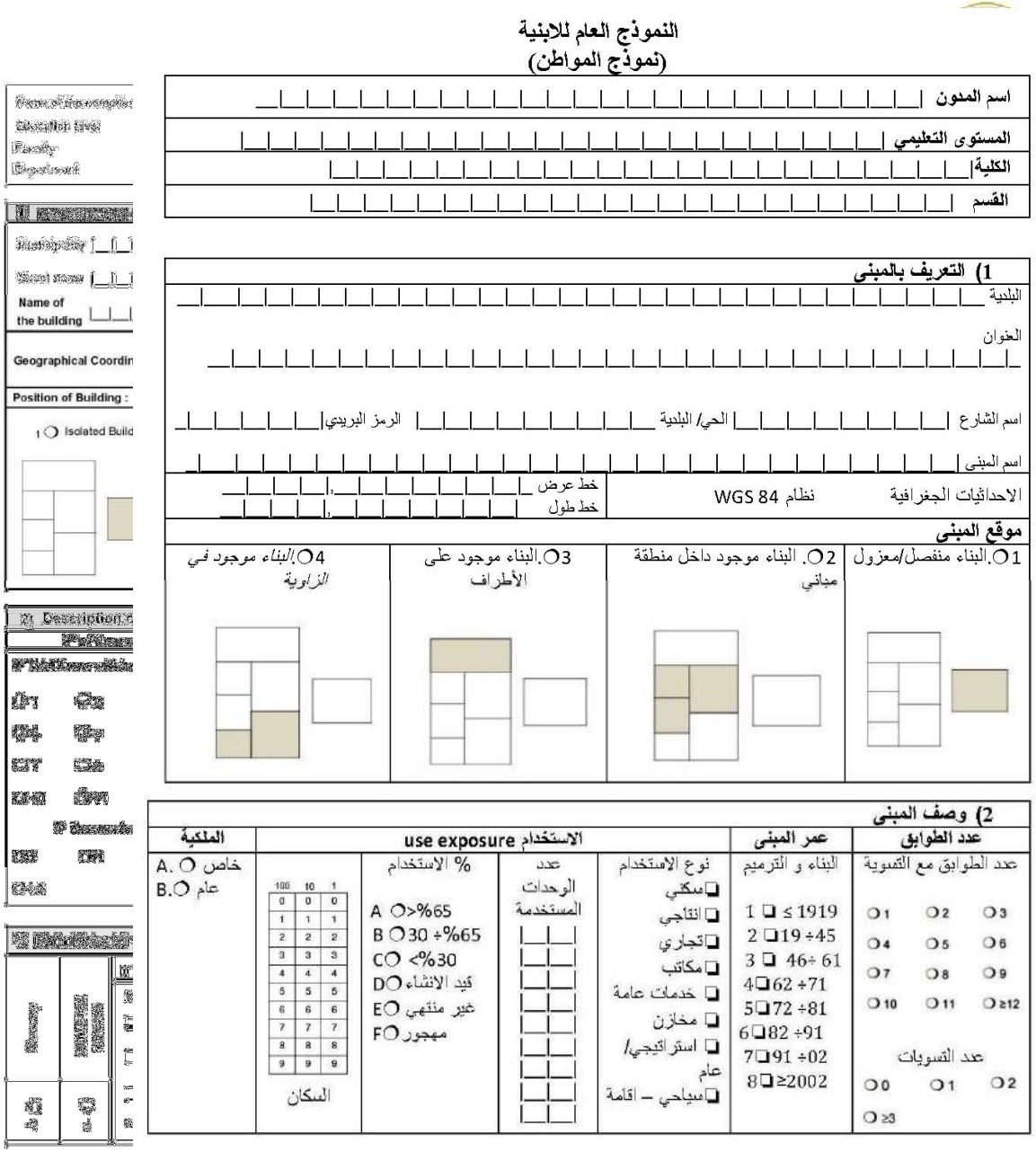
Collection forms

Citizens

(in English and Arabic)



النموذج العام للابنية
(نموذج المواطن)

اسم المدون
المستوى التعليمي
الكلية
القسم

1) التعريف بالمبنى

البلدية
العنوان
اسم الشارع | الحي/ البلدية | الرمز البريدي
اسم المبنى
الاحداثيات الجغرافية | نظام WGS 84 | خط عرض / خط طول

موقع المبنى

1 ○ البناء منفصل/معزول
2 ○ البناء موجود داخل منطقة مباني
3 ○ البناء موجود على الأطراف
4 ○ البناء موجود في الزاوية

2) وصف المبنى

عدد الطوابق	عمر المبنى	الاستخدام use exposure				الملكية
عدد الطوابق مع التسوية	البناء و الترميم	نوع الاستخدام	عدد الوحدات المستخدمة	% الاستخدام	المكان	
○1 ○2 ○3 ○4 ○5 ○6 ○7 ○8 ○9 ○10 ○11 ○≥12	1 ❑ ≤ 1919 2 ❑ 19 ÷45 3 ❑ 46÷ 61 4 ❑ 62 ÷71 5 ❑ 72 ÷81 6 ❑ 82 ÷91 7 ❑ 91 ÷02 8 ❑ ≥2002	❑ سكني ❑ انتاجي ❑ تجاري ❑ مكاتب ❑ خدمات عامة ❑ مخازن ❑ استراتيجي/ عام ❑ سياحي – اقامة		A ○ >%65 B ○ 30 ÷%65 C ○ <%30 D ○ قيد الانشاء E ○ غير منتهي F ○ مهجور		A. ○ خاص B. ○ عام

عدد التسويات
○0 ○1 ○2 ○≥3

Page 1

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Collection forms

Citizens

(in English and Arabic)

Building with n

3) المواد المستخدمة في البناء العمودي

جدران حجرية حاملة	إذا كان المبنى مسلح	A
خرسانة مسلحة	B1 : المبنى بدون جدران في الطابق ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑6 ❑7 ❑ 8 ❑9 ❑11 ❑10 ❑≥ 12 B2: المبنى به جدران جزئية على الطابق ❑ 1 ❑ 2 ❑ 3 ❑ 4 ❑ 5 ❑ 6 ❑ 7 ❑8 ❑9 ❑10 ❑11 ❑≥ 12 B3 : المبنى مغطى بالكامل بجدران	B

4) Notes

مبنى بدون جدران في طابق واحد	مبنى بدون جدران في طابق واحد فقط	مبنى مغطى بالجدران بالكامل

4. ملاحظات:

الافضل اذا توفر كتابة اسم الشارع ورقم المبنى حسب الكود الجديد الموجود في البلدية

التاريخ: / /	اسم المقيم في المسكن :	توقيع

Date |__|__|__|__|

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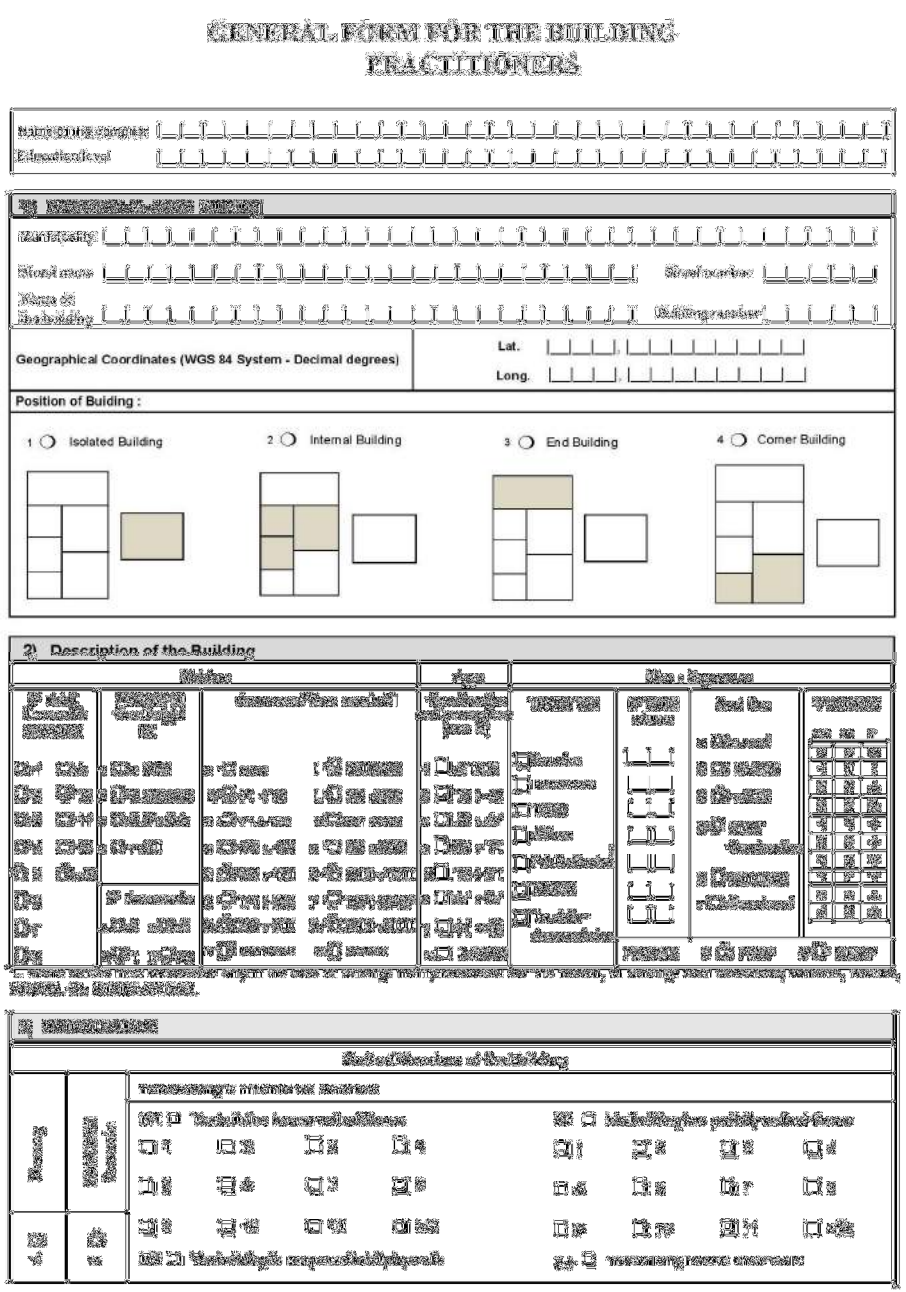
Collection forms

Practitioners

(in English)


GENERAL FORM FOR THE BUILDING PRACTITIONERS

Geographical Coordinates (WGS 84 System - Decimal degrees)

Lat.

Long.

Position of Buiding :

1 Isolated Building

2 Internal Building

3 End Building

4 Corner Building

2) Description of the Building

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Collection forms

Practitioners

(in English)

Horizontal Structure						Roof			
Slab									
Not identified	Solid slab with drop beams	Reinforced concrete ribbed slab	Reinforced concrete slab	Steel concrete slab	Cantilever structures	Heavy and flat	Heavy and sloped	Light and flat	Light and sloped
❍	❑	❑	❑	❑	❑	❍	❍	❍	❍

4) Regularity

In plan		In elevation	
Regular	Not regular	Regular	Not regular
❍	❍	❍	❍

5) Geomorphological Data

Morphology site				Landslides		Category of soil foundation
Ridge	Strong slope	Slight slope	Lowland	Absent	Existing	
❍	❍	❍	❍	❍	❍	

6) Notes

Date |__|__|__|__|/|__|__|/|__|__|	**The Compiler** (Block Letters)	**Sign of the Compiler**

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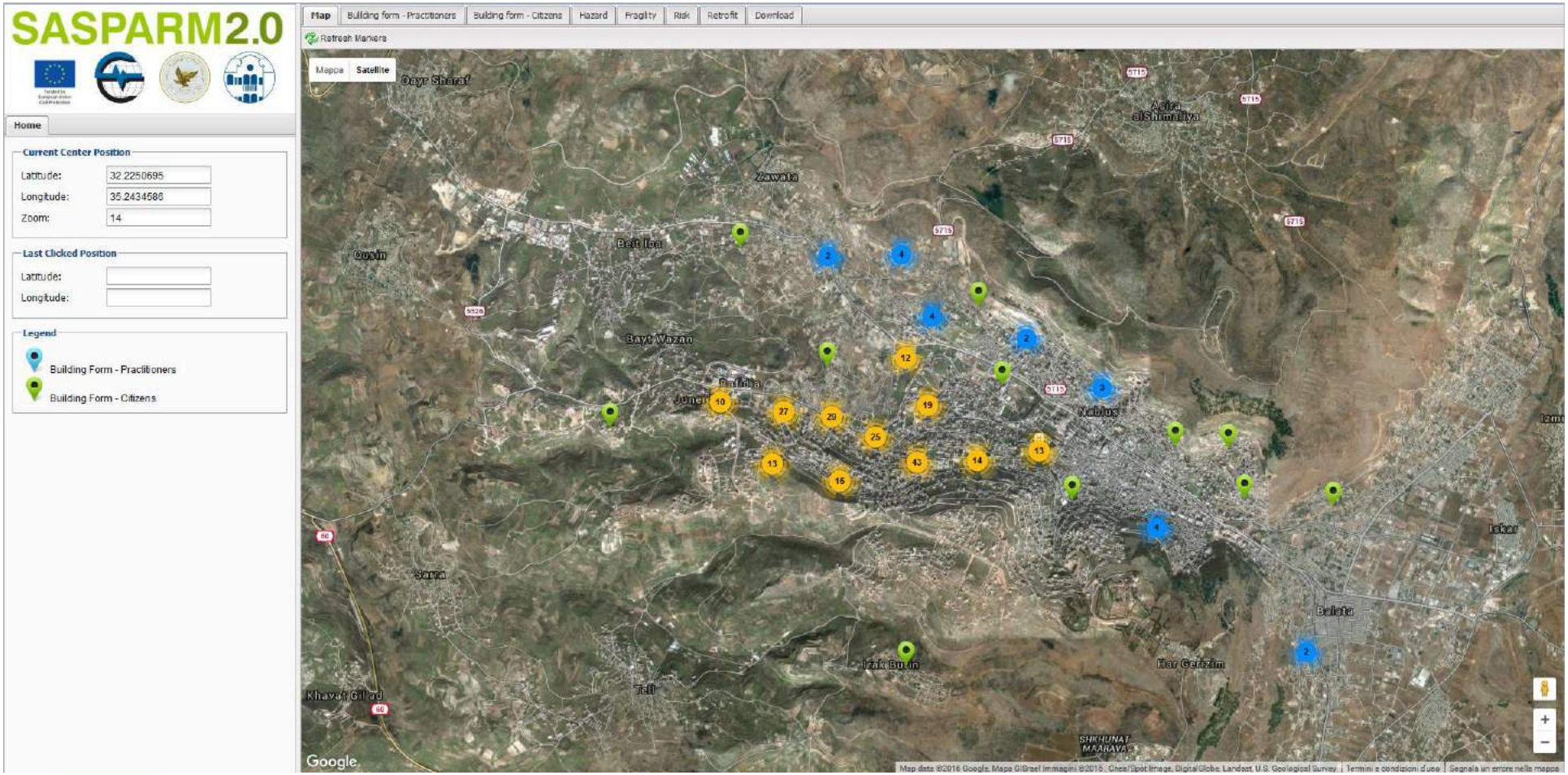
Collected data

On May 17th, **191 practitioner forms** and **61 citizen forms** were uploaded in the WebGIS platform



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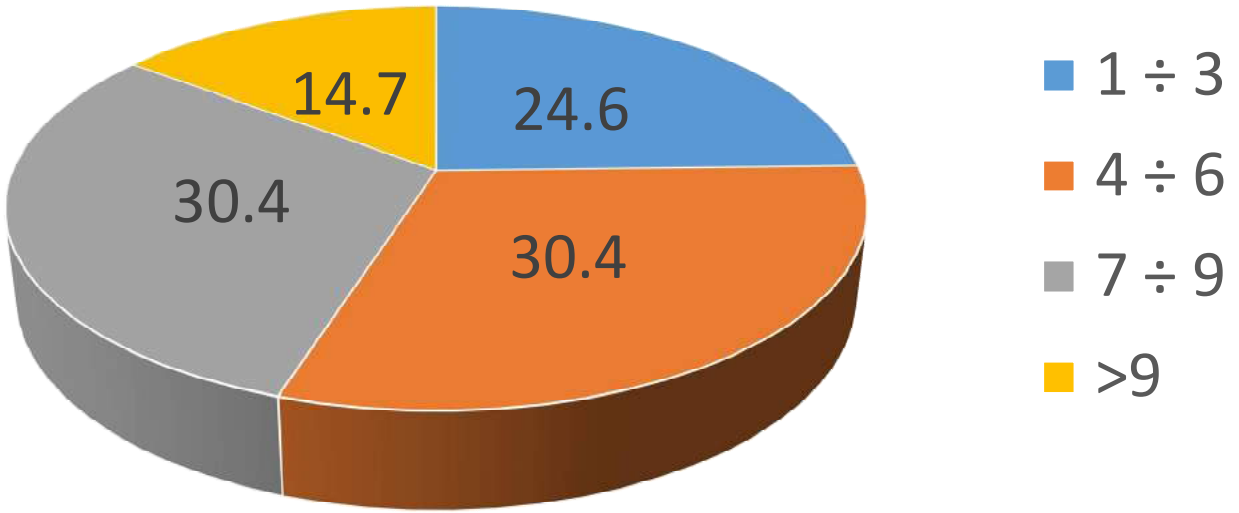
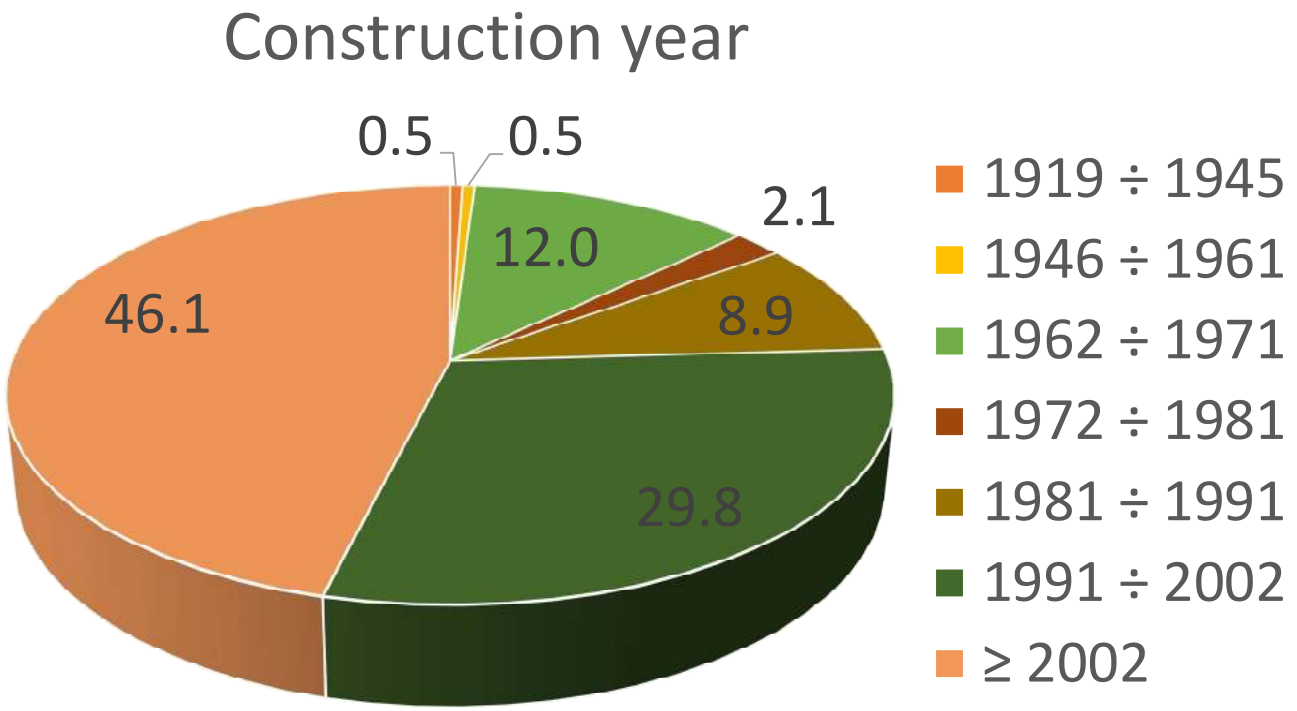
Practitioner forms - General Information

Total number of floors with basement



Most of the buildings are not attached to other buildings on the edges (97%). All of them are private buildings.

