PEER REVIEW
TURKEY
2015

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2015

2015-2016 Programme for peer reviews in the framework of EU cooperation on civil protection and disaster risk management

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(The peer review team, December 2015)

The peer review would not have been possible without significant contributions from all consulted stakeholders in Turkey and their substantial efforts in gathering the data and information for this project.

Particular thanks for the full commitment of their staff and management go to the Disaster and Emergency Management Authority of Turkey (AFAD), who volunteered to undergo this peer review and provided onsite support.

(Dr Fuat Oktay, President of AFAD, with department heads, participants and peer review team at the stakeholders meeting in June 2016)

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1. Introduction

Peer review is a governance tool where the disaster risk management (DRM) system of one country ('the reviewed country') is examined on an equal basis by experts ('peers') from other countries. The EU programme for peer reviews in civil protection and DRM was set up following two successful pilot peer reviews of the UK (2012) and Finland (2013) that were run jointly with the OECD and the UN International Strategy for Disaster Risk Reduction (UNISDR).

The EU peer review programme aims to facilitate the exchange of good practices and identify recommendations for improving reviewed countries' disaster management (DM) policy and operations. The programme encourages mutual learning and understanding and facilitates policy dialogue internally, between countries and among experts.

The EU peer review programme is open to all countries participating in the EU civil protection mechanism (ECPM)[1] as well as EU candidate countries and neighbouring countries. Turkey became a participating state following completion of the ratification process on 4 April 2016.

In February 2015, Turkey wrote to the Commission to express its interest in participating in the EU peer review programme. Turkey's rapid economic and social development in recent decades had brought about a steep increase in both the population at risk of disasters and the value of vulnerable assets. Turkey's most populous residential areas, industrial centres and critical infrastructures are located in areas with high risks of disaster, in particular earthquakes, floods and landslides. At the same time, Turkey had stepped up its capabilities for risk management and, following the devastating 1999 Izmit earthquake, set up the Disaster and Emergency Management Authority (AFAD).

Turkey indicated in its application letter that it recognises the importance of good governance and accountability. It considers the use of peer reviews in improving policy-making in DRM to be a very promising initiative, encouraging mutual learning and enhancing national and regional risk management policies and practices, *inter alia* in the course of a peer review mission.

The following specific objectives were identified for the review:
- to improve Turkey's DRM system and policies and strengthen the involvement of a wide range of institutions and stakeholders;
- to help identify the strengths and weaknesses of Turkey's risk management capabilities; and
- to improve dialogue, cooperation and mechanisms for sharing responsibilities at local, regional and national levels.

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[1] Decision No 1313/2013/EU of the European Parliament and of the Council of 17 December 2013 on a Union Civil Protection Mechanism (OJ L 347, 20.12.2013, p. 924).

Review process

Once Turkey's participation in a general DRM review was confirmed, a call for nominations of experts was sent to countries participating in the ECPM and eligible neighbouring countries. Four peers from EU Member States (Belgium, Italy, the Netherlands and Sweden) were chosen to participate in the review. They were supported by the Commission and a project team contracted by the Commission. Representatives of UNISDR and OECD participated in the inaugural meeting and the initial part of the mission.

The mission was conducted over 12 days, from 29 November to 11 December 2015. It began with an inaugural meeting with representatives of AFAD, where the Commission representative expressed his appreciation to the Turkish side for its willingness to participate in the process and introduced the peer review team.

The team met and interviewed over 100 stakeholders from many different organisations, including central, regional and local government authorities and agencies, NGOs, academia and the media. By bringing together stakeholders with a variety of backgrounds, expertise and responsibilities, the peer review sessions helped achieve one of the key objectives of the peer review process: to share knowledge and encourage cooperation between DRM stakeholders in Turkey.

Interviews took place at the following locations:
- AFAD's premises in Ankara;
- Turkish Red Crescent (TRC) Campus, Ankara;
- 112 call centre, Ankara;
- AFAD Bursa Provincial Directorate, including visits to a logistics centre, local units, the training centre and the public-awareness and education centre;
- AFAD Istanbul Provincial Directorate; and
- Istanbul Metropolitan Municipality Disaster Coordination Centre (AKOM).

The meetings at AFAD were largely plenary sessions, with many stakeholders presenting their activities. This contributed to the exchange of information with a large number of people.

Scope of the review

The peer review encompassed all stages of DRM, taking in policies and practices developed at all levels of government and society. The link with global policies (the 2013-2015 Hyogo Framework for Action and the 2015-2030 Sendai Framework for Disaster Risk Reduction)[2] and European-level action (ECPM) received particular attention. The framework for the review covered five broad areas:
- an integrated approach to DRM;
- risk assessments;

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[2]   As adopted at the Third UN World Conference on Disaster Risk Reduction in Sendai, Japan (18 March 2015).

- risk management planning;
- preparedness; and
- public awareness (see Diagram 1).

The detailed framework is annexed to this report.

This report identifies good practices and areas for improvement, and proposes a series of recommendations under the different objectives. The report and its recommendations were discussed among the peers, Turkey and the Commission. It is for the Turkish Government and other stakeholders to consider and determine how the recommendations could be implemented so as best to contribute to achieving the goal of a resilient society and sustaining a national policy dialogue. The Commission and the peers remain available to discuss the possible follow-up.

This report represents an analysis of the situation in Turkey as presented in December 2015. More recent developments are not taken into account.

Framework for Peer Review

General framework:
An integrated, cross sectoral and multi-hazard approach to disaster risk management is in place and functioning at national, regional and local levels

1. Integrated approach to DRM: Ensure that disaster risk management is a national, regional and local priority with a strong institutional base for implementation

2. Risk assessment: Assess (identify, evaluate and monitor) disaster risks at local, regional and (inter)national levels

3. Risk management planning: Reduce the underlying risk factors through structural and non-structural measures to ensure the physical, economic, ecological, social, culture resilience of persons, communities, countries and their assets