Practitioner forms - General Information



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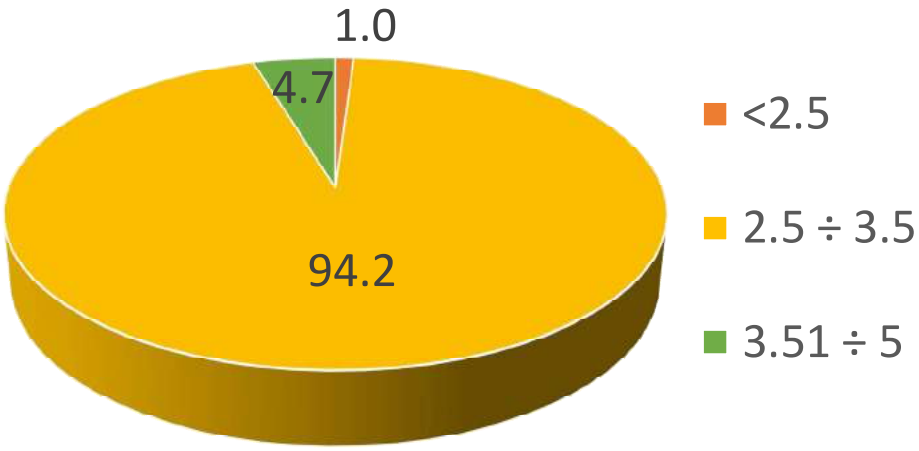
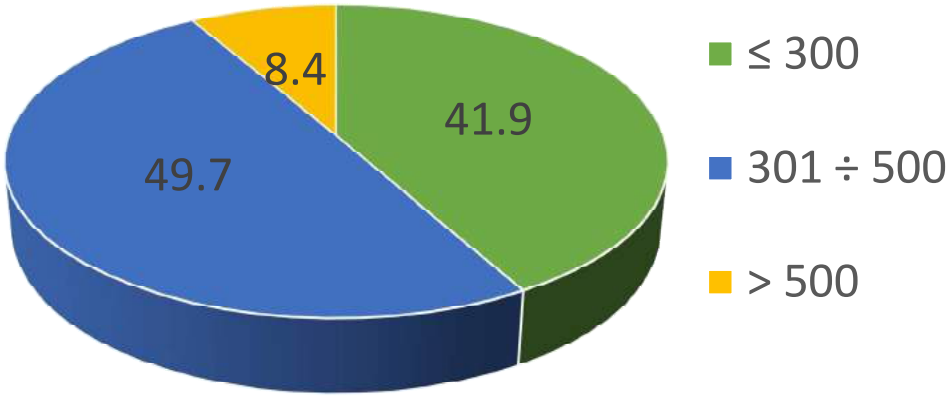
Practitioner forms - General Information

Average of floor height [m]

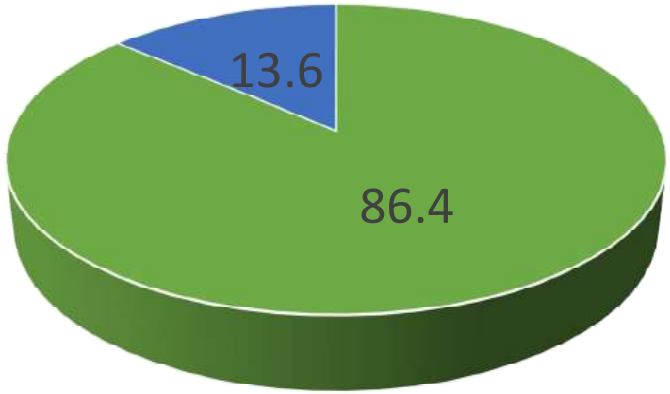


Average of floor area [m²]

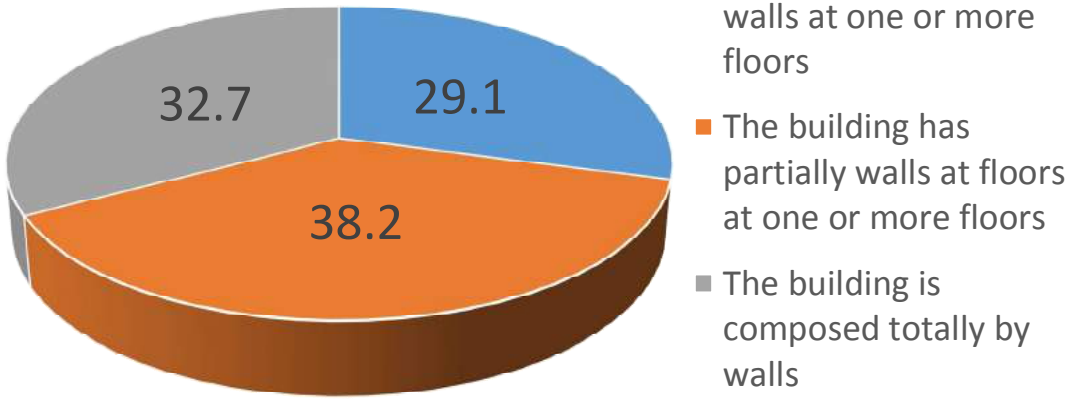


Practitioner forms – Vertical Structure

Vertical Structure of the buildings



RC buildings



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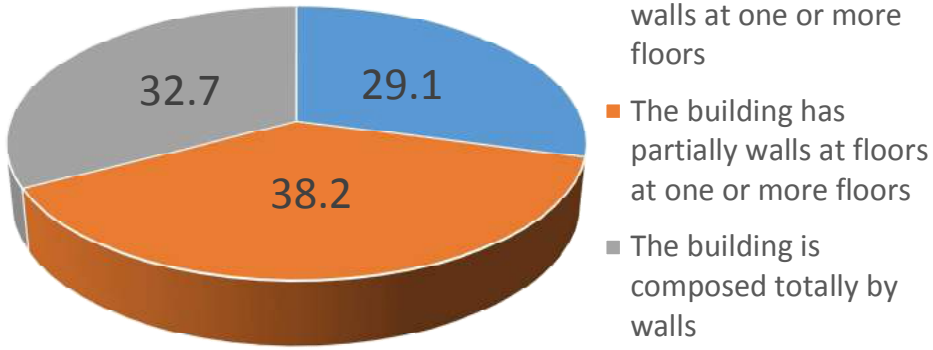
Practitioner forms – RC buildings

RC buildings



No walls at one floor

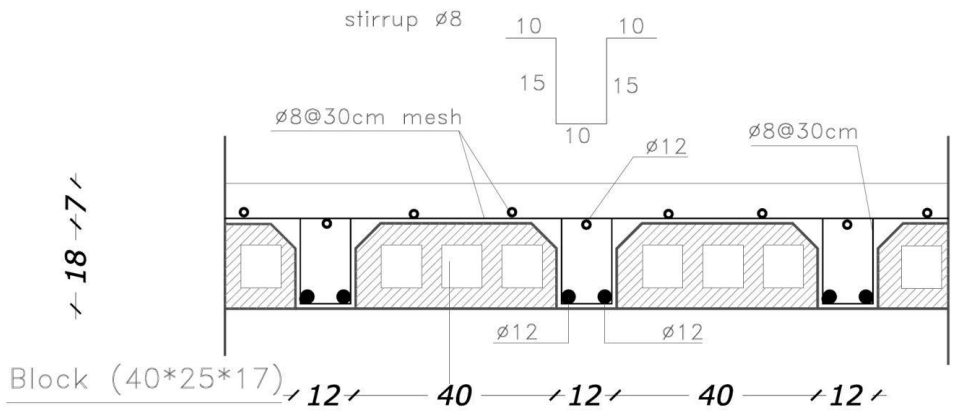
Partial walls at 2 floors

Walls regularly distributed

Practitioner forms – Horizontal Structure

Most of the buildings have a heavy and flat roof (99.5%) and a reinforced concrete ribbed slab (73%)

Reinforced concrete ribbed slab



Flat roof

Practitioner forms – Horizontal Structure

There are 40 buildings with Cantilever structures

Practitioner forms – Regularity

Regularity in plan

Not regular in plan

Regularity in elevation

Not regular in elevation

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How to use the data collected

Using the information collected through the forms it is possible to assign to each building one of the following structural typologies:

- ✓ Masonry
- ✓ Reinforced Concrete in which torsional modes do not play a role
- ✓ Reinforced Concrete in which torsional modes govern the collapse mechanism
- ✓ Shear Wall in which torsional modes do not play a role
- ✓ Shear Wall in which torsional modes govern the collapse mechanism

The assigned typology, combined with the number of storeys of the building, allows to connect each building with a set of five fragility curves, where each curve corresponds to damage levels ranging from D1 to D5 (from light damage to collapse) of the EMS98 scale.

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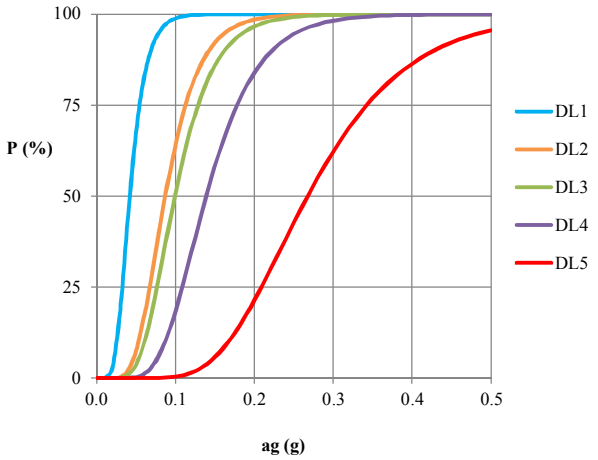
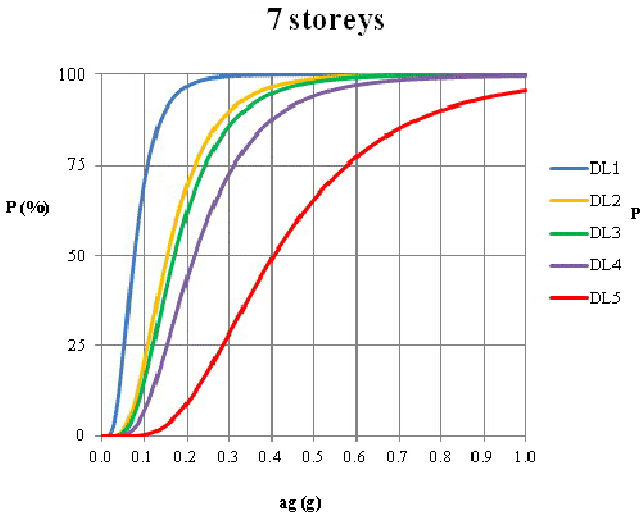
Fragility curves

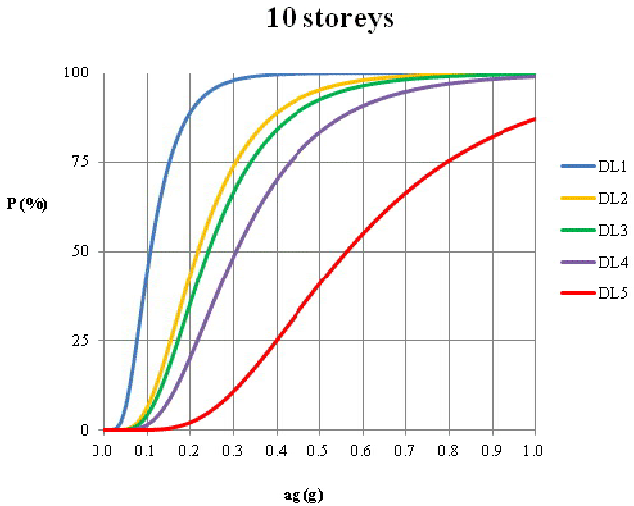
The fragility curves have been developed starting from the SP-BELA (Simplified Pushover-Based Earthquake Loss Assessment) methodology. SP-BELA has been adapted to be representative of the reality of the as built in Nablus.



Fragility curves for **masonry** buildings with **2 storeys**



Fragility curves for **RC frame** buildings with **7 storeys**



Fragility curves for **shear wall** buildings with **10 storeys**

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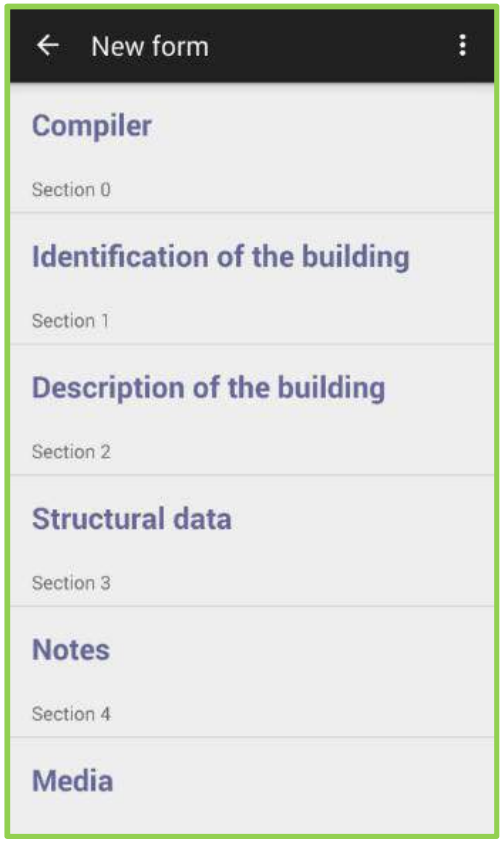
Compiling e-forms through dedicated smart phone and tablet APPS

- ✓ Two Apps (one for citizens and another for practitioners) for tablet and smart phone have been made available to compile the e-form on site
- ✓ Each App allows compilation on field also in off-line mode
- ✓ Data can be stored on smart phone or tablet and sent to WBP once an internet connection is available



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Closure

- Building collection forms are made available
- Compilation of the forms can be done through the WebGIS or Apps
- Thanks to involvement of different target groups (i.e. citizens, practitioners and students) a large database on vulnerability data, from which it is possible to define the seismic risk properties and to suggest possible risk mitigation measures, can be gathered free of charge
- Case study of Nablus could be expanded to other cities with no need of further developments
- Taxonomy could be updated along with vulnerability study and seismic hazard to compute seismic risk and suggest seismic risk mitigation in other countries
- Similar platform could be made available to other countries where a similar process to enhance awareness on seismic risk issues could be undertaken

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Collection of structural data by Palestinian practitioners to implement the vulnerability models

Prof. Jalal Dabbeek
An Najah National University

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Presentation outline

1. General overview of SASPARM 1 and SASPARM2: the dissemination activities and target groups;
2. Integration and Interaction of SASPARM2 with other Projects and Activities (EU, UNISDR, UNDP, OCHA, Red Crescent, Red Cross, etc);
3. General overview of building taxonomy in Palestine (Nablus city as a case study);
4. Collection of structural data by Palestinian practitioners to implement the vulnerability models ;
5. SASPARM2 dissemination activities and Sendai Framework for Disaster Risk Reduction in Palestine;
6. The following steps / What is next?

1. General overview of SASPARM 1 and SASPARM2 : dissemination activities and target groups;

SASPARM 1

Conferences

SASPARM 2.0

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Workshops and meetings

SASPARM 1

Results: Adopting the JSBC











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Training Courses











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Lectures

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Integration and Interaction with other Projects and Activities

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Tenth of reports, interviews, articles…etc

SASPARM 1

Media Coverage

- **Web sites**
- **Radios**
- **TVs**
- **Films and photos**
- **Newspapers**
- **Face book,…etc**

http://www.sasparm.ps/en/?page=one&cat=41

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Local workshops and meetings

A Workshop Conducted on "Disaster Risk Reduction in Palestine: Palestine Safe City Standards and the 10 Essentials for Making Cities Resilient" - Sendai Framework, Tulkarem 24/03/2016

Meetings with stakeholders in Nablus Municipality

http://sasparm.ps/en/?page=details&newsID=236&cat=3

http://sasparm.ps/en/?page=details&newsID=238&cat=3

http://sasparm.ps/ar/?page=details&newsID=220&cat=3

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ورشة عمل "تطوير نظام إدارة مخاطر الكوارث في فلسطين"

Workshop on "Development of Disaster Risk Management Program in Palestine."