4. Preparedness: Strengthen disaster preparedness for effective response at all levels

5. Public awareness: Use knowledge, innovation and education to build a culture of safety and resilience at all levels
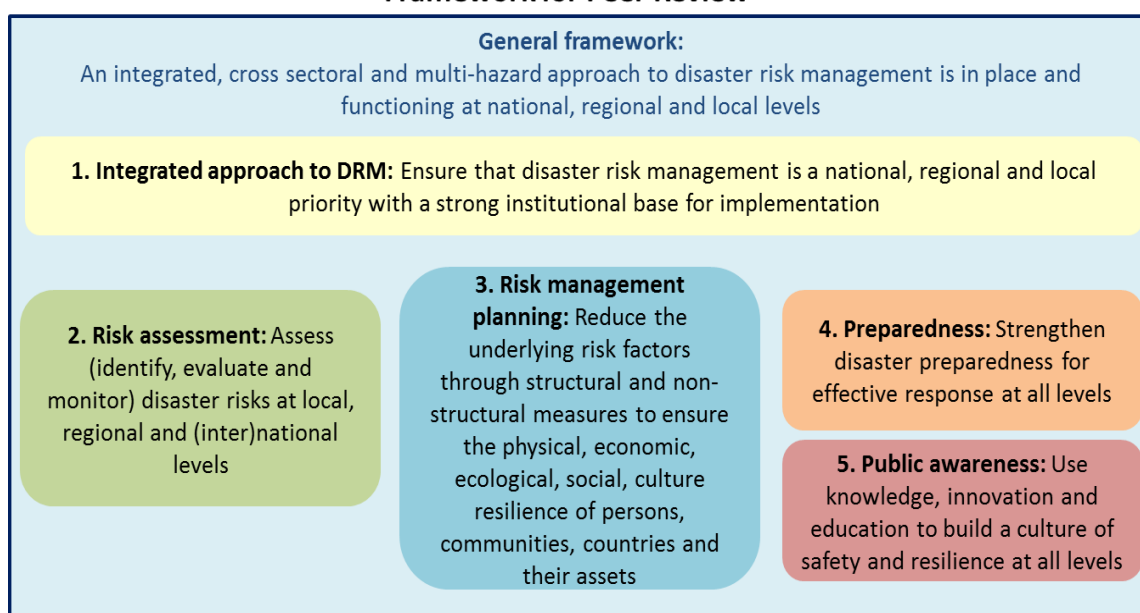
Diagram 1: General review framework

1.1 Key findings and recommendations

Turkey's DM system is organised along the lines of the risk management cycle and therefore in principle coherent and strong, given the level and number of risks the country faces. It is particularly strong on preparedness and response, and the ambition is to bring prevention to the same level and make it an integral part of risk management policies and programmes.

Good practices:

- The Istanbul seismic risk mitigation and emergency preparedness (ISMEP) initiative is an excellent example of integrating various domains and connecting multiple stakeholders.

- The system of cooperation in service groups with different sectoral 'solution partners'. The TRC is a good example of a 'solution partner' for emergency housing and the nutrition of crisis-affected people.

- The integrated decision support system for incidents (AYDES) has reached a high level of integration across a vast territory and a large sectoral scope.

- Earthquake response capacity, with over 20 warehouses and specialised search and rescue (SAR) units set up, trained according to international standards (as developed by the International Search and Rescue Advisory Group (INSARAG)) and spread strategically throughout the country and provinces.

- Innovative solutions for the refugee crisis, including the disaster temporary city management system (AFKEN) and the use of special debit cards.

- Volunteer portal to link volunteers for the various domains (also environmental care) to the crisis management system. Volunteer organisations, NGOs and individuals can apply to become part of the system. The accreditation process will start in 2016.

- Awareness-raising in the family, schools and workplaces and among young people, which features special programmes, a mobile experience and learning bus and a special experience and learning centre in Bursa.

- The 'train the trainer' principle helps to spread a culture of resilience. Local community leaders (teachers, religious leaders, mukhtars, community-supported police) are educated to establish a disaster mitigation culture on the ground, with a focus on prevention and psychosocial support.

- The Department for Earthquakes has developed an interactive mobile phone app (DEPREM) to raise public awareness of earthquakes.

- Broad and comprehensive cooperation with all main international organisations and providers of humanitarian aid and assistance.

Recommendations:

- Review the older laws, policies, plans and activities to determine whether they should be revised. This will provide more opportunities to create a disaster-resilient society through a multi-stakeholder, all-hazard approach. Key practitioners and experts at municipal level should be involved in the revision.

- Strengthen the role of municipalities in DRM. A disaster generally has the greatest impact on municipalities/districts, with subsequent national consequences. Accordingly, all risk assessments (local as well as national) should include scenario development and capacity analysis. This work should take into account prevention, response and recovery ('building back better'), with a focus on the municipal and district level. The existing structure could be strengthened by a coherent legal system in which, following the principle of subsidiarity, the municipal and district level leads the more tactical/operational action, while the provincial and national levels are responsible for coordinating and facilitating strategic, policy and governance action.

- Identify activities and other organisations (governmental and private, 'solution partners') apart from AFAD that already contribute to risk reduction in many important ways. As facilitator, AFAD could further strengthen the multi-stakeholder approach for all parts of the crisis management cycle, with a focus on prevention.

- Further develop the preventive pillar on the basis of the Sendai Framework for Disaster Risk Reduction 2015-2030, to bring it into line with response capabilities. This will include many elements of the ECPM.

- Continue to initiate projects that will develop the capacity for disaster prevention, including emerging challenges such as climate-change adaptation and sustainable development. Risk assessment processes (identification, analyses and evaluation) should be at the centre of DM work and 'risk-informed' investment.

- Use disaster data effectively to prepare a wider range of risk scenarios and associated contingency plans that will enhance disaster preparedness and prevention.

- Use lessons learned to create a national framework ensuring a consistent and systematic approach to following up post-disaster reviews so as to improve disaster management and limit vulnerability and losses.

- Produce detailed risk maps and risk assessments covering the entire country, in particular for seismic risk, taking into account the best available information on hazard, vulnerability and exposure.

- Increase the focus on risk management planning and the reduction of (especially seismic) risk factors. A nationwide quantitative risk assessment should be developed as the basis for a priority scale that can be used to start building, strengthening and retrofitting in the most risk-prone situations.

- Strive for effective, efficient, transferable, sustainable and coherent DM policies. These should not be too costly and should aim to improve resilience to disasters and foster a culture of prevention and risk management.

- Use open sources to share data and knowledge between programmes in different sectors. Communicate in multi-stakeholder meetings aimed at tackling a specific problem to make use of sectors' varying capacities.

- Continue to collaborate internationally with other national and local governments to increase the use of scientific knowledge. Use this knowledge to strengthen public education and awareness.

2. Turkey's institutional and legal framework for disaster risk management

Objective 1: Integrated approach to DRM – ensure that DRM is a national, regional and local priority with a strong institutional basis for implementation

2.1 National policy and legal framework

AFAD was established in May 2009 by Law No 5902 on the basis of lessons learned from the 1999 İzmit earthquake, which indicated a need to facilitate cooperation with 'solution partners' and ministries. This involved the merger of General Directorates in the Ministry of Interior, the Ministry of Public Works and the Prime Minister's Office. At national level, Turkey's policy and legal DRM framework and its implementation are characterised by AFAD's role as coordinator, facilitating cooperation between 'solution partners' in governmental bodies, scientists, NGOs, private business and local communities. AFAD has about 5 000 staff, of whom 500 work in the headquarters in Ankara and the rest in the provincial directorates. It is a young organisation, but is impressive how DRM has improved already in the last six years.