•Several meetings with local and national stockholders have been done during 2015 and 2016, such as: Engineers Association, Contractors Union, major municipalities like Nablus, Hebron, Ramallah, Tulkarm and Bethlehem, PA ministries like Housing and Public Works, local government, Education, Palestinian Environment Authority, Civil Defense, National Agency for Disaster Risk Mitigation, Chamber of Commerce and Industry of Nablus, and other National committees in which President office, the Prime Minister's office and the different ministries are represented (The National technical team for the development of Disaster Risk Management system).

http://sasparm2.com/workshop-national-team-of-develop-disaster-risk-management-system/

http://sasparm2.com/workshop-on-development-of-disaster-risk-management-program-in-palestine/

http://sasparm.ps/ar/?page=details&newsID=178&cat=3

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Training courses

جلسة تدريبية لطلاب الجامعة ضمن مشروع SASPARM2

Training Sessions University Students - SASPARM 2.0

04/11/2015

http://sasparm.ps/ar/?page=details&newsID=204&cat=3

http://www.sasparm2.com/training-sessions-university-students-sasparm-2-0/

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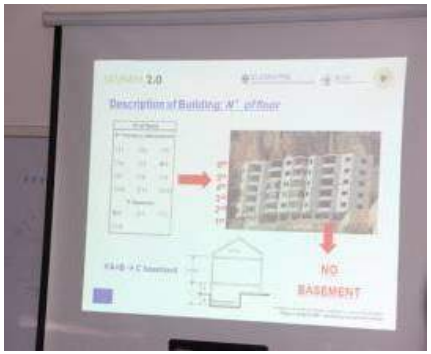
Training Sessions for Practitioners SASPARM 2

جلسة تدريبية للمهندسين ضمن مشروع SASPARM2

05/11/2015

A training course for students at planning engineering department within the project SASPARM 2

02/12/2015



http://sasparm.ps/ar/?page=details&newsID=206&cat=3

http://sasparm2.com/a-training-course-for-students-planning-engineering-department-within-the-project-sasparm-2/

http://sasparm.ps/ar/?page=details&newsID=203&cat=3

http://www.sasparm2.com/training-sessions-for-practitioners-sasparm-2/

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دورة تدريبية لطلاب قسم هندسة البناء والمدني ضمن مشروع

A training course for students at building and civil engineering Departments - SASPARM2 -

05/12/2015

Group no 1

Group no 2

http://www.sasparm2.com/a-training-course-for-students-of-the-department-of-construction-and-civil-engineering-within-the-project-sasparm-2/

http://sasparm.ps/ar/?page=details&newsID=207&cat=3

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Training course on data collection in site from several buildings in Nablus city and fill out the form to assess the vulnerability and determine their resistance to earthquakes

4/04/2016

Group no 3 and no 4

http://sasparm.ps/en/?page=details&newsID=237&cat=3

http://sasparm.ps/ar/?page=details&newsID=224&cat=3

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2. Integration and Interaction of SASPARM2 with other Projects and Activities (EU, UNISDR, UNDP, OCHA, Red Crescent, Red Cross, etc);

An Najah University participated in a workshop For Disaster Risk Reduction in Beirut

15/03/2016

An-Najah Participates in an International Workshop on Mitigation of Disasters Due to Severe Natural Events in Sir Lanka **12/03/2016**

http://sasparm2.com/an-najah-participates-in-an-international-workshop-on-mitigation-of-disasters-due-to-severe-natural-events-in-sir-lanka/

http://sasparm2.com/an-najah-participates-in-a-workshop-on-disaster-risk-reduction-in-beirut-20-march-2016/

http://sasparm.ps/ar/?page=details&newsID=216&cat=3

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المشاركة في مؤتمر الأمم المتحدة "دور العلوم والتكنولوجيا في الحد من مخاطر الكوارث" سويسرا- جنيف

An-Najah Participates in the UNISDR Science and Technology Conference, Geneva, 27-29/01/2016

The Arab Region Meeting on the Implementation of Sendai Framework for Disaster Risk Reduction, Egypt-Cairo

8/11/2015 UNISDR

http://sasparm.ps/ar/?page=details&newsID=205&cat=3

http://www.sasparm2.com/an-najah-professor-participates-in-the-arab-region-meeting-on-the-implementation-of-sendai-framework-for-disaster-risk-reduction/

ECHO/SUB/2014/694399 - SASPARM 2.0 Support Action for strengthening PAlestine capabilities for seismic Risk Mitigation
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http://sasparm.ps/ar/?page=details&newsID=209&cat=3

http://sasparm.ps/en/?page=details&newsID=230&cat=3

An-Najah /UPDRR Participates in a Workshop on Earthquakes in Italy, RELEMR, 26/10/2015


An-Najah /UPDRR Participates in a Workshop on Arab Cities Disaster Resilience in Jordan



http://www.sasparm2.com/an-najah-professor-participates-in-a-workshop-on-arab-cities-disaster-resilience-in-jordan/

http://sasparm.ps/ar/?page=details&newsID=198&cat=3

http://sasparm.ps/ar/?page=details&newsID=213&cat=3

http://sasparm2.com/an-najah-professor-participates-in-a-workshop-on-earthquakes-in-italy/

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Training course at An-Najah National University in the field of seismic design of buildings 22/12/2015

A Training course on Seismic Design of buildings in Tulkarm city

http://sasparm.ps/ar/?page=details&newsID=180&cat=3

http://sasparm2.com/earthquake-risk-mitigation-in-palestine-and-a-training-courses-on-seismic-design-of-buildings-in-tulkarm-city/

http://www.sasparm2.com/graduate-training-course-at-an-najah-national-university-in-the-field-of-seismic-design-of-buildings-2/

http://sasparm.ps/ar/?page=details&newsID=208&cat=3

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Training course s at An-Najah National University in the field of seismic design of buildings

A Training course on Seismic Design of buildings in Jenin City

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http://sasparm.ps/ar/?page=details&newsID=183&cat=3

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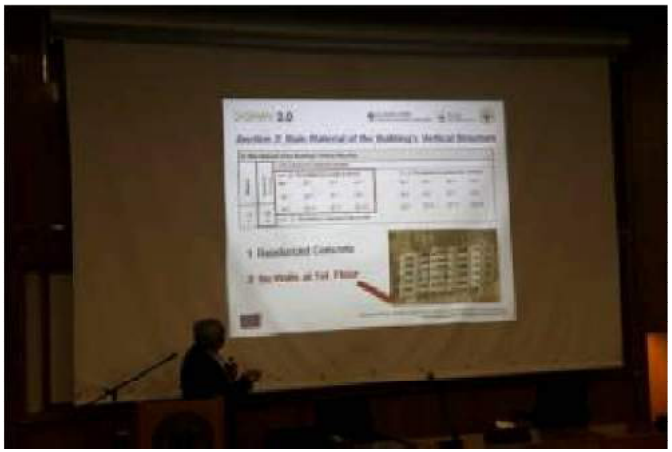
Short Training Course on Disaster Risk Reduction - SASPARM2 (Students and Citizens)



12/03/2016

http://sasparm.ps/en/?page=details&newsID=233&cat=3

http://sasparm.ps/ar/?page=details&newsID=219&cat=3

ECHO/SUB/2014/694399 - SASPARM 2.0 Support Action for strengthening PAlestine capabilities for seismic Risk Mitigation
Project co-funded by ECHO - Humanitarian Aid and Civil Protection

Building capacity within civil society and general public to cope with natural disasters by using several dissemination activities

- Community service programs/courses: **5000 students** each year, short courses on DRM, Blood donation, 50 working hours with emergency response org., working for/with vulnerable citizens (with children's, mothers, handicapped or disabled persons, etc)…
- Developing engineering courses for non engineers and urban planning courses for not planners.
- Memorandum of under standing with CD, R Cresent, OCHA, R C, etc……

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Five Short Training Courses on Disaster Risk Management and Emergency Response (in five cities: Ramallah, Salfeet, Tulkarem, Hebron and Bethlehem). - Relief Medical Care Asso…






http://sasparm.ps/ar/?page=details&newsID=194&cat=3

http://sasparm2.com/disaster-management-and-emergency-response-short-training-course-in-ramallah/

ECHO/SUB/2014/694 SASPARM 2.0 Support Action for Strengthening Disaster Risk Management in the Arab Region
Project co-funded by ECHO - Humanitarian Aid and Civil Protection

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Media Coverage

- Web sites
- Radios
- TVs
- Newspapers
- Face book,…etc

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3. General overview of building taxonomy in Palestine

(Nablus case study);

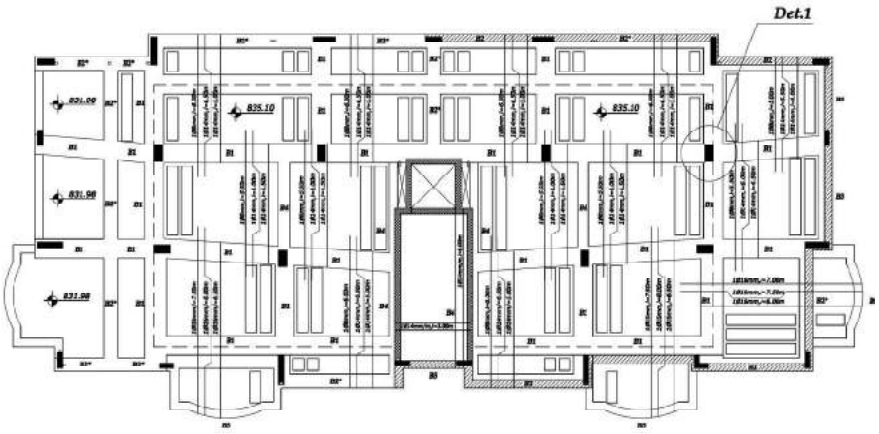
Building types:

- Reinforce concrete frame buildings;
- Shear wall buildings;
- Masonry Buildings;
- Buildings with soft storey.
- Reinforce concrete buildings with cantilever

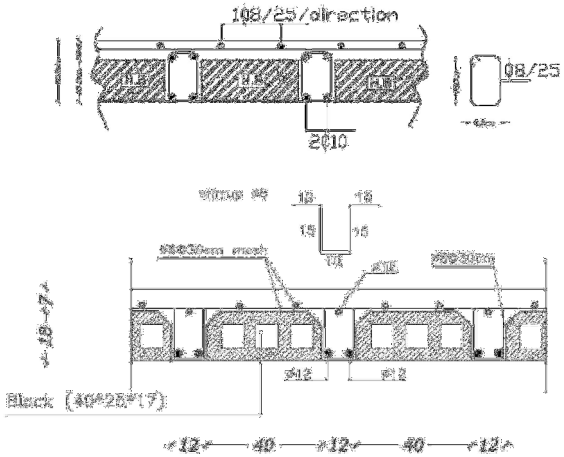
Typical R.C. Frame Buildings in Nablus, Palestine

1. REINFORCED CONCRETE FRAME BUILDINGS

This type of buildings is the most common in Nablus. It mainly consists of in-situ casted reinforce concrete slabs supported by reinforced concrete beams and columns. This type is mostly used for residential buildings with 2 to 3 bays in both directions and up to the heights of 15 floors. Generally it is common to use for these buildings ordinary concrete of cylindrical compressive strength between 24 and 32 MPa. The reinforcing steel can be of tensile strength 420 MPa. The partitions are generally made of hollow concrete blocks with 100 mm thickness.



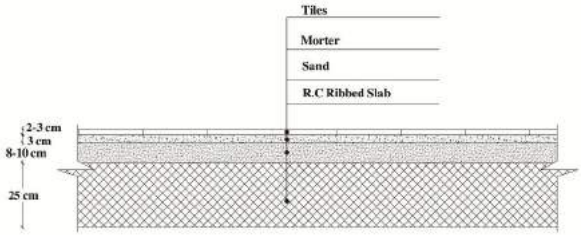
Typical Slab Reinforcement for a Frame Concrete Building



Typical Ribbed Slab Cross Section

The type of slabs have an influence also on the buildings geometrical dimensions (slab span, interstory height). The two used typologies of slabs are listed below.

One way ribbed slab system



Typical Architectural Floor Section

Steel Cage for a Concrete Column in an R.C. Frame Building

Cross Section of Exterior Masonry Wall

Concrete Columns in an R.C. Frame Building

2. SHEAR WALL BUILDING

Shear Wall Building with Stone Cladding

Stone Cladding of Shear Wall Building

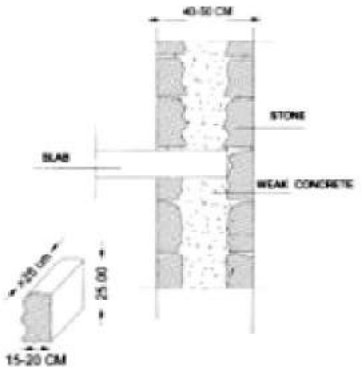
Reinforcement Used to Fasten the Stone Cladding to the Shear Wall

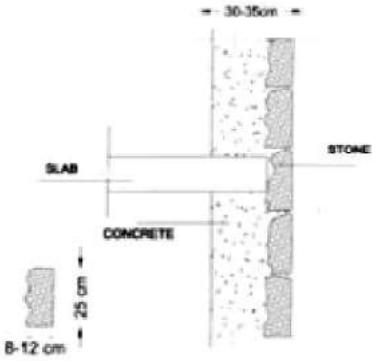
3. MASONRY BUILDINGS

Masonry buildings used to be common in Nablus up to the1970. Masonry buildings comprise masonry walls that support reinforced concrete slabs.

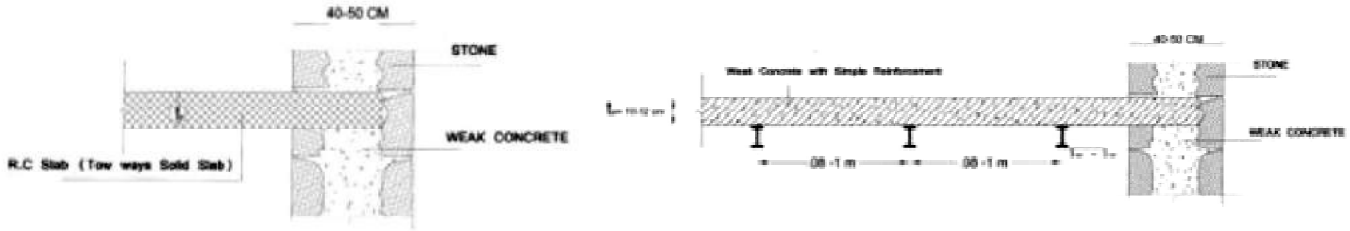
A Three Story Masonry Building

An Old Masonry Building





Detailing of Section



Concrete Slab in Masonry Buildings

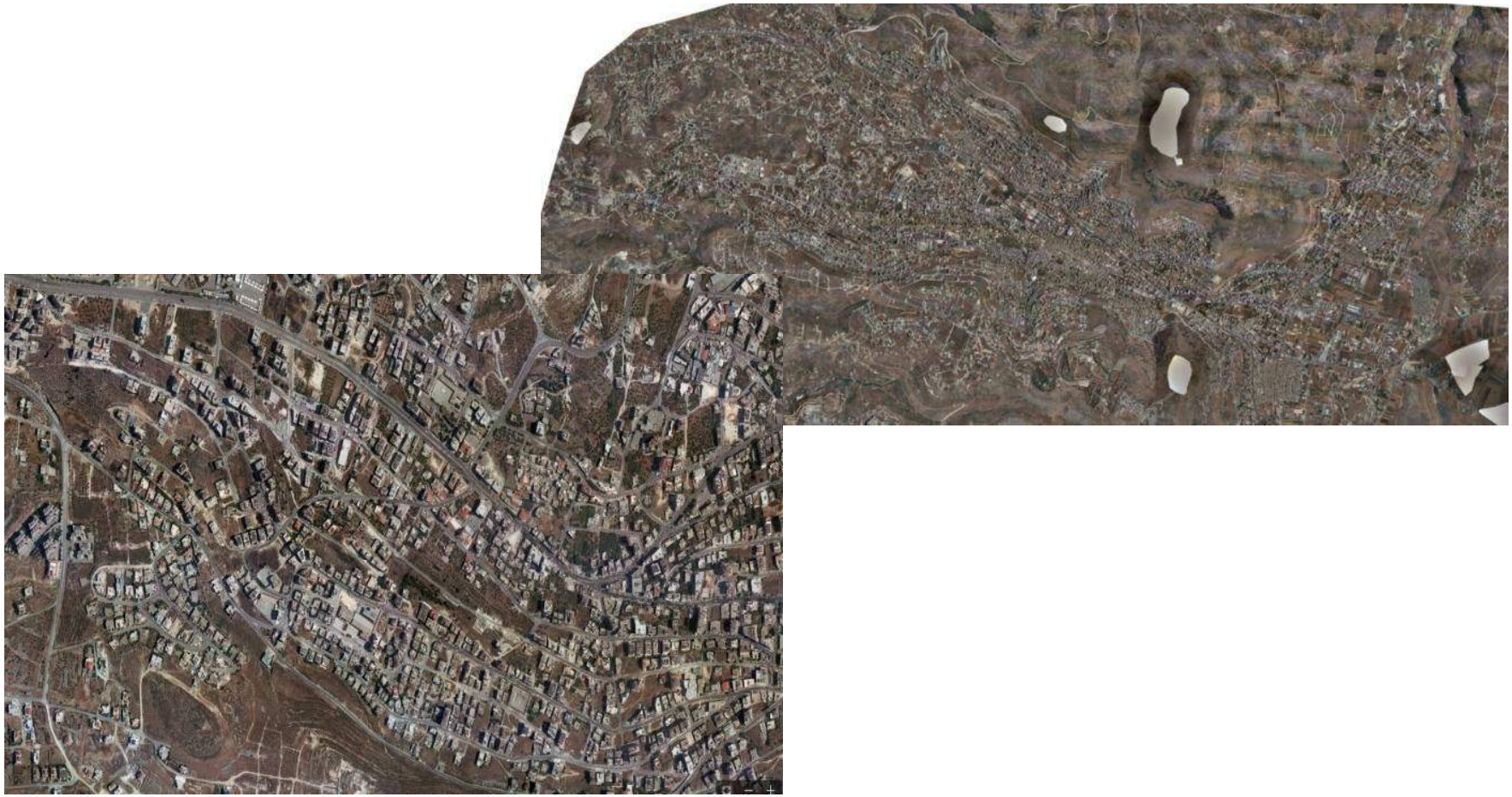
4 . BUILDING WITH SOFT STORY

A Building with Partial Soft Story

A Building with Full Soft Story

Circular Concrete Columns in an R.C. Frame Building

4. Collection of structural data by Palestinian practitioners to implement the vulnerability models ;



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GENERAL FORM FOR THE BUILDING PRACTITIONERS

Name of the compiler: Essam Team

Education level: Civil Engineer

1) Identification of the Building

Municipality: Nablus

Street name: Al Masjid street

Name of the building: Al Hindi Building

Geographical Coordinates (WGS 84 System - Decimal degrees)

Lat. 32.1 95 7.22

Long. 35.1 91 0.83

Position of Building:

1 ● Isolated Building | 2 ○ Internal Building | 3 ○ End Building | 4 ○ Corner Building

2) Description of the Building

Metrics | Age | Use - Exposure

3) Structural Data

Vertical Structure of the Building

Horizontal Structure					Roof			
Not identified	Solid slab with strip beams	Reinforced concrete ribbed slab	Reinforced concrete slab	Steel horizontal slab	Heavy and flat	Heavy and sloped	Light and flat	Light and sloped
○	○	●	○	○	●	○	○	○

4) Regularity

In plan		In elevation	
Regular	Not regular	Regular	Not regular
○	●	○	●

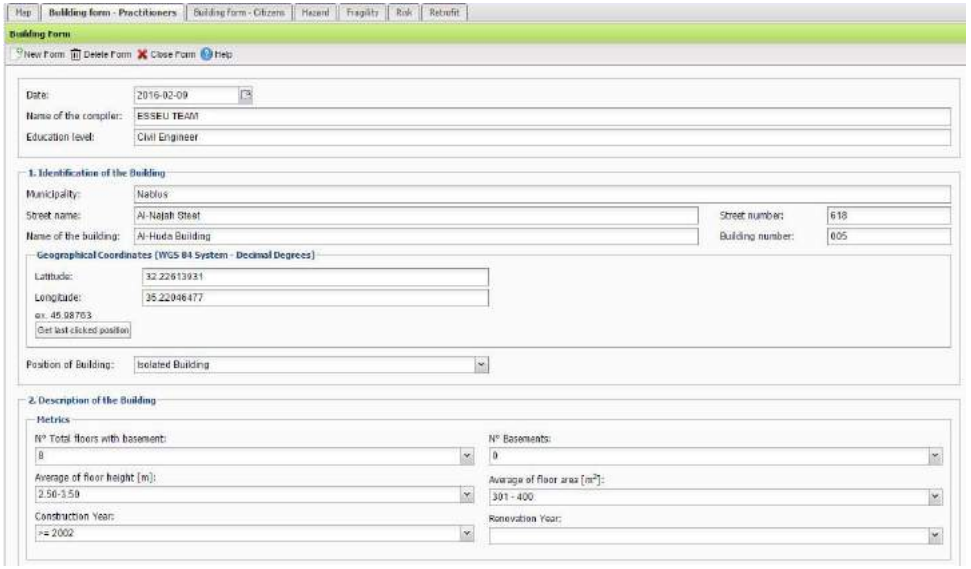
5) Geomorphological Data

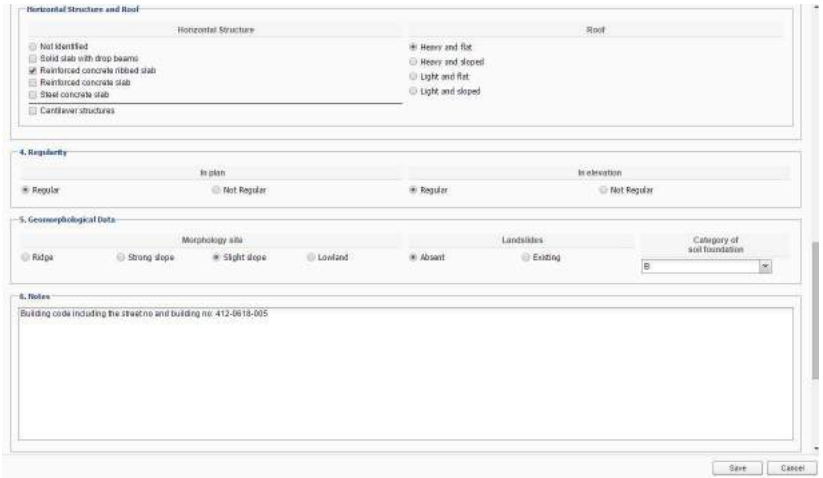
Morphology site				Landslides		Category of soil foundation
Ridge	Strong slope	Slight slope	Lowland	Absent	Existing	
○	○	●	○	●	○	B

6) Notes

Building code including the street no and building no: 412-0619-005

Date: 2016.2.9 | The Compiler (Block Letters): Eng | Sign of the Compiler





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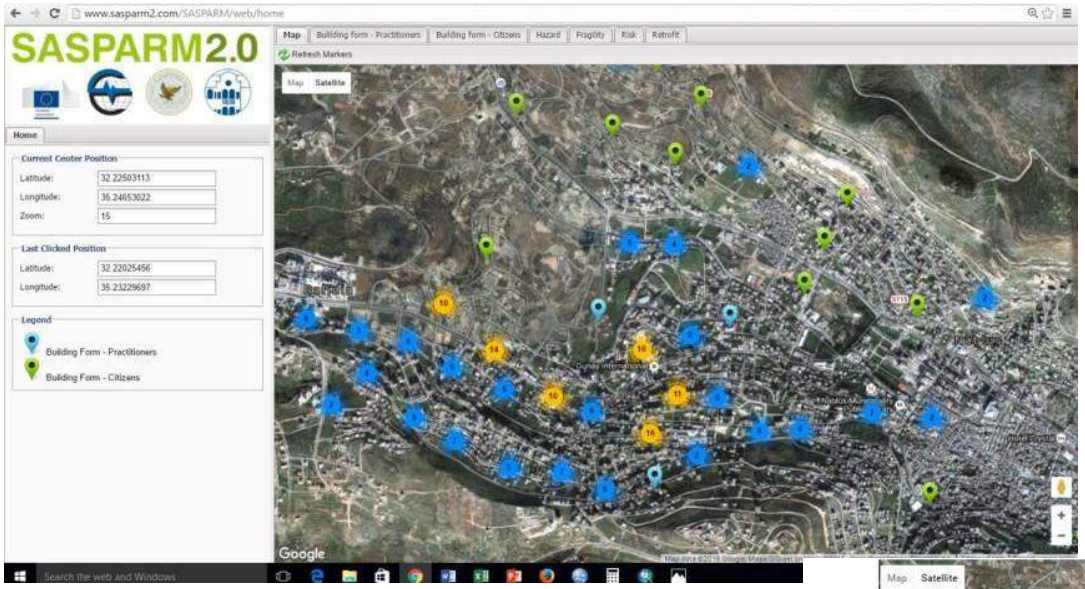

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5. فعاليات مشروع ساسبارم وإطار سِنداي للحد من مخاطر الكوارث

5. SASPARM2 dissemination activities and Sendai Framework for Disaster Risk Reduction in Palestine;

2030 - 2015

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أولويات العمل

Priorities for action

الأولوية ١ - فهم مخاطر الكوارث

Priority 1: Understanding disaster risk

الأولوية ٢ - تعزيز [الحكم والمؤسسات/الترتيبات المؤسسية/الأطر التنظيمية والقانونية والسياسية] لإدارة مخاطر الكوارث

Priority 2: Strengthening governance to manage disaster risk

الأولوية ٣ - الاستثمار في مجال الحد من مخاطر الكوارث من أجل زيادة القدرة على مواجهتها

Priority 3: Investing in disaster risk reduction for resilience

الأولوية ٤ - تعزيز التأهب للكوارث بغية التصدي لها بفعالية و "إعادة البناء بشكل أفضل" في مرحلة التعافي والإصلاح وإعادة البناء

Priority 4: Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction

Thank you for your attention.

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Support Action for Strengthening PAlestine capabilities for seismic Risk Mitigation

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Training courses on seismic risk and seismic risk mitigation

Dr. Ricardo Monteiro
Institute for Advanced Study of Pavia

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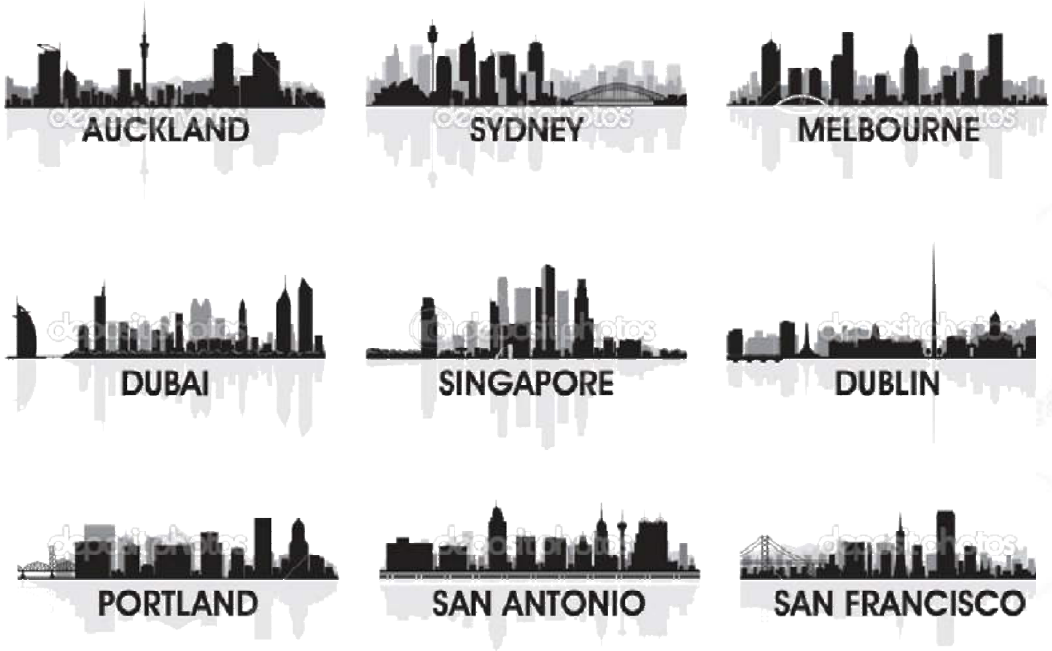
Training

- ✓ Knowledge transfer
- ✓ Capacity building
- ✓ Interaction and exchange
- ✓ Awareness
- ✓ Legacy

Knowledge transfer



- ✓ **Different context**
- ✓ **Extendable approach**

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Outline

1. Local workshops;
2. Training courses – seismic design of buildings;
3. Training courses – vulnerability of buildings for seismic risk assessment;
4. Training courses – disaster management and emergency response;
5. Forthcoming courses.

Training

- ✓ **Continuous training**
- ✓ **English and Arabic**

2015	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Local Workshops												
Seismic Design												
Vulnerability and Risk												
DRR and Emergency Response												

2016	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Local Workshops												
Retrofitting												

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1. Local Workshops

Development of Disaster Risk Management Program in Palestine

- **April 2015**, Palestinian Red Crescent
- Ministries, Governmental Authorities, Civil society organizations, Research Centres, Emergency Committees, UNDP and OCHA representatives and volunteers

Future vision and consolidation of concepts

- **June 2015**, National Team (DRM) office
- DRR in Palestine and determination of **general framework for disaster risk management**

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1. Local Workshops

Disaster Risk Reduction in Palestine: Safe City Standards and the 10 Essentials for Making Cities Resilient

- **March 2016**, Tulkarm
- Tulkarm Governorate, Urban Planning and DRR Center of An-Najah University, Palestinian Civil Defense, researchers and specialists in the field

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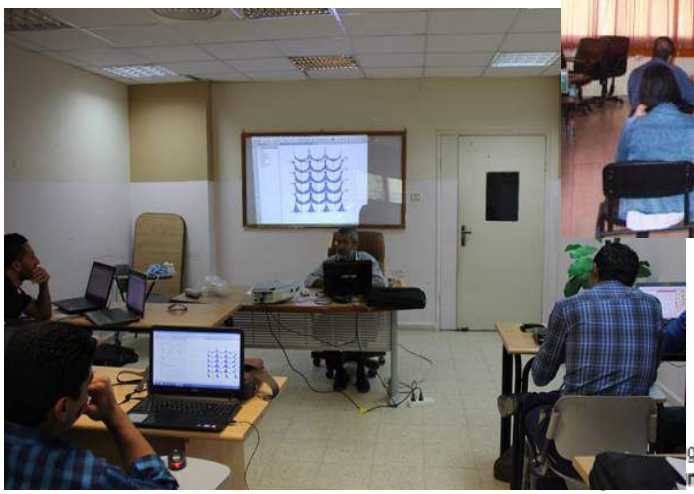
2. Training courses – seismic design of buildings

Fundamentals of seismic analysis and design

- **February 2015**, Nablus - **March 2015**, Jenin - **May 2015**, Tulkarm
- 50-hour course
- Build the capacity of engineers in the field of **seismic design** with practical application with SAP 2000 and ETABS software programmes
- 40 Engineers in Nablus
- 45 Engineers in Jenin
- 26 Engineers in Tulkarm



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nded by ECHO - Humanitarian Aid and Civil Protection

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3. Training courses – Vulnerability of buildings and seismic risk

Training session for University Students and Practitioners

- **November 2015**, **Pavia ➔ Nablus**
- Courses for the compilation of the **collection forms** to gather data of buildings and implement vulnerability models
- 100 University Students
- 35 Practitioners - Ministry of Local Government, Engineers Association, Civil Defense, Nablus Municipality and Design engineering offices

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3. Training courses – vulnerability of buildings and seismic risk

Training session for University Students and Practitioners

Training Sessions University Students - SASPARM 2.0

Pavia - Nablus, November 4-5, 2015
November 4th

09.30-09.45	Presentation of the project **EUCENTRE**
09.45-10.30	Taxonomy Presentation **IUSS**
10.30-10.45	*Coffee break*
10.45-11.15	Vulnerability models based on data collected with the forms **EUCENTRE**
11.15-12.30	Contents of the collection forms **IUSS**
12.30-13.30	*Lunch break*
13.30-14.15	Examples on the compilation of forms for existing buildings **EUCENTRE**
14.15-14.45	Italian Seismic Risk Maps **EUCENTRE**
14.45-15.00	*Coffee break*
15.00-16.00	Summary of Risk Assessment, Mitigation and Management **ANNU**
16.00-16.30	Discussion of practical aspects on the compilation of the forms Questions

Training Sessions Practitioners - SASPARM 2.0

Pavia - Nablus, November 4-5, 2015
November 5th

09.30-09.45	Presentation of the project **EUCENTRE**
09.45-10.30	Taxonomy Presentation **IUSS**
10.30-10.45	*Coffee break*
10.45-11.15	Vulnerability models based on data collected with the forms **EUCENTRE**
11.15-12.30	Contents of the collection forms **IUSS**
12.30-13.30	*Lunch break*
13.30-14.15	Examples on the compilation of forms for existing buildings **EUCENTRE**
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15.00-16.00	Summary of Risk Assessment, Mitigation and Management **ANNU**
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bilities for seismic Risk Mitigation
nitarian Aid and Civil Protection

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3. Training courses – vulnerability of buildings and seismic risk

Form for Citizens (helped by students)

نموذج للمواطنين

3) المواد المستخدمة في البناء العمودي

إذا كان المبنى مسلح

A ○ جدران حجرية حجارة

B ○ قرصانة مسلحة

B1 ❑ : المبنى بدون جدران في الطابق ❑1 ❑2 ❑3 ❑4 ❑5 ❑6 ❑7 ❑8 ❑9 ❑10 ❑11 ❑12≤

B2 ❑: المبنى به جدران جزئية على الطابق ❑1 ❑2 ❑3 ❑4 ❑5 ❑6 ❑7 ❑8 ❑9 ❑10 ❑11 ❑12≤

B3 ❑ : المبنى مغطى بالكامل بجدران

مبنى بدون جدران في طابق واحد	مبنى بدون جدران في طابق واحد فقط	مبنى مغطى بالجدران بالكامل

4. ملاحظات:

التاريخ: / / اسم الفاحص/السكان: التوقيع

اسم المدون

المستوى التعليمي

الكلية

القسم

1) التعريف بالمبنى

البلدية

العنوان

اسم الشارع | الحي/ البلدية | الرمز البريدي

اسم المبنى

الاحداثيات الجغرافية نظام WGS 84

خط عرض

خط طول

موقع المبنى

1○.البناء منفصل/معزول | 2○. البناء موجود داخل منطقة مباني | 3○.البناء موجود على الأطراف | 4○.البناء موجود في الزاوية

2) وصف المبنى

عدد الطوابق	عمر المبنى	الاستخدام use exposure			الملكية
عدد الطوابق مع التسوية ○1 ○2 ○3 ○4 ○5 ○6 ○7 ○8 ○9 ○10 ○11 ○≥12 عدد التسويات ○0 ○1 ○2 ○≥3	البناء و الترميم 1 ❑ ≤1919 2 ❑19 ÷45 3 ❑ 46÷ 61 4❑62 ÷71 5❑72 ÷81 6❑82 ÷91 7❑91 ÷02 8❑≥2002	نوع الاستخدام ❑سكني ❑انتاجي ❑تجاري ❑مكاتب ❑ خدمات عامة ❑ مخازن ❑ استراتيجي/ عام ❑سياحي – اقامة	عدد الوحدات المستخدمة	% الاستخدام A ○>%65 B ○30 ÷%65 C○ <%30 D○قيد الانشاء E○ غير منتهي F○ مهجور	السكان 100 10 1

A. ○ خاص
B.○ عام

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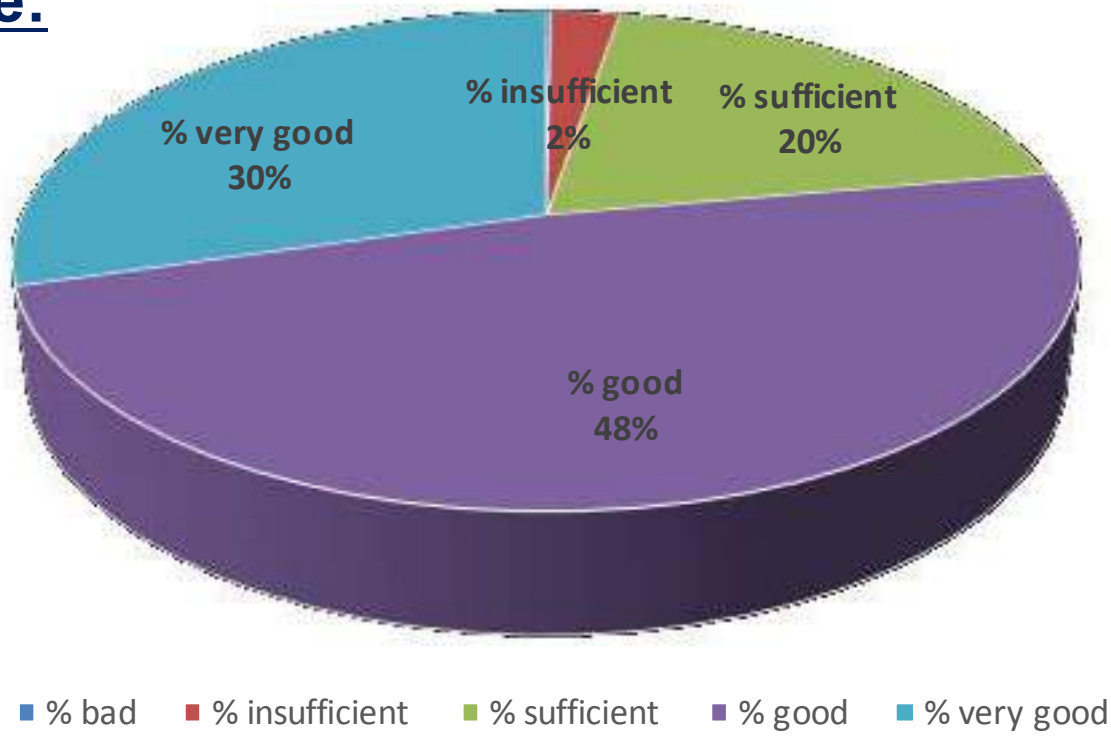
3. Training courses – vulnerability of buildings and seismic risk

Training session for University Students and Practitioners

Feedback

Quality of the course:

- Usefulness
- Content
- Structure
- Level
- Clarity
- Material
- Exercitations



Score: 4.0 / 5

3. Training courses – vulnerability of buildings and seismic risk

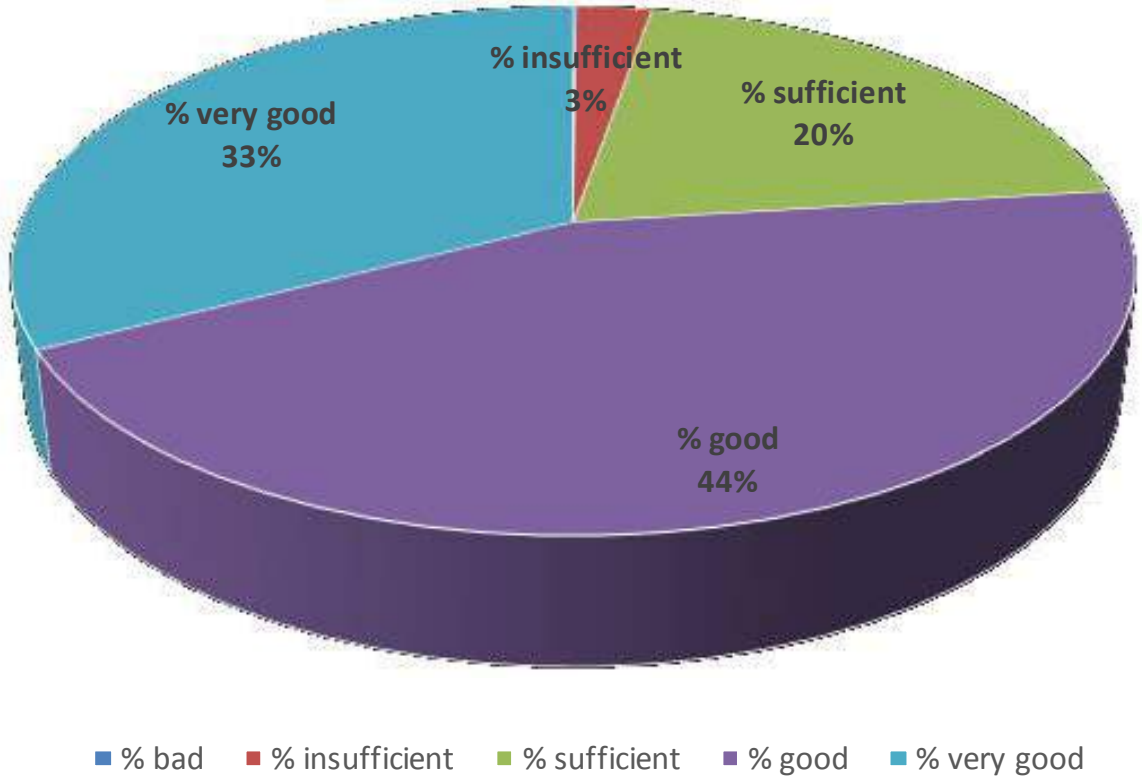
Training session for University Students and Practitioners