The Disaster and Emergency High Council meets at least twice a year to approve DRM plans, programmes and reports. It is chaired by the Deputy Prime Minister, consists of 13 ministers and also prepares an overall national DRR strategy. In addition to the High Council (for overall strategic decision-making), AFAD also reports to the inter-ministerial Disaster and Emergency Coordination Council. The national legislative framework relating to DRR and DM is considered comprehensive.

The many laws relating to DM include a law on AFAD's organisation and functions, a law on measures and assistance as regards disasters affecting the life of the general public, a civil defence act, a law on land development, a law on catastrophe insurance, restructuring areas at risk and the execution of services relating to damage and disruption caused by natural disasters, a national defence act, expropriation, soil protection and land utilisation, and good stewardship for pastures. In addition, there are many regulations, e.g. on emergency aid after disasters, building codes for disaster-prone areas, claims by homeowners after disasters, remains of buildings and land acquired due to disasters, and buildings to be constructed in earthquake zones.

Some parts of the DRM legislation need to be reviewed to include further improvements and updating. A few older laws may give rise to weaknesses that would undermine the effectiveness of DRM. For example, legislation on disaster risks other than earthquake and flood risks needs to be developed further.

It is considered that simplification of the overall legislative structure (there are many individual laws) could make it less difficult and complex to maintain. This could involve a more layered approach, with a core legal act on the principles of DRM and

DRR, and supporting acts tackling certain aspects (e.g. sustainable development, building codes) in more detail.

2.2　National Platform for Disaster Risk Reduction

AFAD is responsible for organising the National Platform for Disaster Risk Reduction and work on a roadmap for implementation of the Sendai Framework. The Platform is a multi-stakeholder forum that is active at European level. It has a relatively large membership from governmental and semi-governmental bodies. In addition to ministries, scientific and academic institutions, NGOs, the private sector and national financial institutions are also involved. The national progress report on the implementation of the Hyogo Framework for Action (2013-2015) provides a comprehensive review of the DRR Platform, achievements and constraints, and proposals for future action.

The National Platform for Disaster Risk Reduction was established by Cabinet Decision No 2011/1320 of 17 January 2011 (Official Gazette No 27844, 12 February 2011), which also set out its structure. Plans for a new structure were adopted in 2015, but still need to be implemented. The proposed changes will provide a springboard for implementation of the Sendai Framework.

Serious DRR measures have been proposed in Turkey's development plans, emergency plans, annual programmes, and sectoral and strategic plans. Turkey will be looking at how to integrate activities for prevention, mitigation, preparedness and vulnerability reduction into sustainable development policies, plans and programmes, as also recommended in the Sendai Framework.

2.3　Strategic planning for disaster management

AFAD prepares a Strategic Plan, which the team considers to be in line with international guidelines. It is very ambitious, well planned and organised, with five goals and 22 objectives.[3] It includes an analysis of stakeholders' views, a self-assessment, a SWOT analysis, an environmental analysis, objectives and arrangements for monitoring and evaluation. Its implementation is monitored on the basis of key performance indicators (KPIs) and reports from the departments responsible for achieving strategic objectives.

The National Disaster Management Strategy and Action Plan had yet to be ratified and shared at the time of this review. It should be structured in line with the Sendai Framework, which calls for countries to develop a national DRR strategy. The Strategic Plan covers AFAD activities only. An overall DRR and DRM plan and strategy for all sectors, with indicators, would be a next step. The focus should be on an overall strategy and reporting by all ministries and sectors, rather than by AFAD only (on DRR/DRM).

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[3]　　See AFAD Strategic Plan 2013-2017 (p. 15).

It is estimated that 80 % of the objectives were achieved by the end of 2015. The objectives on risk maps and technological risks will be achieved by 2016. The Strategic Plan covers the period to 2017. KPIs have been tracked since 2013 and their use in the Strategic Plan is an example of good practice and can guide Turkey's future achievements. Turkey could apply this practice more broadly, including to the work of other ministries. In future, global indicators available through the Sendai Framework could be useful to all sectors.

Picture 1: Prime Ministry Disaster and Emergency Management Presidency, 2013–2017 Strategic Plan, English language version

2.4 Local DRM responsibilities and capacities

In Turkey, the 'local' level comprises provincial, district and municipal actors. AFAD is directly present at provincial level via its 81 disaster and emergency directorates, which are responsible for managing local emergency action, including engineering activities, SAR operations and coordination between institutions. AFAD also has 11 regional SAR brigades and 23 regional logistics warehouses distributed across the country.

Guidance (e.g. on plans and risk assessments) is passed down from national level to regional/county level. Emergency and contingency plans are prepared centrally, taking account of suggestions from the municipalities under the control of provinces. There are local preparedness and response plans, but these do not identify targets and indicators.

Laws No 5393 (3 July 2005) and No 5216 (23 July 2004) require municipalities and metropolitan municipalities to develop disaster and emergency plans, which must contain DRR elements. Municipalities must demolish buildings that are exposed to high disaster risks and are also responsible for suitable urban transformation.

The metropolitan municipalities covered by this review, Bursa and Istanbul, appeared to have a degree of autonomy and responsibility, e.g. Istanbul has a sophisticated Disaster Coordination Centre (AKOM), an emergency control room established in

2000 where local authorities and the mayor gather in the event of a disaster. AKOM cooperates closely with AFAD's Istanbul Provincial Directorate and the two bodies are considered examples of good practice.

As compared with the national and provincial levels, the district and municipality levels seem to lack a balanced system of subsidiarity and proportional autonomy in terms of DRR decision-making and budget, although municipalities are responsible for demolishing buildings at risk and for urban transformation within their territories (see above). Fire brigades are also a local responsibility.

Legislation should cover all levels of government and be appropriate for each. The municipal level could be more involved in ensuring disaster resilience. Local DRR platforms should be established in line with the principles of subsidiarity and proportionality, and with the Sendai Framework. There should be local DM plans, with targets, indicators and timeframes. Municipalities should be involved in prevention activities and promote the sharing of good practice.

Five cities in Turkey (including Istanbul, one of the largest cities in the world) participate in the UNISDR Making Cities Resilient campaign, which means that they actively and visibly implement the Sendai Framework and the 10 essentials for city disaster resilience.

2.5   Financing disaster management

AFAD's budget has been increased from about 1 billion to 3 billion Turkish *lira* as a result of the various disasters and emergencies that have affected Turkey. Some of the increased funding is dedicated to the significant task of providing humanitarian aid for Syrian and Iraqi refugees.

The biggest proportion of the budget (46 %) is devoted to response and recovery and only 20 % to planning and mitigation. In particular, the budget allocation for 12 DRR projects and 12 DM projects (TL 117 million overall) seems low, but DRR- and DRM-related funds are also managed by other ministries. For example, AFAD coordinates the retrofitting of buildings, but the considerable finances required are managed by the Ministry of Environment and Urbanisation. Local (district, municipality) authorities seem not to have significant autonomous budgets for DRR.

The ready availability of funds in the event of an emergency is an example of good practice and facilitated by the fact that AFAD reports directly to the Prime Minister's Office. Reconstruction cycles sometimes extend over decades, so AFAD has to invest more in very long-term DRR projects.

While not having the information on the budget allocated for DRR and DRM in other ministries, it recommends that a sufficient proportion of overall funding should be devoted to planning and mitigation. Also, some expenditure capacity should be available to local (district, municipality) authorities. Nevertheless, considering current circumstances (the refugee crisis and AFAD's heavy expenditure on refugee camps), this recommendation would need further examination.

2.6 International cooperation

AFAD works in close cooperation with several international organisations, including UNISDR, UNICEF, UNHCR, UNESCAP, UNFPA, UN OCHA, UNDP, the World Bank, WHO, the World Food Programme (WFP) and the International Organisation for Migration.

AFAD attends meetings of the UNISDR Global Platform and the European Forum for Disaster Risk Reduction (EFDRR), which it will be chairing in 2017. As regards operations carried out with UNISDR (as the organisation responsible for the application of the Sendai Framework and its predecessor, the Hyogo Framework for Action (HFA), Turkey's HFA monitoring and progress reports are submitted to UNISDR regularly every two years, so information on its progress on DRR is publicly available across the world. Turkey has led an EFDRR working group on governance and accountability.[4]

Turkey has an ambitious vision of becoming a disaster-resilient society. AFAD strives to be a leader, both nationally and internationally, in work on sustainable development and DRR. it aims to promote risk-centred, efficient and effective DM, and is considering the possibility of establishing a DRR institute in Istanbul province to transfer knowledge internationally.

AFAD prepares bilateral and multilateral agreements, memoranda of understanding, letters of good faith and action plans to increase cooperation with other countries and organisations in the field of disaster and emergency management. There is a large number of such agreements.

The *2013 Global Humanitarian Assistance Report* ranked Turkey as the third biggest provider of humanitarian aid (after the United States and the UK); it provided USD 1.6 billion of aid in 2013.

Good practice:

- The use of performance indicators in the Strategic Plan is an example of good practice and can guide Turkey's future achievements.

- Turkey is involved in wide and comprehensive cooperation with all the main international organisations (UN, EU, OECD, NATO, JICA) and has signed many bilateral and multilateral international agreements.

- Turkey's HFA progress report is an example of good practice; it is comprehensive and updated regularly in line with UNISDR's reporting period.

- Turkey has been very active internationally in the fields of humanitarian aid and disaster relief.

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[4]   https://www.unisdr.org/we/inform/publications/39593

Recommendations:

- Improve coordination and cooperation among all relevant actors to strengthen coordination in prevention, for example through the National Platform for DRR. The level of coordination among public, private and civil society institutions, other actors and AFAD departments could be improved so as to create an integrated framework of DM knowledge and experience. The involvement of all relevant ministries and affected sectors in strategic and operational decision-making is a positive basis for more coordination.

- Use the National DRR Platform as an instrument for spreading good practice. The National Platform for Disaster Risk Reduction could become an important mechanism for further improving DM policies in the field of prevention. It could be a good forum for launching regular programmes, such as an annual scientific conference to provide information on new research findings and discuss areas for further research.

- Create additional cross-border mechanisms for risk prevention, e.g. dialogue with neighbouring countries on risk scenarios to be developed and plans for cross-border prevention projects. Discuss and apply climate-change adaptation methods that focus on common disaster risks. Use and build on current disaster-response channels.

- over more DRR activities and achievements of other ministries, the scientific community, NGOs and grass-roots organisations, in future UNISDR progress reports,.

- Continue to implement the institutional (AFAD) DM strategy, action plan and the targets and indicators intended to measure the degree of success. This is a good base to build on.

- Develop DRR policies targeted at the municipality level. In line with the principles of subsidiarity and proportionality, consider more decentralised (district- and municipality-level) decision-making for AFAD and other governmental bodies. Legislation should cover all levels of government and be appropriate for each of these levels. More of the policies, plans and activities should promote disaster resilience at municipal level. Review the legislation for the local level, including Laws No 5393 and No 5216, to see if they should be revised.

- Include the local level more in long-term planning and policy-making, and try to use the same overall strategic all-hazard, whole-society approach for across the country and at each level. This is already the case for the emergency plans and partly also for DRR projects, but the same structure and indicators could be replicated throughout the country.

- Encourage leadership and action at municipality level, where key experts should be involved as much as possible. Provide municipalities with national-level funding for training in disaster-prevention methods and increase the number of regional and municipal DM employees working in the field of prevention.

- Support community-based approaches and action that will strengthen resilience at local level. Organise good disaster-prevention practice workshops where solutions that have already been applied in Turkish cities can be presented.

- Initiate more twinning projects whereby representatives from two countries or cities meet several times over a period of time (e.g. two years) and have an opportunity to share good practice. Another possibility is to make use of UNISDR's Resilient Cities Connect initiative (part of the Making Cities Resilient campaign).

- There is a very easy-to-use package of materials for the UNEP Awareness and Preparedness for Emergencies at the Local Level (APELL) programme that could be implemented in Turkey.

- The national level should finance city-to-city peer reviews within Turkey to share expertise and good practice in building disaster resilience.

- Ensure that the results of research projects are disseminated for use at local level.

- Ensure that the proposed DRR knowledge centre has a strong component focusing on emerging challenges such as climate-change adaptation and sustainable development.