Feedback

Lecturers:

- Clarity
- Preparation
- Availability
- Enthusiasm

Score: 4.1 / 5



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3. Training courses – vulnerability of buildings and seismic risk

Training courses for students

- **December 2nd and 5th 2015**, Nablus
- Courses for the compilation of the **collection forms** to gather data of buildings and implement vulnerability models
- 22 University Students of Department of Planning and Engineering
- 40 University Students of Department of Construction and Civil Engineering

- **December 22nd 2015**, Nablus
- Course on Fundamentals of **seismic analysis** and **seismic design**
- 48 students of Department of Civil Engineering and Building Engineering

4. Training courses – disaster management and emergency response

- **August 22nd 2015** - Ramallah, **August 24th 2015** - Salfeet, **August 25th 2015** - Bethlehem, **August 26th 2015** - Hebron
- Spread **awareness** on DRR, society's attitude and responses towards disasters, risk assessment and risk management
- Audience: Palestinian Relief Society's staff and volunteers

4. Training courses – disaster management and emergency response

- **March 2016**, **An-Najah University**
- Develop the culture of disaster risk management for university students and introduce the SASPARM 2.0 Project
- 600 University Students

SASPARM 2.0

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5. Forthcoming courses

- **May 24th 2016, Pavia ➔ Nablus**
- Short training on building **seismic design** and **seismic vulnerability** to enhance expertise
- Audience: Building Contractors

- **May 25th 2016, Pavia ➔ Nablus**
- Comprehension and adoption of **retrofitting measures**: common and advanced techniques for the Palestinian in-built
- Audience: Practitioners and Building Contractors

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5. Forthcoming courses

Training Sessions for Building Contractors

Pavia - Nablus • May 24th 2016

14:30 – 15:30	- Overview of seismic risk assessment - Seismic hazard – faulting system and seismicity of Palestine - Local geology conditions and site effects
15:30 – 16:30	Seismic conceptual design and vulnerability of Palestinian buildings
16:30 – 16:50	*Coffee break*
16:50 – 17:40	- Seismic performance of non-structural elements - Reinforcement of structural elements
17:40 – 18:00	Discussion and questions

Pavia - Nablus • May 25th 2016

14:30 – 14:45	Presentation of the course
14:45 – 15:30	Characteristics of the Nablus in-built
15:30 – 16:15	Common retrofitting measures
16:15 – 16:30	*Coffee break*
16:30 – 16:50	Example of rehabilitation
16:50 – 17:30	Advanced retrofitting measures
17:30 – 18:00	Discussion and questions

Training Session for Practitioners

Pavia - Nablus • May 25th 2016

09:30 – 09:45	Presentation of the course
09:45 – 10:15	Introduction to structural analysis and capacity design
10:15 – 11:00	Characteristics of the Nablus in-built
11:00 – 11:15	*Coffee break*
11:15 – 12:15	Common retrofitting measures
12:15 – 12:35	Example of rehabilitation
12:35 – 13:10	Advanced retrofitting measures
13:10 – 13:30	Discussion and questions

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Thank you

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Support Action for Strengthening PAlestine capabilities for seismic Risk Mitigation

SASPARM 2.0

Tools and guidelines
to quantify and reduce seismic risk in Palestine

Dr. Paola Ceresa
Institute for Advanced Study of Pavia

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Retrofit measures: guidelines and tool

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Retrofit of existing structures

• It envisages not only the compliance with Seismic Code for construction of **new buildings**, but strongly foresees the reduction of seismic risk through retrofitting of **existing buildings** in order to meet **seismic safety requirements**.

• The need for seismic retrofitting in existing buildings can arise due to many reasons such as *building not designed according to Code*, *subsequent updating of Code and design practice*, *deterioration of strength and aging*, *modification of existing structure* or *change in use*.

• An **optimal intervention** has to be conducted in a **cost effective fashion**.

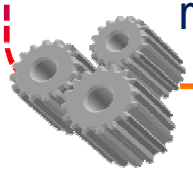
Retrofit of existing structures

In SASPARM 2.0:

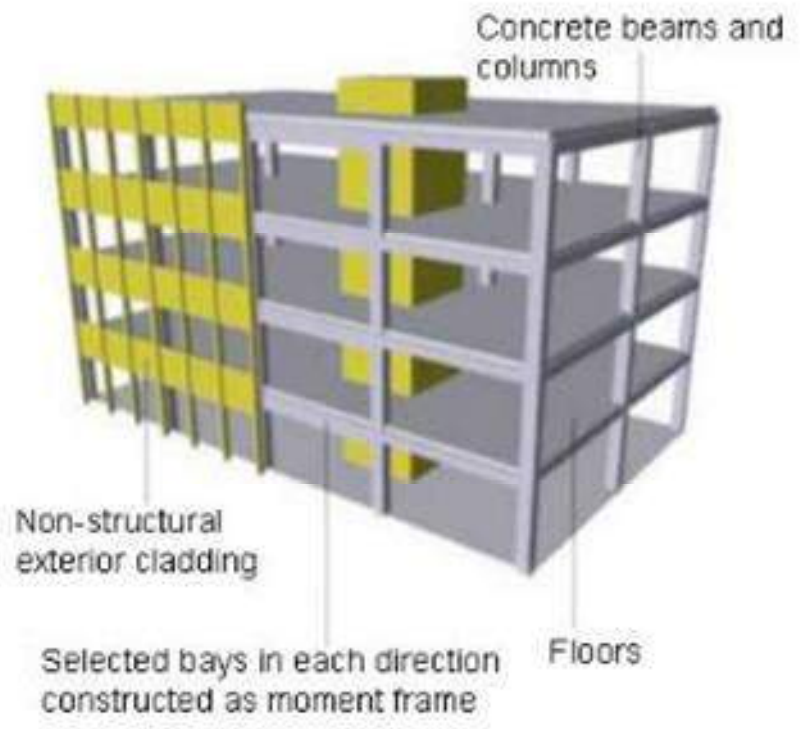
- Potential rehabilitation techniques have been identified:
  - ✓ based on the **taxonomy** highlighted during field investigations.
  - ✓ with special attention to **evaluation**, **costs** and **priorities**.
- The **construction cost** as well as the **cost of disruption** to building users or the **value of contents** to be seismically protected are taken into account.

Guidelines on the identification of retrofit measures

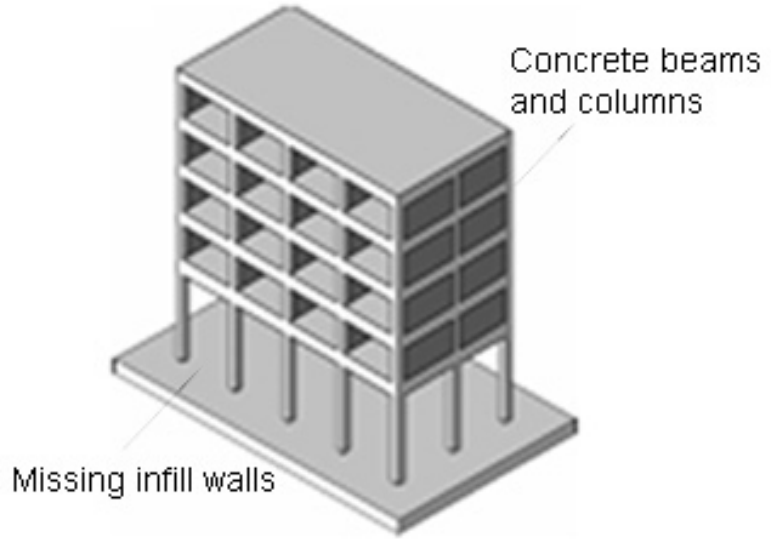
Tool to link the vulnerability data with the corresponding retrofit measure



Building taxonomy



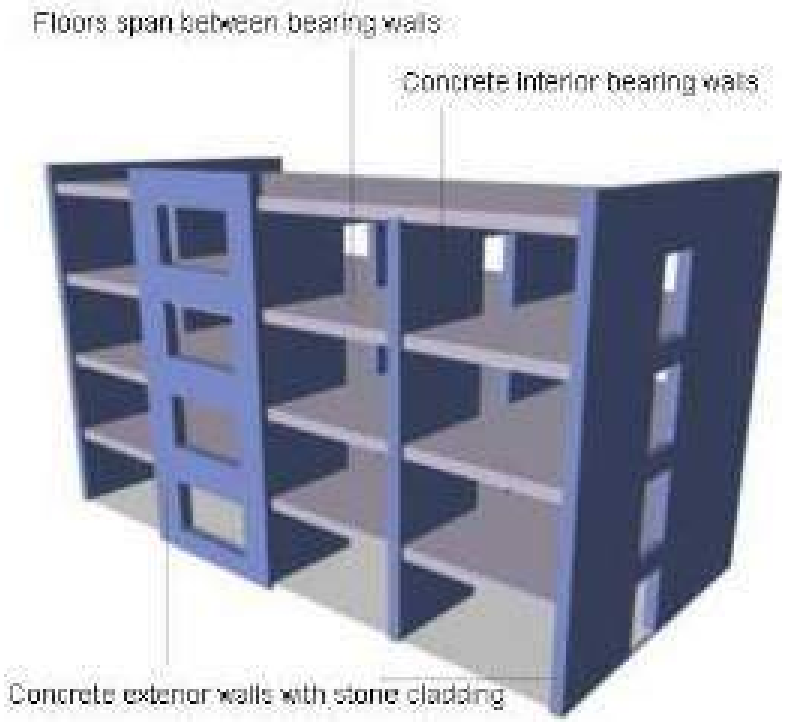
RC Frame typology (C1)



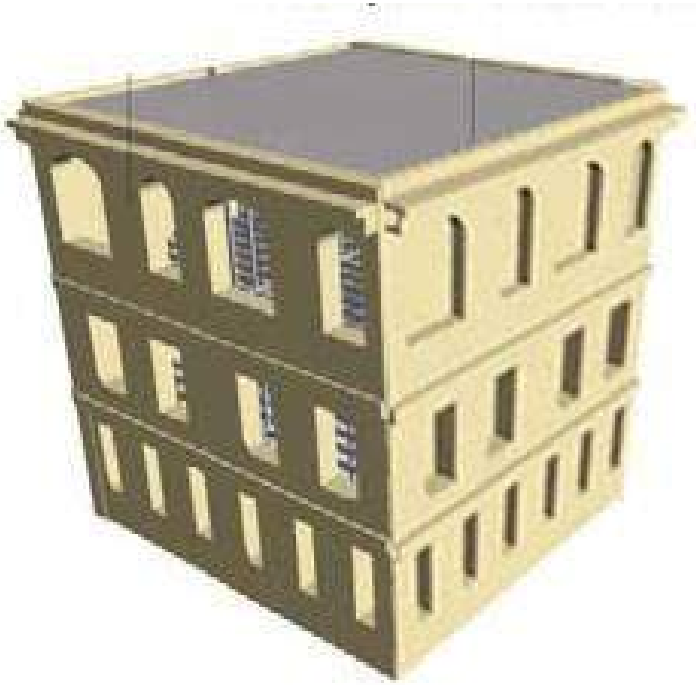
RC Frame typology with soft storey (C1a)

Adapted from FEMA 547: Federal Emergency Management Agency, *Techniques for the seismic rehabilitation of existing buildings*, October 2006.

Building taxonomy



Dual system typology (C2)



Unreinforced masonry typology (URM)

Adapted from FEMA 547: Federal Emergency Management Agency, *Techniques for the seismic rehabilitation of existing buildings*, October 2006.

Categories of seismic deficiencies

- ✓ Global Strength/Stiffness;
- ✓ Configuration;
- ✓ Sectional Detailing;
- ✓ Diaphragms;
- ✓ Foundations.

VS

Classes of rehabilitation techniques

- ✓ **Add** elements: to increase strength/stiffness;
- ✓ **Enhance** performance of existing elements: to increase strength or deformation capacity;
- ✓ **Reduce** demand: to provide acceptable performance for weak lateral system;
- ✓ **Remove** selected components: to enhance deformation capacity.

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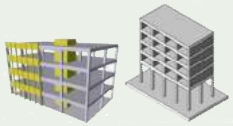
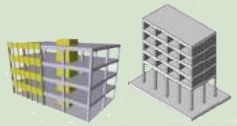
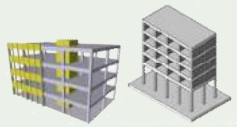
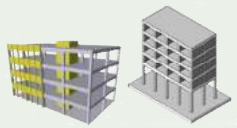
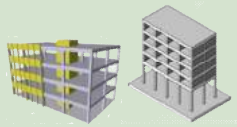
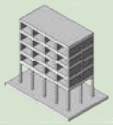
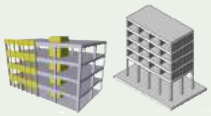
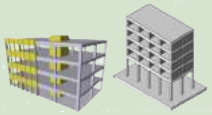
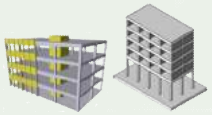
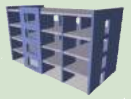
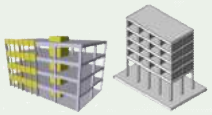
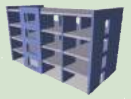
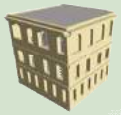
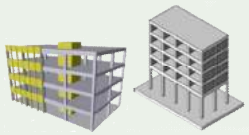
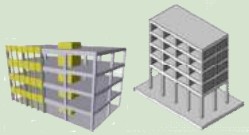
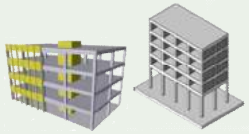
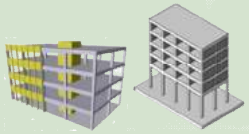
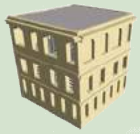
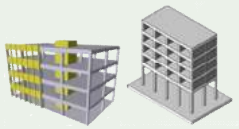
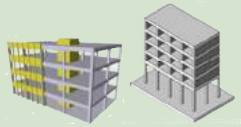
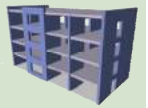
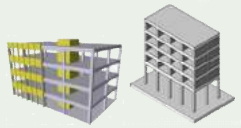
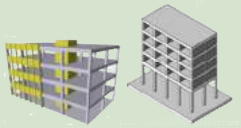
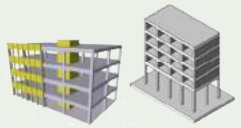
Global Strength/Stiffness and Configuration	Building Category		
	C1/C1a	C2	URM
Insufficient n° of frames			
Short – column mechanism			
Infill walls failing or causing torsion			
Insufficient in-plane wall strength			
Re-entrant corner			
Torsional layout (RC elevator core and staircases)			
Discontinuous walls			
Soft-storey			

Structural Detailing	Building Category		
	C1/C1a	C2	URM
Weak column – strong beam			
Inadequate shear strength in column or beam			
Splices			
Insufficient in-plane wall shear strength (web or boundary element)			
Insufficient flexural capacity (chord rotation)			
Brittle failure of coupling beams			
Wall inadequate for out-of-plane bending			
Unbraced parapet			
Poorly anchored veneer or appendages			

Diaphragms	Building Category		
	C1/C1a	C2	URM
Inadequate in-plane shear capacity			
Punching shear failure of slab-column connection			
Excessive stresses at openings and irregularities			
Inadequate chord capacity			

Foundations		Building Category		
		C1/C1a	C2	URM
New Foundations	Add shallow found next to existing shallow ones			
	Add deep foundations next to existing shallow ones			
Existing Shallow Foundations	Add Micropiles			
	Enlarge exisisting spread footing			
Existing Deep Foundations	Add a Mat Foundation, Extended Pile Cap or Grade Beam			
Ground Improvement	Compaction Grouting			
	Permeation Grouting			

Seismic Deficiencies and Potential Rehabilitation Techniques (ASCE/SEI 41-17a)

Category	Deficiency	Add new elements	Enhance existing elements	Reduce demand (Advanced Techniques)	Remove selected components
Global Strength	Insufficient in-plane wall strength	Steel braced frame [9.1]	RC jacketing [9.9] FRP jacketing* [9.10] Grouting infill openings [9.11]	Seismic Isolation*	
Configuration	Excessive torsion	Braced frame [9.1] Concrete/masonry shear wall [9.2; 9.3]			
Structural Detailing	Wall inadequate for out-of-plane bending	Out-of-plane bracing [9.7] Diagonal/vertical bracings [9.13]	Reinforced cores [9.8] Concrete wall overlay [9.9] FRP overlay* [9.10]		
	Unbraced parapet		Brace parapet [9.6]		Remove parapet [9.6]
	Poorly anchored veneer or appendages		Add veneer ties [9.13]		Remove veneer or appendages
Diaphragms	Inadequate in-plane strength and stiffness	Add horizontal braced frame [9.17]			
	Inadequate chord capacity	Add steel strap or angle			
	Excessive stresses at openings and irregularities	Add wood or steel strap reinforcement			
Foundation	Annex 1				
	Excessive stresses at openings and irregularities	Add steel braces [9.17]	RC topping slab overlay [9.15] FRP overlays* [9.16]		Fill openings [9.14]
Foundation	Annex 1				

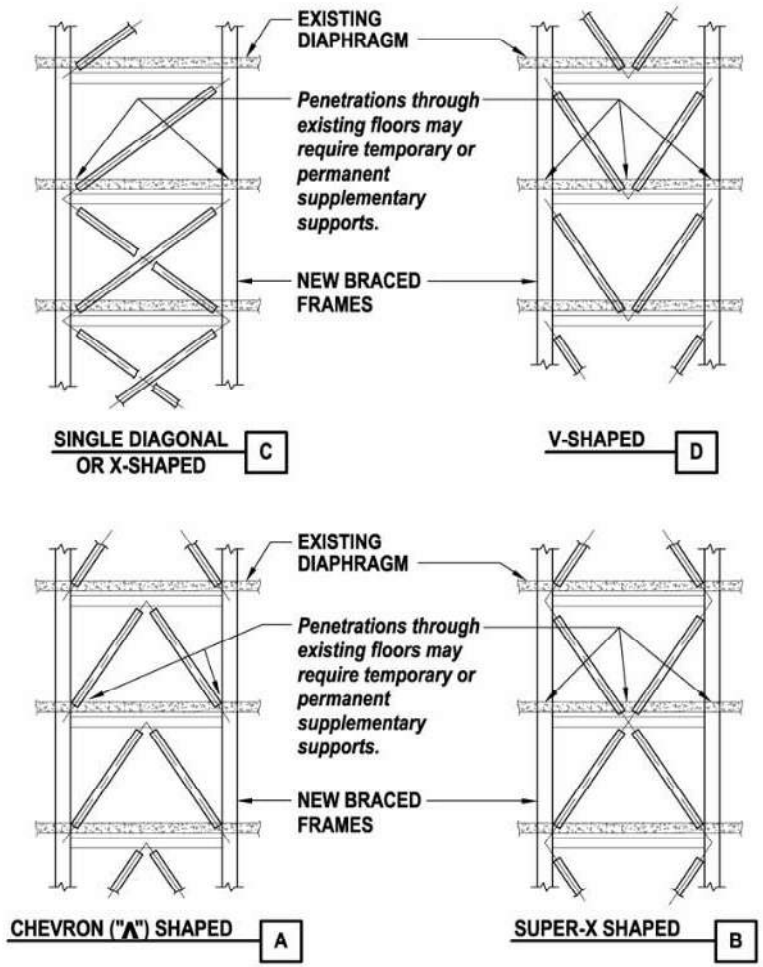
Rehabilitation Techniques made with RC

- ✓ Add Concrete Shear Wall

- ✓ RC Jacketing for column and beam

Rehabilitation Techniques made with Steel

✓ Steel X bracing



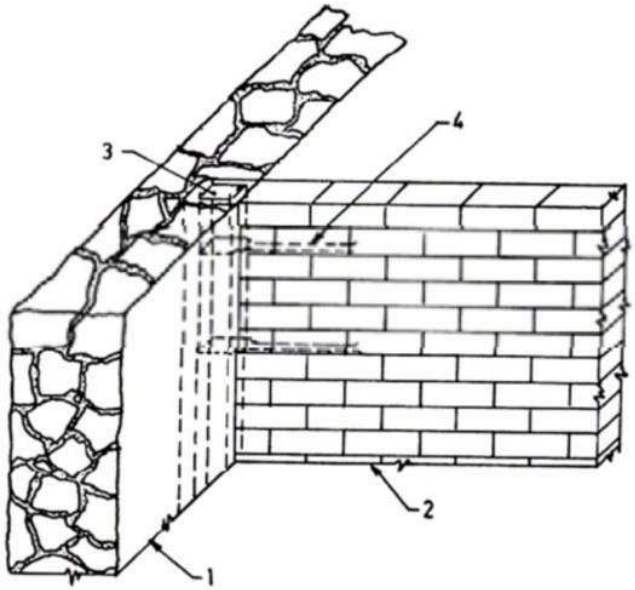
FEMA 547, 2006.