3. Risk assessments

Objective 2 — Achieving a high level of protection against disasters: risk assessment. Assess (identify, evaluate and monitor) disaster risks at local, regional and (inter)national levels

Turkey is prone to three main types of natural disaster: earthquakes, floods and landslides. The majority of the population (70 %) live in seismically active areas and earthquakes have caused two-thirds of total disaster losses over the last century, with 16 % due to landslides and 15 % due to floods. With most of the country exposed to these natural hazards, prevention and risk reduction are extremely important. The approach to risk assessment is currently hazard-specific, with no overarching multi-hazard assessment.
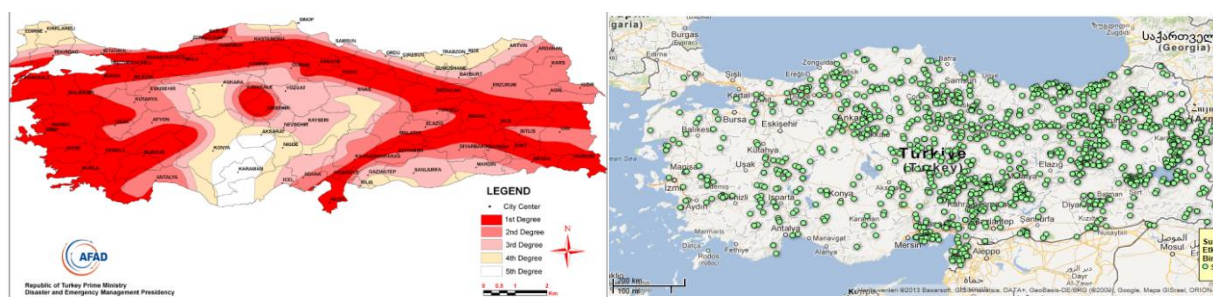
Figure 1: Earthquake zoning map of Turkey and floods in Turkey (2008-2012)

Risk assessment is still at an early stage, since many projects did not start until 2013 or later. Furthermore, the very high influx of Syrian refugees, many of whom are hosted in camps managed by AFAD since 2011, has made response more of a priority.

3.1 National guidelines for hazard assessment

The National Disaster Risk Assessment and Analysis Working Group has developed guidelines for assessing the following hazards: rockfalls, avalanches, landslides and floods (under development). The methodologies are in line with international standards. There is cooperation between sectors and between levels of government (primarily national and regional/county level). In some cases (seismic hazard), the hazard assessment and maps need to be improved, in others (landslides and floods) the limitation is the lack of data at national level.

Risk assessments are carried out at provincial or county level and are limited by the scarcity of quantitative data on the vulnerability of elements at risk (buildings, key infrastructure, roads).

Most studies and projects on hazard and risk assessment are relatively recent and many are still ongoing. For example, the Turkey Disaster Risk Management System Project (TAF-RISK) focuses on risk modelling and developing algorithms in relation to

earthquakes, floods, landslides and large-scale industrial accidents. TAF-RISK started in 2014 and still has to be implemented.

The Turkish Disaster Data Bank (TABB) gathers all electronic and printed material relating to disaster losses in Turkey. It is updated, well organised in terms of GIS and includes:
- five datasets on active faults (1:25 000 scale);
- an instrumental earthquake catalogue (12 674 earthquakes of magnitudes over 4.0 between 1900 and 2012);
- historical earthquake catalogue (1 236 events with intensity of V and over from 2000 BC to 1900 AD);
- moment tensor catalogue; and
- information on crustal thickness.

A Turkish disaster database analysis module stores current information about natural disasters (2 065 forest fires, 912 landslides, 289 rock falls, 234 earthquakes, 175 floods, 135 avalanches, etc.) in 81 provinces between 1900 and 2010.

3.2   Seismic hazard maps

The national seismic observation network development (USAG) project, which was started by AFAD in 2004, has led to the setting-up of 780 stations, including 550 accelerometric stations measuring seismic hazard (strong ground motion) around the clock. Infrastructure systems and software are continuously renewed in order to improve the network.[5]

The probabilistic seismic hazard map (peak ground acceleration (PGA) for return period of 475 years), which constitutes the basis for the official seismic zoning map and application of the seismic building code, dates back to 1993 and needs to be updated. To this end, there is an important ongoing project (by S. Akkar *et al.*) to revise the seismic hazard map, which (in line with the most recent methodologies for probabilistic seismic hazard assessment) computes hazard maps for a set of annual exceedance levels for PGA and pseudo-spectral acceleration (PSA) ordinates at T=0.2 sec. and T=1.0 sec. for the entire country. Considering the importance of the project for revising the design spectrum in the *Specifications for buildings to be built in seismic zones* (DBYBHY 2007) and developing more reliable models for earthquake insurance premium calculations, it is recommended that the new map be implemented as soon as possible.

The National Earthquake Strategy and Action Plan 2012-2023[6] aims to minimise the possible physical, economic, social, environmental and political damage and losses caused by earthquakes and to create living areas that are resistant to and prepared for earthquakes. It has three specific goals:
- learning about earthquakes;
- earthquake-safe settlement and construction; and

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[5]   Data as provided in May 2016.
[6]   http://www.deprem.gov.tr/en/Category/udsep-2023

- coping with the consequences of earthquakes.

It sets out seven objectives and 87 actions, the majority of which remain to be implemented.