✓ Steel Jacketing for column

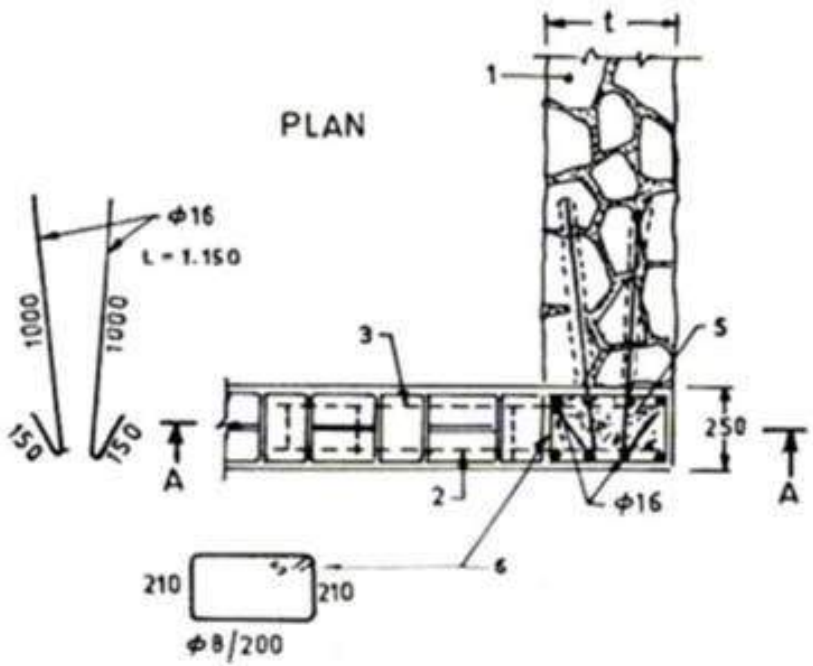
✓ Steel Bracing of URM Parapet

Rehabilitation Techniques made with Masonry

✓ Addition of Masonry Wall



T-junction



Corner junction

M. Tomazevic, *Earthquake-Resistant Design of Masonry Building*, Imperial College Press, 2006.

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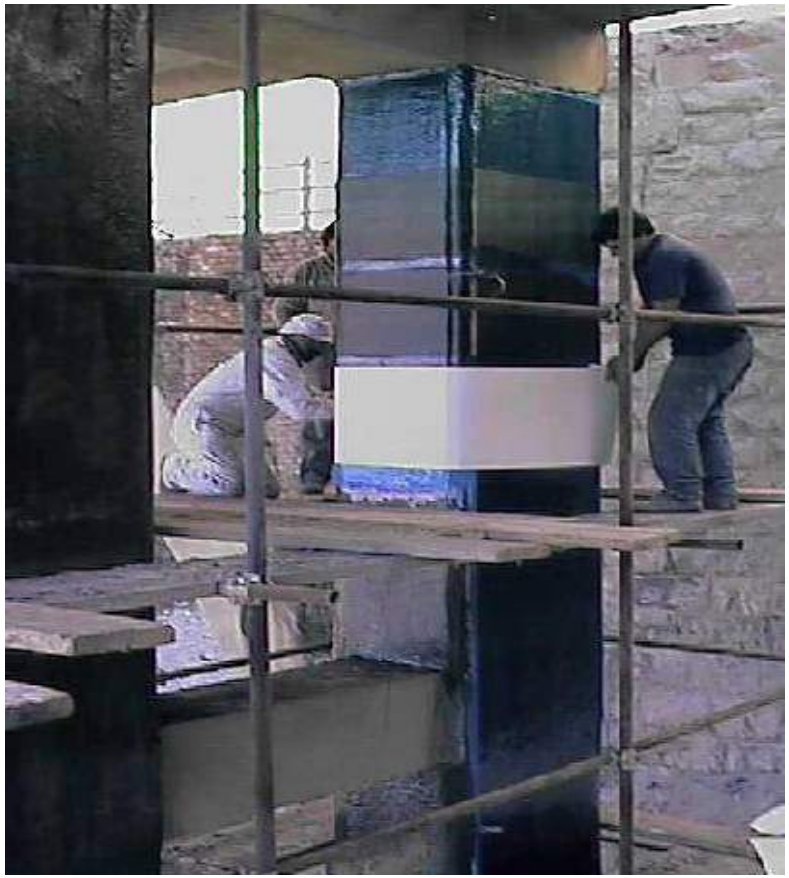
Rehabilitation Techniques made with FRP

✓ FRP for columns

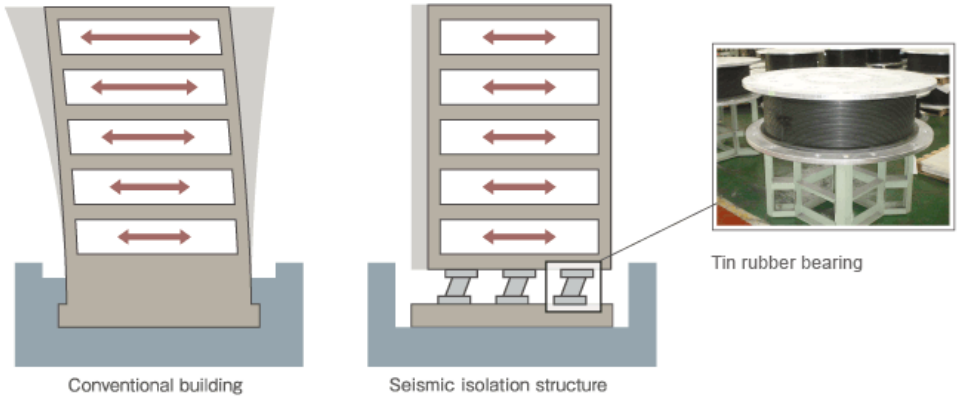


www.MAC-MBT.com (MAC spa - Modern Advanced Concrete)

✓ FRP for beams

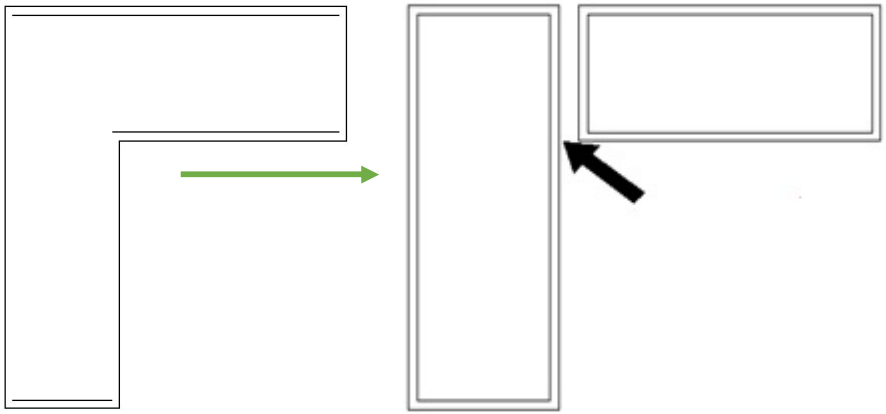
Advanced Rehabilitation Techniques

✓ Seismic Isolation



✓ Energy Dissipation

✓ Seismic Joint



Implementation in Palestine

Applicability of common and advanced techniques

Retrofitting schemes	Availability of the Material	Familiarity	Low Demand for Specific Training	Simplicity of Structural Analysis
RC	✓ ✓ ✓	✓ ✓ ✓	✓ ✓	✓ ✓
Steel	✓ ✓	✓ ✓	✓	✓ ✓
Masonry	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓
FRP	✓	✓	✓	✓ ✓
Seismic Joint	✓ ✓ ✓	✓	✓ ✓	✓ ✓
Seismic Isolation	✓	✓	✓	✓
Supplemental Damping	✓	✓	✓	✓

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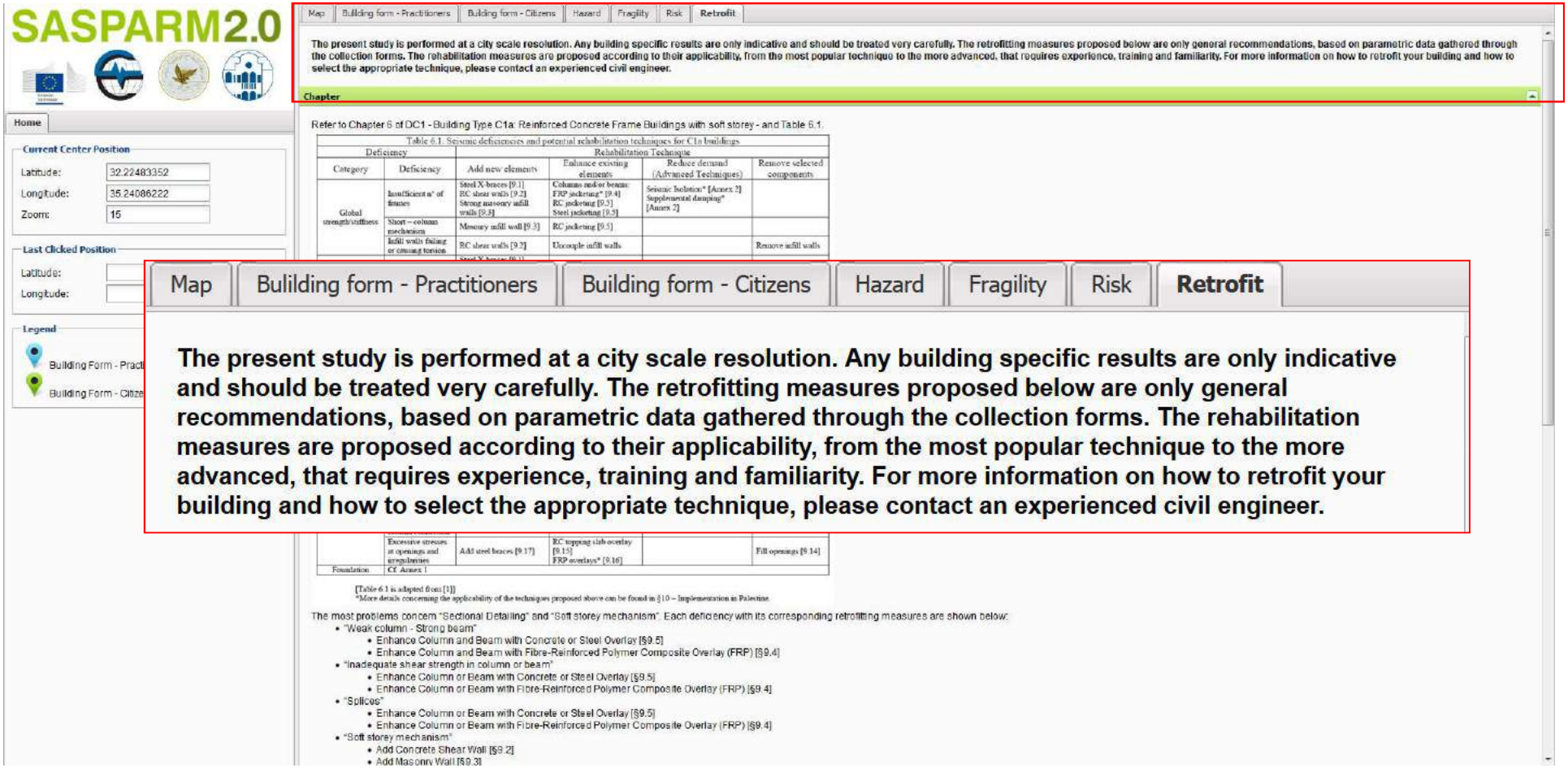
Tool for retrofit measures implemented in WBP



Exposure model

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Exposure model

• It would like to take into account **people**, **property**, **systems** and **elements** present in the case-study area that are thereby subject to potential losses.

• It is initially set up using **census** and **national databases data** [Palestinian Central Bureau of Statistics, PBCS*] and then updated and validated with **real data collected in-situ**.

• It takes into account **indicators** that best describe the exposed asset, such as **relative percentages of buildings**, **floor area**, **building type** and **replacement cost**.

* www.pcbs.gov.ps/en

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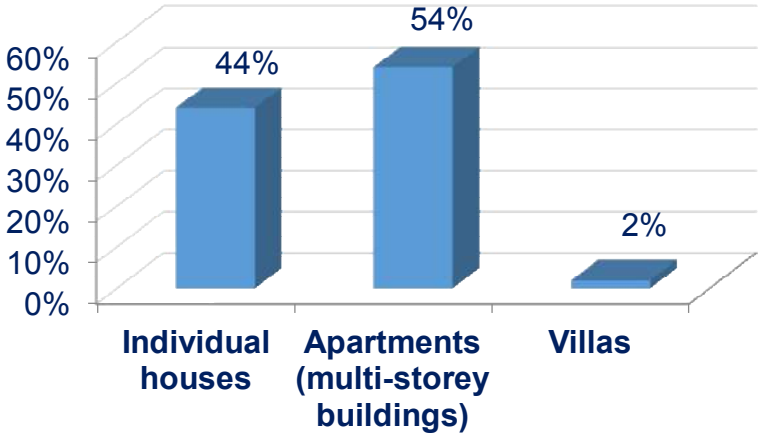
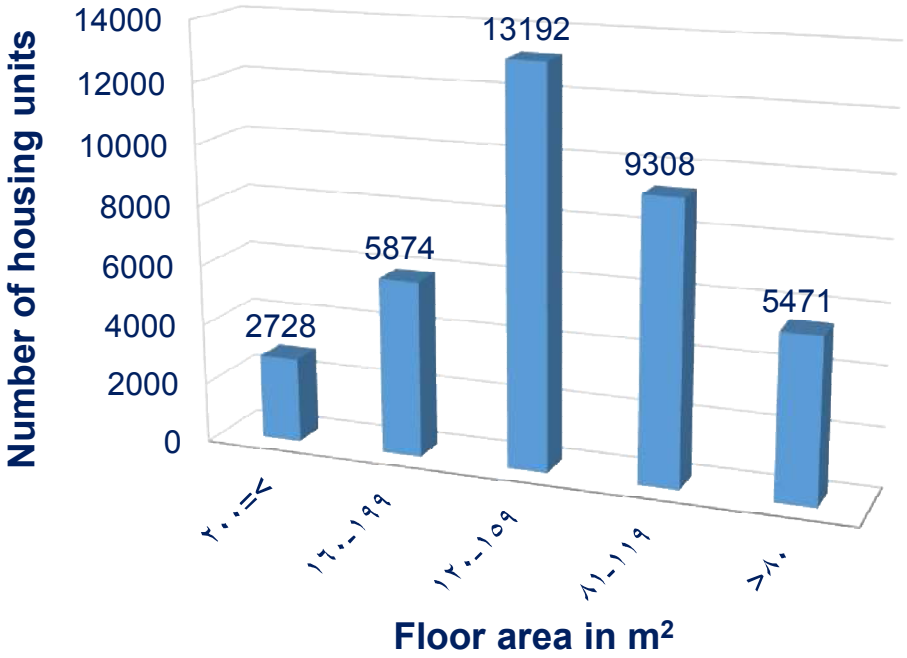
Preliminary exposure data

Percentage distribution of residential **building typologies**:



Estimated distribution of housing units by **floor area** for 2016 [PCBS]:



Evaluation of **replacement costs**:

91 $/m², using data from PBCS

> 550 $/m² , with feedback from practitioners, engineers, engineering associations.

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Social vulnerability model

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Social Vulnerability Model

• A non-negligible aspect in terms of vulnerability comes from **society** with its own knowledge, conditions and cultural context.

• How communities will be affected following a natural and/or manmade disaster may be conceptualized in terms of their **resilience**.

• To capture social characteristics, **indicators** and a specific tool need to be defined, as the as the "**Scorecard approach**" based on a participatory assessment process (Anhorn et al., 2014).

Scorecard approach

- It **measures the concept of city resilience to crisis and disasters**.
- It is based on the six elements of the *Hyogo Framework for Action* and the *UNISDR's 10 Essentials for Making Cities Resilient.*
- The set of **indicators for measuring resiliency** established by UNISDR are implemented in **six key areas**.
- It is built with **specific questions** and **answer schemes** for each key areas and has been **adapted to Nablus background to meet peculiarities**.

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Social Vulnerability Questionnaire

Theme	General Question
Awareness and advocacy	What is the level of awareness and knowledge of earthquake disaster risk?
Social Capacity	What are the capacities of the population to efficiently prepare, respond and recover from a damaging earthquake?
Legal and institutional arrangements	How effective are mechanisms to advocate earthquake risk reduction in your quarter?
Planning, regulation and mainstreaming risk mitigation	What is the perceived level of commitment and mainstreaming of disaster risk reduction through regulatory planning tools?
Emergency preparedness, response and recovery	What is the level of effectiveness and competency of disaster management including mechanisms for response and recovery?
Critical services and public infrastructure resiliency	What is the level of resilience of critical services to disasters?