Seismic risk maps are not yet available nationwide due to the lack of data on building and critical infrastructure seismic vulnerability. Risk maps and scenarios are available only for the Metropolitan Municipality of Istanbul in the context of the ISMEP project, which the Istanbul Governorship is carrying out with EUR 1.5 billion financing from the World Bank, the European Investment Bank, the Council of Europe Development Bank and the Islamic Development Bank. Another project, Earthquake Risk Analysis in Istanbul, is carried out in cooperation with the Japan International Cooperation Agency (JICA).
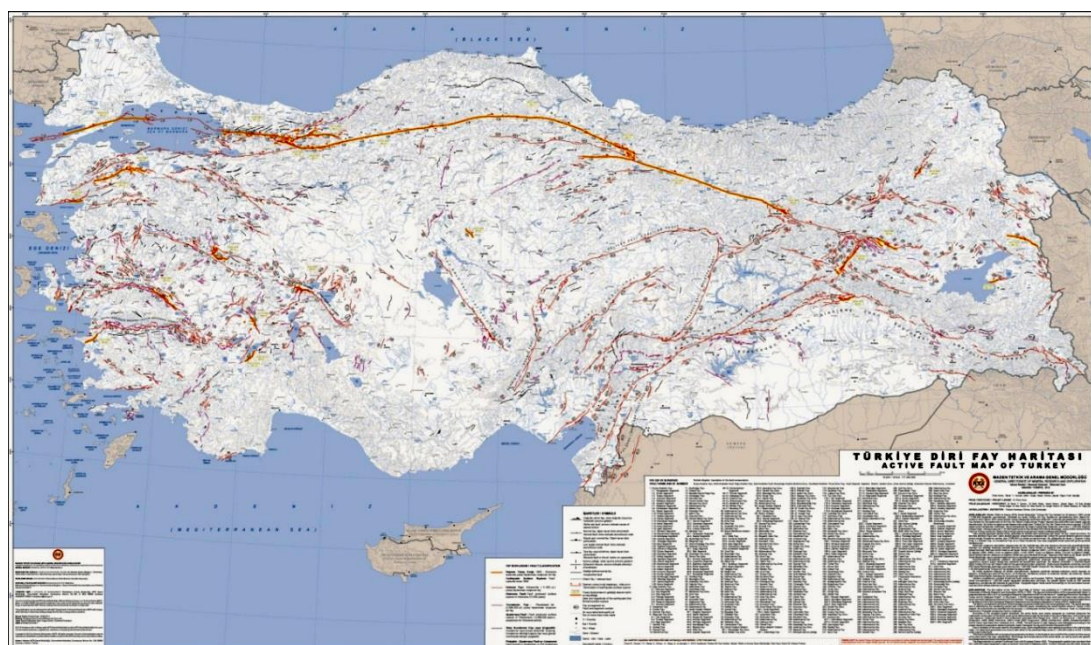
Figure 2: The updated active fault map of Turkey (Scale: 1:1 250 000)
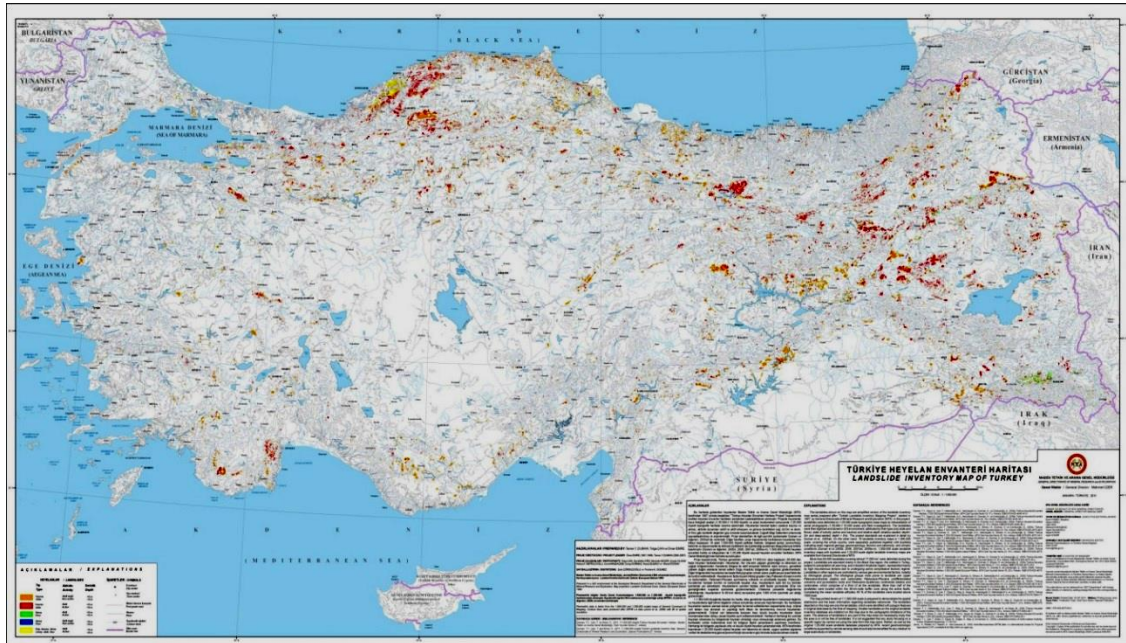
Figure 3: Turkey landslide inventory map (Scale: 1:1 500 000)

3.3   Flood-risk assessment

Responsibility for flood prevention lies both at national (AFAD, Ministry of Forestry and Water Affairs) and local level (municipalities). Turkey is adopting the provisions of Directive 2007/60/EC on the assessment and management of flood risks. Implementation has begun in two of its 25 hydrological basins (the Yeşilırmak and Antalya river basins). Flood-risk assessments, including risk maps for these two basins, were due to be completed by June 2016. The mapping involves coordination with various ministries (e.g. Ministry of Environment and Urbanisation, Ministry of Forestry and Water Affairs, Ministry of Public Works and Settlement, Ministry of Development).

Good practice:
- Turkey has invested in developing a comprehensive system of guidelines and methodologies for disaster hazard maps, such as AFAD's landslide, rockfall and avalanche guideline.

- TABB and the disaster database analysis module gather all electronic and printed material relating to disaster losses in Turkey. The necessary infrastructure to ensure the nationwide application of these guides has also been established.

- Strong earthquake risk mitigation and preparedness is ensured through strategies and action plans and a vast network of monitoring stations. There are hazard maps for earthquakes, a national seismologic observation network of 780 stations with 550 strong ground motion accelerometers, a national earthquake strategy and action plan (UDSEP-2023) and the ISMEP project.

- The major earthquake hazard is well known and extensively managed through strategies and action plans and a vast network of monitoring stations. There

are hazard maps for earthquakes, landslides and floods.

- Knowledge transfer and communication about the work that Istanbul is doing in prevention is ongoing.

- Disaster-sensitive settlement convenience maps (TADYUS) aim to digitise paper-based geological, geotechnical investigation reports and attachments (maps-layouts). To date, 22 000 reports have been converted into digital files for use in a GIS.

- The Ministry of Forest and Water Affairs has developed strategies for forest-fire fighting and the Ministry of Food, Agriculture and Livestock has a strategy and action plan for combating agricultural drought.

Recommendations:
- Place risk identification, risk assessment and risk evaluation at the centre of DRM in order to ensure a holistic DRM system.

- Consider increasing the financial resources for risk assessment, especially for microzoning studies throughout the country. This is in line with future ambitions and can be used to follow up recommendations that Turkey might consider adopting.

- Enhance knowledge transfer by sharing a few examples such as risk maps (ISMEP project) and the safe schools project with all provinces so they can benefit from the good example of Istanbul's work. This could include financing and follow-up, so that knowledge of risks and how to reduce them can be implemented in other urban areas in Turkey.

- Extend the coverage period of the earthquake database back before 1900, in particular for historical earthquakes, and upgrade and enrich the historical earthquake catalogue through historical and paleosismological studies.

- Evaluate landslide hazard and risk to start gathering data on landslide susceptibility and elements at risk in order to implement landslide hazard and risk maps throughout the country.

- Expand the use of microzoning studies to include at least all the highest (level 1 and 2) seismic zones in the country.

- Finalise the revised Turkish seismic hazard map and compare the results with those produced by the seismic hazard harmonisation in Europe (SHARE) (http://www.share-eu.org) and the earthquake model of the Middle East region (EMME) (http://www.emme-gem.org) projects.

- Produce seismic risk maps showing, on the basis of hazard maps and building vulnerability, the probability of a given loss in a given period of time. Compare with the results of the worldwide seismic risk assessment (GEM) project (http://www.globalquakemodel.org).