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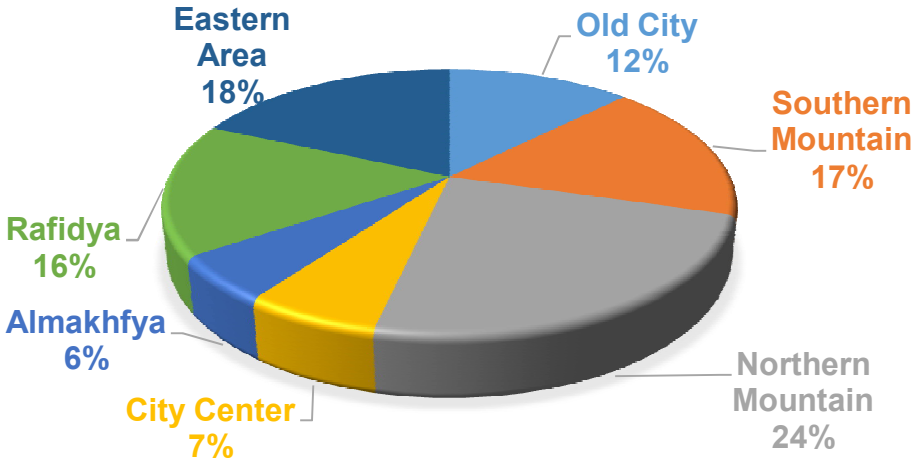
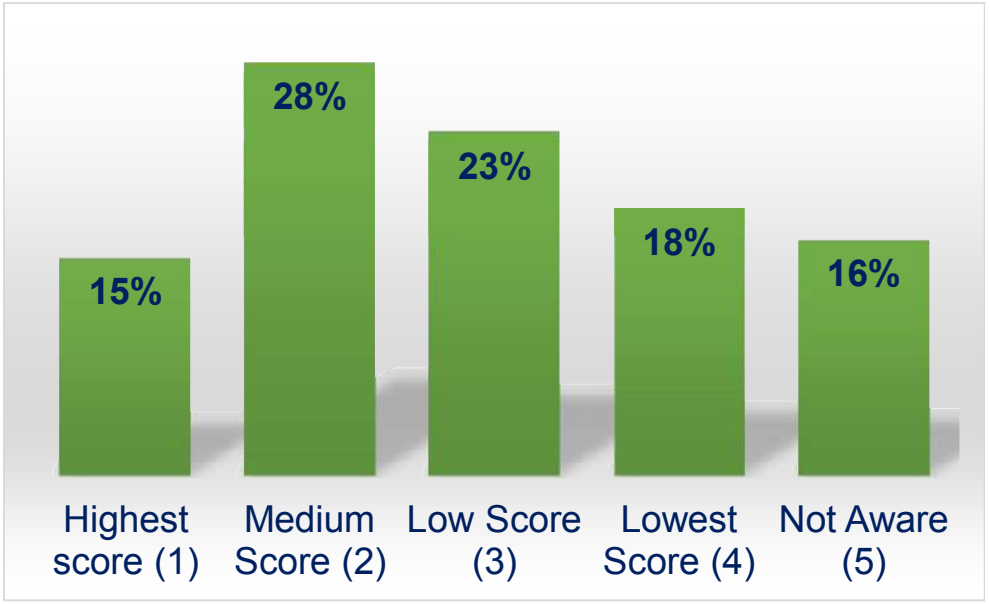
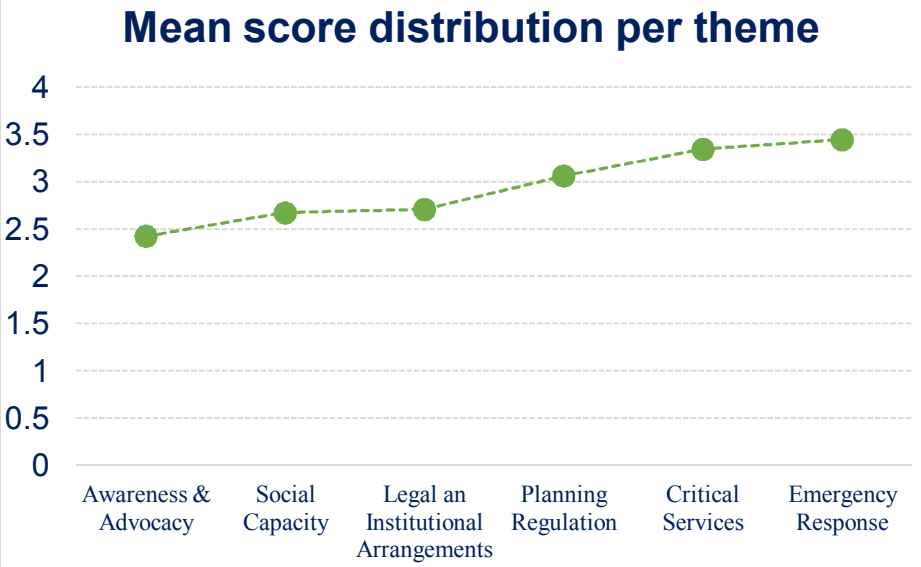
Preliminary outcomes

526 Forms collected







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Improving Social, Economic and Financial Resilience to Earthquake Risk in Palestine

Prof. Alberto Monti
IUSS Pavia

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Earthquake Risk Governance in Palestine

Key institutional challenges:

- Occupation of the State of Palestine
- Fragmentation of the population into different areas
- Limited control over planning, trade and the economy
- Severely restricted access to land (no border control), water and other resources
- Major restrictions on Palestinian movement and access within and between East Jerusalem, the rest of the West Bank, and the Gaza Strip

Earthquake Risk Governance in Palestine

Current legal framework *(West Bank and Gaza)*:

- Basic Palestinian law of 2003 (*Constitution*) as amended
- *Executive Authority*: the President *(declaration of the state of emergency)* and the Council of Ministers (with PM)
- *Civil Defence Law of 1998*: Civil Defence Directorate; High Council of Civil Defence (HCCD); Local Committees of Civil Defence ▸ *focus on emergency response and recovery* (Ministry of Interior)
- **Need to review and streamline existing provisions**

Earthquake Risk Governance in Palestine

Outlook:

- Projected reform of DRM governance structure
- Coordinating role of the PM at national level *(accountable to the President)*
- Ministry of Interior (*civil protection*), Ministry of Social Affairs (*relief*), Ministry of Economy (*reconstruction*)
- New DRM Standing Committees (*national, district and local level*) – more emphasis on prevention/mitigation
- **Financial management of earthquake risk?**

Financial vulnerability and resilience

- Extent to which economic agents are able to **absorb and recover from disaster costs** given disaster risk **exposures and financial (risk-bearing) capacities**
  - the ability to absorb loss and damage, minimize impacts and bounce forward (resilience)

- Key element of the **Sendai Framework for Disaster Risk Reduction 2015-2030** (UN)

G20/OECD Framework (2012)

- **Financial exposure and capacity**
- **Risk financing and transfer**
- **Institutional arrangements**

Financial Management of Earthquake Risk

Key policy issues:

- Assessing the ***potential economic and financial impacts*** of earthquakes (short, medium and long term)
- Managing the ***fiscal impacts*** of EQ risk (potential budgetary impacts of emergency response and reconstruction costs / contingent liabilities)
- Establishing clear rules regarding ***post-disaster financial assistance / compensation*** (solidarity, efficiency and accountability)

Financial Management of Earthquake Risk

Key policy issues (cont'd):

- Ensuring the optimal allocation of resources for DRM, including assessment of the ***cost-effectiveness of major public financial investments*** in disaster risk reduction and mitigation projects
- Ensuring the ***soundness and resilience of the financial (insurance) sector*** with respect to earthquake risks, including through proper regulation, business continuity planning, and stress testing

Financial Management of Earthquake Risk

***Ex ante* financing**	• Dedicated reserve fund • Contingent credit facility • Insurance • Cat-linked securities / ARF
***Ex post* financing**	• Budget reallocation • Debt financing / borrowing • Taxation • International aid

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Earthquake risk assessment
and market-based risk financing tools

- **Quality of risk assessment** ▸ key
- **Risk quantification** ▸ generation of quantitative data through the risk assessment process enables the development of private markets and promotion of efficient risk pricing
- **Financial institutions** (e.g., insurance companies) may have incentives to perform their own risk assessments and generate detailed data on hazards, exposures, and vulnerabilities, which may be shared with government

Financial and fiscal tools to allocate the Earthquake risk costs

- **Earthquake insurance** *(risk-based premium)*
- **Fiscal measures** *(e.g., property tax, insurance premium tax, deductibility of mitigation costs)*
- **Price/cost signals regarding risks and costs**
  - may help to identify and incentivize critical risk reduction measures, evaluate costs and benefits, and measure the reduction of risks through time
- **Risk financing and transfer markets** may help to increase **risk awareness** and improve **risk reduction education**

Earthquake Insurance Schemes and Public-Private Partnerships (PPP)

Broad range of country experiences

- Japan
- New Zealand
- Taiwan
- Turkey
- Other countries *(multi-hazard schemes)*

Earthquake Insurance Schemes (PPP)

- Legal framework
- Nature of government intervention *(insurer / reinsurer / guarantor)*
- Extent of compulsion *(mandatory nature of the scheme)*
- Type of hazards / type of losses
- Segments of the population / economy covered by the scheme
- Contractual *(stand-alone / endorsement)* / pricing mechanisms
- Linkages with risk reduction *(incentive mechanism)*

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Thank you!

Pavia, 18 May 2016

Prof. Alberto Monti

IUSS Pavia

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Civil protection capacity building actions in the Mediterranean and EU Neighbouring countries

Workshop on SASPARM2.0, 18 May 2016

Danilo Bilotta, Italian Civil Protection Dept. – International Relations Unit

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Presidenza del Consiglio dei Ministri
Dipartimento della Protezione Civile

PROTEZIONE CIVILE
Presidenza del Consiglio dei Ministri
Dipartimento della Protezione Civile

The Italian Civil Protection system and main international co-operation activities

Main funding mechanims:

EUROPEAID
CO-OPERATION OFFICE

Aide humanitaire
et Protection civile

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Euro-med Programme on Prevention, Preparedness and Response to Natural and Man-made Disasters (PPRD South) 2008-2013

pprd south programme

Main topic: regional co-operation and capacity-building activities for disaster management and disaster risk reduction

Budget: 5 Mln/€ budget

Beneficiary: civil protection authorities in Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria*, Tunisia, Albania, Bosnia-Herzegovina, Croatia, Montenegro and Turkey

Main activities: risk assessment through developing national and regional tools (such as the risk Alas and the CP Operational Manual), prevention and preparedness by means of training, workshops, study visits and technical assistance; information and awareness raising of affected population regarding risk exposure, prevention and response through grass-root activities (such as in schools)

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Tunisia – 2015-1016: EU co-funded project on “increasing preparedness across the Mediterranean IPCAM”

Main topic: Capacity-building activities for emergency planning and mass evacuation. It is the irst project on DRM governance following the forced migration crises of 2011

Budget: 0.7 Mln/€ budget

Beneficiary: Tunisian civil protection, civil protection association of volunteers, other relevant stakeholders in disaster management

Overall objective: to improve capacities for emergency response and thus ensure more effective protection of risk prone population in Tunisia
through the transfer of know-how and best practices in the field of preparedness measures at cross-border (Italy-Tunisia) and regional levels (Tunisia - Germany and the EU Civil Protection Mechanism)

IPCAM
increasing preparedness capacities across the Mediterranean

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Dipartimento della Protezione Civile

Main activities

Training courses

- Contingency planning courses for the disaster management regional committees members
- Team management courses for mixed teams of first responders (professional and volunteers)

Contingency planning at local level

- Technical assistance for developing SOPs to facilitate the functioning of inter-institutional mechanism in the locally based decision making process;
- Develop tools for information sharing (database of available resorces)
- Promote good pratice in terms of awareness raising campaings

Western Balkans and Turkey: 2015-2017: Programme for Prevention, Preparedness and Response to Floods in the Western Balkans and Turkey (IPA FLOODS)

Main activities: Capacity building for flood prevention and response

Budget: 6 Mln/€ budget

Beneficiary: civil protection and flood prevention authorities of Albania, BiH, FYROM, Kosovo*, Montenegro, Serbia, Turkey

Objective: increase capacities in terms of response and floods risk management

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Main activities

- Multi-national CP Modules able to operate regionally and through the UCPM (flood rescue using boat, high-capacity pumping, flood containment)
- Host Nation Support/ Border Crossing Protocols: institutional arrangements
- bilateral and regional technical assistance to i mprove capacity to deal with requirements of EUFD and address flood prevention through

KNOW YOUR FLOOD RISK™

Israel, Jordan and Palestine: 2016-2017: Protecting Mediterranean Cultural Heritage during Disaster (PROMEDHE)

Main topic: Capacity-building activities for international co-operation, emergency planning, assessment and safeguarding of cultural heritage

Budget: 1.1 Mln/€ budget

Beneficiary: Israel, Jordan and Palestinian civil protection, other relevant stakeholders in disaster management and cultural heritage

Overall objective: Better prepared Civil Protection Authorities in the region, able to operate jointly at national, cross-border and international levels and to partner with the Union Civil Protection Mechanism; Set up a pool of experts and related assets able to assess needs/capacities and operate in the aftermath of a disaster for assessment and safeguard of cultural heritage;

Main Activities

1. RESEARCH AND STUDY: a baseline analysis including lessons learned and good practices on the safeguard of cultural heritage in case of disaster and national stakeholder mapping
2. TECHNICAL ASSISTANCE: 2 capacity-development programmes, based on EU Mechanism courses, covering international co-operation, assessment methodologies and techniques for the safeguard of cultural heritage;
3. MODULES DEVELOPMENT: Asset/team concept and SOPs development at both national and regional levels - based on the Union Civil Protection Mechanism regulatory framework for CP assets - for safeguard of cultural heritage (including basic requirement and procedures for activation, deployment, operations and hand-over).
4. EXERCISE: Simulation exercises to train the experts and testing SOPs also at the regional and international dimensions - through the activation of the Union Civil Protection Mechanism.

Preparedness for response: participation into field exercise

IPA Civil Protection Co-operation Programme 2013-2015: field exercise on Camp Management

"Balkans and Europe for Development of Resilience Initiatives" BE DRIN – 2015 -2017

Main topic: The objective of the BE DRIN - Balkans and Europe for Development of Resilience Initiatives project, taking place within the Drin river basin (Western Balkans), is to enhance volunteers management capacities of the third countries partners, in order to ensure compliance with the standards and procedures regarding EU Aid Volunteers Initiative, and to facilitate their undergoing in EUAV certification process.
The project also aims to strengthen the Hosting Organizations' capability to respond to humanitarian crisis through the effective impact of the EU Aid Volunteers' work on the ground, in the field of hydrologic disaster risk management, preparedness and response.

Beneficiaries: civil protection and prevention authorities in Albania, Kosovo, FYROM, civil protection volunteers' associations of Albania Q-VEC and Association of volunteers of the Union for forest fires protection (FPUM) of FYROM

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"BUFFER-IT, Better Use of Forest Fire Extinguishing Resources by Italy – 2016

bufferIT

Co-funded by the European Union Civil Protection

Main topic: The BUFFER-IT project will make available one airplane Bombardier 415 that will be stationed/ on stand-by in Southern Europe during the most critical period of the year for forest fires risk, namely **from 15 June 2016 to 15 September 2016**

The buffer capacity can be prepositioned within maximum 24hrs of the request in appropriated locations according to the likelihood of a forest fire spreading disaster, it can also guarantee rapid interventions lasting maximum one day and it will also make feasible detachments lasting several days, that will begin within maximum 24 hours following the acceptance of the offer by the requesting State.

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Key achievements in DPC international co-operation approach

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International Agreements with countries outside the European Union

- Albania
- Algeria
- Armenia
- Azerbaigian
- Bielorussia
- Bosnia-Herzegovina
- Cina
- Indonesia
- FYROM
- Montenegro
- Morocco
- Palestine
- Serbia
- Tunisia
- United Arab Emirates
- Venezuela

Sasparm 2.0

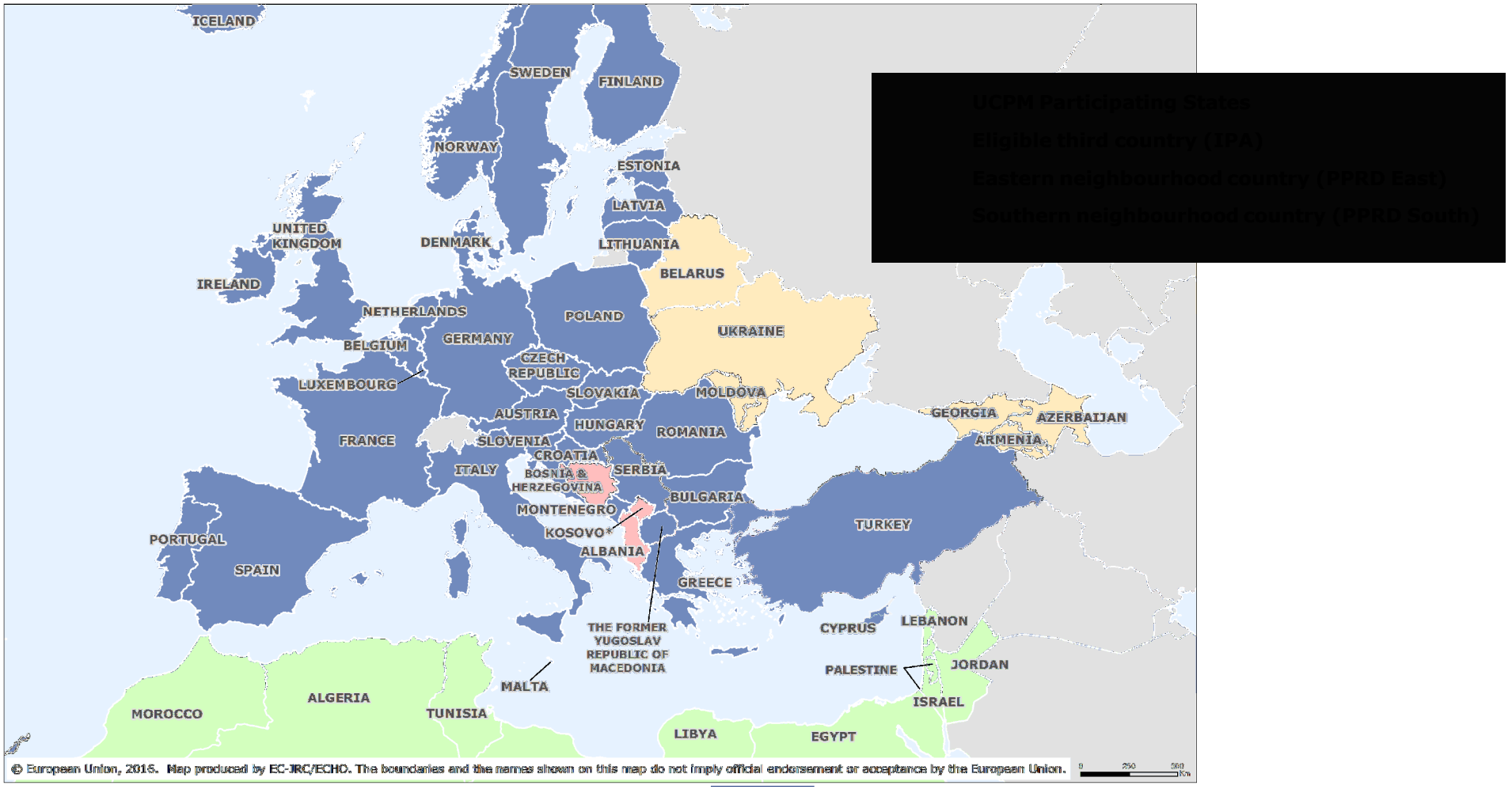
Strenghtening Mediterranean and EU Neighbouring countries capabilities for Seismic Risk mitigation

Roberto Schiliro – EC DG ECHO Civil Protection Policy Unit

Partnership to the UCPM

1. The UCPM geographical dimension
2. ENP review
3. Objectives & Principles of the Partnership
4. Cooperation activities through the UCPM & ENI

The UCPM geographical dimension



The ENP review

1. Steering from Principles to Interests
2. Long term vs short term interests
3. Joint priorities for cooperation
    1. Economic development
    2. Security dimension
    3. Migration & mobility

Objectives & Principles of the Partnership

1. Principles

1. Agree on a Disaster Risk based approach to DM
2. Adopt a multi sectoral approach to DM
3. Facilitate information sharing and coordination of activities

2. Objectives

1. Make full use of available UCPM tools
2. Integrate ENI tools into the same strategy
3. Work together with the EU to accomplish Sendai objectives

Cooperation activities through the UCPM & ENI

1. Prevention & Preparedness Projects / TWINNINGs & Projects
2. Exchange of experts / TAIEX
3. Trainings
4. Exercises & Modules Exercises
5. Lessons Learned & Working groups
6. Peer reviews

Workshop on SASPARM2.0
Support Action for Strengthening Palestine capabilities for seismic Risk Mitigation

***Second session*: Support actions by international stakeholders for strengthening Mediterranean and EU Neighbouring countries capabilities for seismic risk mitigation**

ENG. LUIGI RONSIVALLE (PRESIDENT OF THE STUDY CENTRE OF THE ITALIAN COUNCIL OF ENGINEERS)

MAY 18, 2016

MULTIMEDIA ROOM, EUCENTRE FOUNDATION
PAVIA, ITALY

THE ITALIAN HOUSING

- The Italian housing stock **is particularly old** and for this reason relevant interventions are necessary.
- **Around 15 million houses (more than 50% of the total) were built, in fact, before 1974, without any appropriate anti-seismic regulation.**
- And even approximatively 4 million buildings were constructed before 1920 and other 2,7 million before 1945 .

Estimate of number of houses, by year of construction and region. Year 2011

	Before 1919	From 1919 to 1945	From 1946 to 1961	From 1962 to 1971	From 1972 to 1981	From 1982 to 1991	From 1992 to 2001	From 2002 to 2011	Total
Total	3.892.873	2.704.532	4.333.281	5.706.708	5.142.110	3.324.317	2.160.827	1.810.074	29.074.722

Source: Istat (Italian Institute of Statistics)Data processing Centro Studi Cni, Cni

THE STATE OF CONSERVATION OF ITALIAN HOUSING

- Moreover, through the observation of the buildings constructed up to 2001, almost a quarter of them (**around 6 million**) **goes through a mediocre or even very bad state of conservation.**
- As we would expect, the older houses are the most affected by a poor state of conservation.
- For example, over a third of the buildings constructed before 1945 is in very bad or mediocre state of preservation, as well as around 30% circa of the ones built before 1961
- Only 15,0% of the buildings constructed before 1919, together with 13,0% of those prior to 1945, and 15,8% of those prior to 1961, is in very good state of conservation.

Residential buildings, for year of construction and state of conservation- Italy – (updated on 2001)

Yaer of construction	Very good	Good	Mediocre	Very bad	Totale
Before 1919	15,0	46,9	32,4	5,8	100,0
From 1919 to 1945	13,0	49,2	33,3	4,5	100,0
From 1946 to 1961	15,8	55,4	26,6	2,3	100,0
From 1962 to 1971	21,4	60,4	17,3	0,9	100,0
From 1972 to 1981	29,3	58,8	11,4	0,5	100,0
From 1982 to 1991	42,0	50,7	7,0	0,3	100,0
From 1991 to 2001	71,6	25,2	2,9	0,2	100,0
Total	25,6	51,8	20,3	2,3	100,0

Source: Istat (Italian Institute of Statistics)Data processing Centro Studi Cni, Cni

THE SEISMIC RISK IN ITALY

- THE ITALIAN HOUSING, AS A RESULT OF BEING SO OLD, **IS OF COURSE PARTICULARLY EXPOSED TO SEISMIC RISK**
- ITALY IS AFFECTED BY A DESTRUCTIVE EARTHQUAKE **ON AVERAGE EACH 5 YEARS**
- MORE THAN **21 MILLION** PEOPLE LIVE IN AREAS OF SEISMIC RISK (ZONE 1 AND ZONE 2) IN AROUND 10 MILLION HOUSES
- Each year in Italy approximatively a hundred noticeable heartquakes occur. These episodes do not normally bring damage.
- Considering, however, the whole national territory, destructive heartquakes happen, instead, less frequently.
- In the last 150 years, seismic events, resulting in serious damage, have happened, on average, once yeach 5 years.

Resident population, by seismic zone, 2011

	Seismic area 1	Seismic area 2	Seismic area 3	Seismic area 4	Total
Grand total	2.914.231	18.765.726	17.960.646	19.898.636	59.539.239

Source: Istat (Italian Institute of Statistics)Data processing Centro Studi Cni, Cni

THE SEISMIC RISK IN ITALY

- Regarding the **seismic risk**, the territorial classification according to the degree of danger shows how more than **21,5 million people live in high-risk areas** (classified, respectively, 1 and 2), with a share of **around 3 million, solely in zone 1, of maximum exposure to the risk.**
- Other 19 million live, instead, in districts belonging to zone 3; this zone cannot be classified as safe, considering that many towns of the region Emilia Romagna have been recently hit by the earthquake occured in May 2012 belonged to this range of risk.
- The framework at a regional level is particularly **diversified.**
- Regions such as Calabria, that shows the major risk, and where the majority of the population live in the zone 1 (around 1,2 million people) and the remaining part in zone 2 (750 thousand); or Basilicata region, with 220 thousand people living in zone 1 and 276 thousand in zone 2. Or even Sicily, with 4,5 million citizens in zone 2 and other 350 thousand in zone 1.

Number of residents, for regions and seismic areas. Year 2011

	Seismic area 1	Seismic area 2	Seismic area 3	Seismic area 4	Total
Grand total	2.914.231	18.765.726	17.960.646	19.898.636	59.539.239

THE PREVENTION OF THE SEISMIC RISK

- If the seismic events cannot be predicted or avoided, it is possible, instead, to plan an action to limit damage arising from them.
- The **cost of doing nothing as an** unaccettable price in terms of human lives and brings high economic burdens.
- ***147 BILLION EURO*** *EARTHQUAKE* ***DAMAGE IN THE LAST 40 YEARS (3,6*** *BILLION PER YEAR)*
- If we only consider the last 40 years, according to the Civil Protection Department (Protezione Civile), seismic events have brought damage for around **147 billion euro** (3,6 billion per year). A recent research by Ania (national association of insurance companies) has assessed, for the future, damage arising from seismic events of the amount of **2,6 billion euro a year.**
- Reducing the risk of natural disasters, is, nowadays, widely possible, theoretically, because the applied sciences are able to provide appropriate technologies and materials.
- *HOW MUCH DOES IT COST PROTECTING HOUSES FROM SEISMIC RISK?*

93 BILLION

THE PREVENTION OF THE SEISMIC RISK: COSTS

- The costs for securing housing from seismic risk depend on the level of reasonable risk coverage.
- On the basis of this, the **Centro Studi Cni has supposed a possible distribution of the costs, according to the structural conditions and the age of the buildings.**
- The number of the buildings to be recovered on the basis of the conditions of the housing, resulting from census data, **is of the amount of around 40% of the national houses,** regardless of the level of risk.
- 12 billion buildings are to be recovered and secured.
- This means involving a population of around 23 million citizens.

THE COSTS FOR SECURING ZONES

- Applying the standards of the technical specifications in terms of antiseismic interventios, the total cost for securing the Italian housing from seismic events, will cost approximatively **93 billion euro**

SECURING COSTS DIVIDED BY ZONE

- ***ZONE 1: 5,4 BILLION EURO***
- ***ZONE 2: 30 BILLION EURO***
- *ZONE 3: 27 BILLION EURO*
- *ZONE 4: 30 BILLION EURO*

Estimate of the cost for securing the Italian housing from seismic events, by zone (data in euro)

	ZONE 1	ZONE 2	ZONE 3	ZONE 4	TOTALE COST
TOTAL	5.487.567.794	30.312.813.480	27.392.412.378	30.487.358.213	93.680.151.864

Source: Estimate by Centro Studi Cni on Istat data, Cresme, Protezione Civile, 2013

WHAT DOES ITALY DO TO PREVENT THE SEISMIC RISK?

- **PROVIDES AN INCENTIVE OF 65%** OF THE COST FOR SECURING FROM THE SEISMIC RISKS (*BALANCE LAW 2016*)
- **NATIONAL PLAN OF SEISMIC RISK PREVENTION** (law 77/2009, which has allocated 965 million euro in 7 years)

- HOWEVER, THE AMOUNT OF MONEY DESTINED TO THIS PURPOSE DOES NOT **SEEM TO BE SUFFICIENT** IN RELATION TO THE NEEDS
- FOR THIS REASON, **PREVENTION,** EVEN IN OTHER FORMS, BECOMES ABSOLUTELY IMPORTANT

THE ROLE OF THE CNI IN PREVENTION AND IN THE MANAGEMENT OF THE POST-EMERGENCY

(in collaboration with the Civil Protection Department)

- *Citizens, as well as Professional Orders and Associations, contribute to the activity of the Civil Protection* **(law 225/92)**
- **Framework Agreement** of collaboration signed on 13 November 2009 between the Cni the Civil Protection Department
- **Memorandum of Understanding of** 24 March 2011 between Cni e Dcp Activation of the «training project» for the implementation of the Framework Agreement

THE CNI AND THE EARTHQUAKE OF EMILIA

20 of May 2012 : 1° seismic event **29 of May 2012 : 2° seismic event**

2 of June 2012

Opening CNI Coordination Office *with its headquarters in Bologna at the Orders of Engineers*

3 of June 2012

Engineers start the activities about damage quantification and conformity to standards through the form AeDES

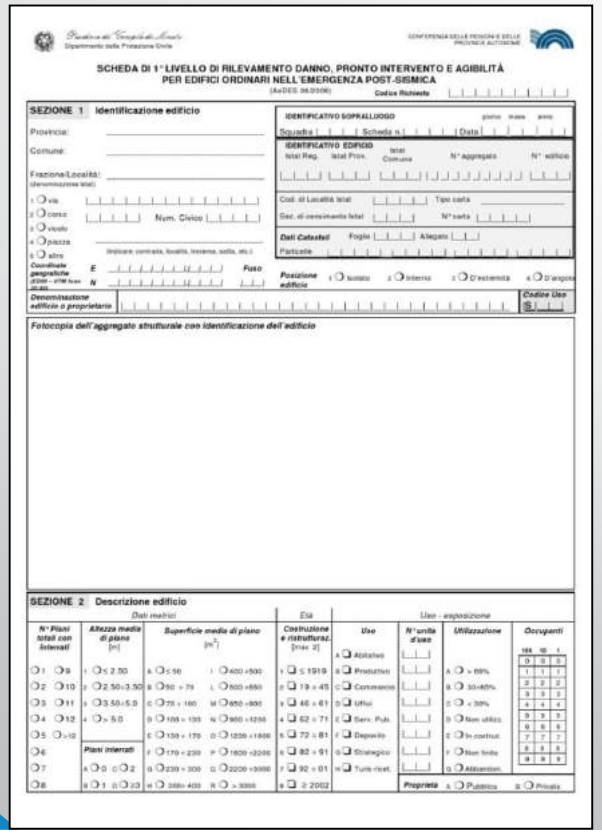
5 of August 2012:

Engineers end the activities of Damage quantification and conformity to standards

DAMAGE QUANTIFICATION

IMMEDIATE ACTIVITIES OF THE ENGINEERS THAT HAVE ATTENDED THE PILOT-COURSES IN "emergency management technique, pad damage and suitability ", during the first two weeks (from 03.06.2012 to 17.06.2012)

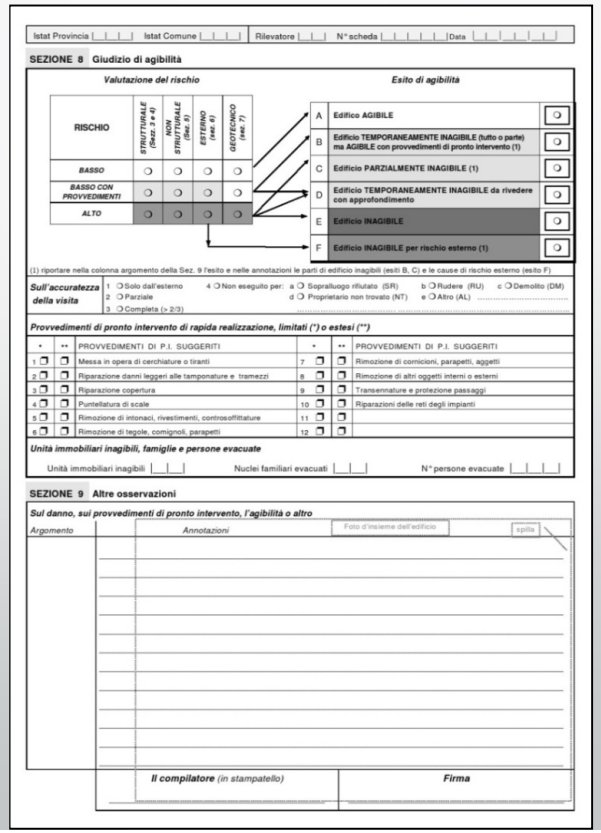
AeDES FORM



SCHEDA DI 1° LIVELLO DI RILEVAMENTO DANNO, PRONTO INTERVENTO E AGIBILITÀ
PER EDIFICI ORDINARI NELL'EMERGENZA POST-SISMICA

SEZIONE 1 Identificazione edificio

SEZIONE 2 Descrizione edificio



SEZIONE 8 Giudizio di agibilità

Valutazione del rischio / Esito di agibilità

RISCHIO	STRUTTURALE (Sez. 5 e 6)	NON STRUTTURALE (Sez. 6)	ESTERNO (ves. 6)	GEOTECNICO (ves. 7)
BASSO	○	○	○	○
BASSO CON PROVVEDIMENTI	○	○	○	○
ALTO	○	○	○	○

A	Edificio AGIBILE	○
B	Edificio TEMPORANEAMENTE INAGIBILE (tutto o parte) ma AGIBILE con provvedimenti di pronto intervento (1)	○
C	Edificio PARZIALMENTE INAGIBILE (1)	○
D	Edificio TEMPORANEAMENTE INAGIBILE da rivedere con approfondimento	○
E	Edificio INAGIBILE	○
F	Edificio INAGIBILE per rischio esterno (1)	○

(1) riportare nella colonna argomento della Sez. 9 l'esito e nelle annotazioni le parti di edificio inagibili (esiti B, C) e le cause di rischio esterno (esito F)

Sull'accuratezza della visita

Provvedimenti di pronto intervento di rapida realizzazione, limitati (*) o estesi (**)

1	Messa in opera di cerchiature o tiranti	7	Rimozione di cornicioni, parapetti, aggetti
2	Riparazione danni leggeri alle tamponature e tramezzi	8	Rimozione di altri oggetti interni o esterni
3	Riparazione copertura	9	Transennature e protezione passaggi
4	Puntellatura di scale	10	Riparazioni delle reti degli impianti
5	Rimozione di intonaci, rivestimenti, controsoffittature	11	
6	Rimozione di tegole, comignoli, parapetti	12	

Unità immobiliari inagibili, famiglie e persone evacuate

SEZIONE 9 Altre osservazioni

Sul danno, sui provvedimenti di pronto intervento, l'agibilità o altro

Argomento | Annotazioni

Il compilatore (in stampatello) | Firma

1° LEVEL AEDES FORM FOR DAMAGE QUANTIFICATION, AND TO ASSESS BUILDINGS PRACTICABILITY IN THE POST – SEISMIC EMERGENCY

CNI'S ROLE IN THE EMILIA EARTHQUAKE

TRAINING

Every Sunday afternoon, the engineers participated to the training course in order to learn how to fill in the AeDES form.

ENGINEERS COMING FROM **80 DIFFERENT ORDER**

THAT HAVE DONE INTERVENTIONS **IN 39 DIFFERENT DISTRICTS**

THE ROLE OF CNI IN THE EMILIA EARTHQUAKE

TERM ASSETS	**9 WEEKS**	**FROM** **TO**	03/06/2012 05/08/2012
ENGINEERS ENROLLED IN CNI	NR. OF TEAMS TOTAL NUMBER OF ENGINEERS		**284** **593**
INSPECTIONS	TOTAL NUMBERS OF INSPECTIONS		**39.136**
	INSPECTIONS MADE BY CNI ENGINEERS	25.3%	**9.909**
FILLED IN CARDS	BY CNI ENGINEERS		**9.765**
RESULTS OF INSPECTIONS	a - habitable b - temporarily habitable c - partially habitable d – temporarily not habitable (need more inspections) e – not habitable f – not habitable due to external risk	34% 19% 4% 0.3% 36.7% 6%	**3.282** **1.897** **419** **36** **3.586** **545**






MI-SPEZZO-MA-NON-MOLLO-



I.P.E.

(NATIONAL ASSOCIATION OF ENGINEERS FOR PREVENTION AND EMERGENCIES)

IPE WAS BORN IN 2013

After the important job made by engineers for the Abruzzo and Emilia earthquakes the **role of engineers** in the process of prevention and emergency management has been recognized

I.P.E. ROLE AND PURPOSES

The Association operates for the purpose of civil, social and cultural solidarity to provide technical assistance in order to serve and protect the Communities and the Environment.

The IPE aims at:

- enhancing safety and prevention culture;
- training and updating engineers on Civil Protection technical issues;
- involving engineers in the civil protection activities in order to safeguard the public and private property and for the security of citizens, land and environment;
- promoting Engineers participation in the voluntary issues and in the Civil Protection activities.

ACTIVITIES OF IPE AND THE CULTURE OF PREVENTION:

IN ORDER TO HAVE A SUCCESSFUL ACTIVITY OF PREVENTION

IT'S NECESSARY TO INCREASE THE PERCEPTION OF RISK BY THE SIDE OF CITIZENS IN THEIR TERRITORY

To achieve this cooperation, the local institutions should adopt specific civil protection measures related to prevention

Prevention is not only an activity related to a technical or legal aspect

but it is mainly based on providing constant information about civil protection activities to the population

THE ROLE OF CITIZENS IN THE PREVENTION AND EMERGENCY MANAGEMENT

ANOTHER IMPORTANT ASPECT OF PREVENTION IS THE ROLE OF CITIZENS

THE CONCEPT OF RESILIENCE

From Latin RESALIO = back on overturned boats
"Capacity of a system to resist and react to sudden and destabilizing shocks "

THE RESILIENCE IN CIVIL PROTECTION

To build in advance the **elasticity** that teaches how to face a critical emergency,
not only preparing crisis management procedures,

but also

EXPLAINING IN ADVANCE TO CITIZENS WHAT TO DO AND HOW TO BEHAVE IN CASE OF PREVENTION, EMERGENCY MANAGEMENT AND RECONSTRUCTION.

THANK YOU