- In the new seismic hazard map, include uniform hazard response spectra (UHS) for all structural periods between 0.05 and 4 seconds. Calculate UHS for a dense point grid covering the whole territory in order to enable the direct use of the UHS, interpolated from the grid, to fit the smoothed spectra of the seismic

building code.

- Complete work under UDSEP-2023 for the medium (2012-2017) and long term (2012-2023), including the production of a national building inventory with associated seismic vulnerability following the example of the Istanbul ISMEP project. Useful data concerning building features could be extracted from the land registry and cadastre information system prepared by the Ministry of Environment and Urbanisation in 2012.

- Implement the Flood Directive and the flood management plan for all 25 hydrological basins; this is a long-term (2020-2023) objective of the Ministry of Forestry and Water Affairs. Increase participation in EU conferences on flood resilience and implementing the Flood Directive.

- In cooperation with all relevant sectors and stakeholders, develop scenarios for emerging risks and model their impact on disaster risk. Mainstream climate-change adaptation and sustainable development into urban planning by making them part of the risk and vulnerability assessments.

- For river basin management, set up stakeholder groups made up of representatives from different bodies at national and basin level, such as NGOs and inhabitants. These stakeholders bring varied knowledge into discussions as to what prevention and mitigation action can and should be taken to avoid severe consequences from flooding.

- Develop multi-risk assessments that take account of information about vulnerability and exposure.

4. Risk management planning

Objective 3 - Achieving high-level protection against disasters: Risk management planning; reduce the underlying risk factors through structural and non-structural measures to ensure the physical, economic, ecological, social and cultural resilience of persons, communities, countries and their assets

A clear structure assigns responsibilities for risk management planning so as to avoid overlaps, gaps and mismatches in responsibility. The fact that one organisation oversees and coordinates the full DM cycle has many advantages. However, it seems that the main focus in terms of budget, staffing and attention from management has been on response and recovery, especially since AFAD's mandate covers reconstruction as well as early recovery.

Among AFAD's main tasks are coordinating DM throughout the country, planning integrated DM activities and implementing risk management plans for natural hazards and man-made/technological risks. Turkey aims to implement a DRR strategy for institutions and businesses and increase accountability for their capacity to ensure operational continuity. In addition to AFAD, the Turkish Atomic Energy Authority and the Ministries of Labour and Social Security, Culture, Environment and Urbanisation, Energy and Natural Resources, Transport Maritime and Communications, and Food, Agriculture and Livestock are also involved.

Turkey's economic and social development has brought with it a rapid population increase and an increase in the number of valuable assets that are vulnerable to disaster. Turkey's most populous residential areas, industrial centres and critical infrastructures are often located in areas with a high risk of disaster. Turkey also has many cultural assets and archaeological sites to protect from disaster. As a result, Turkey remains vulnerable to disaster risks that could harm critical facilities and have major social and economic effects.

4.1 Risk management planning for earthquakes

Possibilities for risk management planning and the reduction of risk factors are limited, especially as regards seismic risk, since there is a lack of nationwide quantitative risk assessments, hampering efforts to establish a priority scale that can be used to start building, strengthening and retrofitting in the most risk-prone areas. In addition to AFAD, other institutions are involved in many important risk reduction activities, e.g. the Ministry of Forestry and Water Affairs (flood-risk reduction through erosion control) and the Ministry of National Education (seismic retrofit of schools).

Law No 6306 of Transformation of Areas under the Disaster Risks, which entered into force in 2012, introduced innovations such as:
• the demolition of buildings proven on the basis of scientific data to be risky, regardless of their condition;

- the allocation of credits, housing and workplaces to those who have their buildings demolished, depending on the principle of negotiation; and
- implementation by citizens themselves, with the least possible involvement of the state (other than for assistance and support).

The plan is to demolish and reconstruct 6.5 million housing units by 2023. The seismic building code must be applied to the construction of new buildings or the retrofitting of existing buildings. The *Specifications for buildings to be built in seismic zones* (DBYBHY 2007) date back to 1998, although several improvements were made in 2007, particularly as regards displacement-based design and requirements for the seismic assessment of existing buildings and retrofitting. It is important to upgrade the Turkish code in line with international standards (Eurocode EC8 — EN 1998-1, US or Italian codes), in particular as regards the soil amplification (S) factors (the spectral acceleration during all period ranges must increase as the corresponding V_{S30} of the soil class decreases). For correct enforcement of the code, it is also important to upgrade the seismic hazard map (see previous chapter).

4.2 Risk management planning for technological disasters

With the help of various institutions and organisations, AFAD has prepared a technological disaster roadmap consisting of a main document and eight separate booklets specific to types of technological disaster: major industrial accidents, accidents caused by mining and mining wastes, accidents causing marine pollution, accidents of dangerous substance transportation, dangers caused by ionising radiation, the protection of critical infrastructures, the biosafety of genetically modified organisms, and climate change and associated disasters. The purpose of the roadmap is to reduce damage and losses from technological disasters, and promote research at national, regional and local levels. It is intended to strengthen cooperation on civil protection, monitor risks, increase capacity development and promote the implementation of risk management plans. It includes requirements and suggested action. A regional pilot project is being conducted on developing methodologies for preparing hazard maps for technological disasters. Turkey implements the SEVESO II Directive (96/82/EC) and other international regulations.

AFAD has developed a specific nationwide chemical, biological, radiological and nuclear (CBRN) risk management system with the aim of enhancing the capacity and effectiveness of the current system. Short public information films about CBRN risk have been made and a web portal (kbrn.afad.tr) provides public information. The approach is in line with international practice. The 2012 Regulation on duties regarding CBRN threats specifies the responsibilities of public authorities, the private sector and organisations. Also, a CBRN service plan has been prepared in accordance with the national disaster response plan to ensure a systematic response to CBRN incidents. Response teams and team standards have been established as part of the plan. The roles and responsibilities of each stakeholder have also been identified for before, during and after incidents.

Figure 4: 2014-2023 Technological Disasters Roadmap — English version

As regards the safety (in particular seismic) of nuclear power plants (NPPs), it should be noted that no NPPs are currently active in Turkey. Armenia has an NPP close to the Turkish border, but due to the lack of diplomatic relations between the two countries there are no bilateral agreements regarding early notification of cross-border effects. As a result, information about any emergencies and accidents will be conveyed through the International Atomic Energy Agency (IAEA). Turkey plans to build two NPPs, the first on the south coast and the second on the north coast. The reactor designs meet IAEA safety standards and have recently been licensed by the IAEA.

Following several chemical accidents, Turkey turned for guidance to the OECD's *Guiding principles for chemical accident prevention, preparedness and response* and the *Guidance on safety performance indicators*.[7]

Developments in technology carry various types and levels of risk. In this context, cyber-related risks could be assessed as part of technological risks and be included in the scope of action and strategic plans prepared by relevant ministries.

4.3   Risk management planning for floods

The Ministry of Forestry and Water Affairs has prepared a specific upper catchment flood control action plan (2013-2017).[8] Works covering afforestation, erosion control, terracing, and the rehabilitation of inadequate land, flood brooks, rangelands and degraded forests will be carried out in 227 flood catchments. The General Directorate of Water Management has completed the preparation of a national flood management strategy paper and action document in consultation with relevant ministries. A river-basin management plan will be produced. The General Directorate of Water Management is responsible for preparing flood-risk management plans that are compatible with EU Flood Directive requirements.

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[7]   http://www.oecd.org/env/ehs/chemical-accidents/Guiding-principles-chemical-accident.pdf
[8]   http://www.cem.gov.tr/erozyon/Files/yayinlarimiz/SEL%20CALISMA%20ING%20MAIL.pdf

4.4 Risk management planning for climate change

As a result of global climate change, Turkey has to tackle problems such as desertification, hydro-meteorological disasters and sea-level rise. The Ministry of Environment and Urbanisation coordinates a Coordination Board on Climate Change comprised of 13 ministries, AFAD and other public and private institutions. Several working groups address specific aspects of the work to be done, such as mitigation, impact and adaptation, inventory, finance, technology development and transfer, capacity-building and air management. Work is in progress in accordance with the national climate change strategy document (2010-2020) and the national climate change action plan (2011-2023). Adaptation studies are planned for water resources management, agriculture policy, DM, forest policy, public health, capacity-building activities, awareness-raising efforts, and impact and vulnerability assessment. The Ministry of Food Agriculture and Livestock has a strategy and action plan for combatting agricultural drought. Various meteorological data are used as a basis for early warnings. This work under the climate change strategy is reported annually to the UN Framework Convention on Climate Change.

4.5 Risk management planning – insurance

Turkey introduced a requirement for earthquake insurance in 2000 and coverage is provided by the Turkish Natural Catastrophe Insurance Pool (DASK), set up under Law No 6305, which is an example of good practice. Additionally, DASK may cover disasters such as floods, storms, landslides, and hail and snow damage in the event of insurance companies failing to do so.

Insurance companies make use of risk scenarios. At present, insurance has 41 % penetration and there are 7.3 million policies.[9] It is therefore recommended that further efforts be made to increase the penetration of compulsory earthquake insurance.

Another example of good practice in the field of insurance is the Agricultural Insurance Pool (TARSİM), which insures herbal and animal products against the consequences of hail, storm, flood, fire, landslides, tornadoes and frost.

> **Good practice:**
> • Turkey applies international standards and follows EU and international regulations on technological risk, chemical accident prevention and flood risk. Turkey produces its flood risk map and risk management plans in line with the guidelines of the Floods Directive. The Ministry of Forestry and Water Affairs has prepared an upper catchment flood control action plan (2013-2017) and a comprehensive programme for flood risk reduction has been carried out. In addition, the Ministry of Culture and Tourism takes measures to protect and restore cultural assets in flood plains, in line with the aims of the Floods Directive.

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[9]   Data as provided in May 2016.

- A retrofitting programme for schools has been drawn up in combination with seismic risk assessments and cultural heritage buildings are retrofitted in line with international standards. Many stakeholders have been involved in the retrofitting of schools process, including consultants, provincial and national level actors, educators, municipality personnel, citizens, parents and students. A social guidance and awareness study has been produced on the retrofitting of schools.

- AFAD and expert ministries and universities coordinate well in the risk management process. For example, the Ministry of Food, Agriculture and Livestock produced the drought strategy and action plan and the Ministry of General Directorate of Water Management is responsible for preparing flood-risk management plans.

- DASK and TARSIM are legal entities providing insurance cover against natural disasters. Turkey closely monitors other countries and takes advantage of lessons learned by countries such as New Zealand and Japan in financing natural disasters.

- Law No 6306 on the transformation of areas under disaster risk — target 2023 (liveable cities).

Recommendations:
- More DM policies should aim to increase resilience to disasters and foster a culture of prevention as an integral part of risk management, covering the full spectrum from prevention to recovery.

- Integrate disaster prevention into municipal land-use planning, which can play a central role in enhancing community resilience, e.g. by protecting critical infrastructure.

- Improve the mechanism for coordinating disaster prevention activities across a range of stakeholders, including government, the private sector and civil society. As part of this, develop a methodology for incorporating new scientific knowledge into DRR policies and practices.

- Adapt the relevant laws on the transformation of areas at risk of disaster regarding the measures to be taken for cultural assets to involve the Ministry of Culture and Tourism directly in disaster management.

- Increase horizon-scanning to raise awareness of the effects of emerging risks such as climate change and cyber threats in Turkey. Discussions should be pursued with stakeholders in all sectors on the most effective means of preventing and/or mitigating risks.

- Develop tools for inventorising climate-change adaptation measures and assessing their effectiveness. Encourage cities (in addition to Nilüfer) to use the EU Mayors Adapt Programme to promote climate-change adaptation at municipal level. Enhance cooperation with other ministries to incorporate DRR into national and international assistance programmes that promote sustainable development, natural resource management, urban development and adaptation to climate change. Arrange seminars on good risk management practices in conjunction with scientists. Integrate climate-change adaptation

into the legal framework. In addition, the national platform should actively promote the implementation of the national climate change adaptation strategy and action plan for 2011-2023.

- Information systems that are now used for emergency operations should include other components that can be used for prevention, e.g. a knowledge bank based on different types of risk, including suggestions for prevention activities. GIS could enhance risk analysis by showing areas and populations that are particularly vulnerable to identified risks.

- Promote business continuity planning with public- and private-sector risk management actors. Use business continuity management to ensure the continuous operation of vital societal functions and services during and after a crisis (for methods, refer to business continuity management standard ISO 22301 and the EU INSPIRE Directive). Apply the ISO 31000 standard for risk management; this is a good tool to ensure comprehensive risk management with all stakeholders.

- Accelerate the school retrofitting programme to cover at least all schools in first- and second-degree seismic earthquake zones. Inform the population about the seismic risk to which the schools are exposed and the measures adopted to reduce it.

- Implement retrofitting guidelines and run training courses for technical staff in governorships, municipalities and civil engineers in the private sector. The World Bank project on retrofitting is an excellent example that can be used in the higher-education curriculum.

- Continue to take into account cities' and villages' cultural heritage in the transformation, with a new urban design, of areas at risk.

- Adapt the *Specifications for buildings to be built in seismic zones* (DBYBHY 2007) according to European standards, in particular as regards soil amplification factors.

- Continue the process of progressively increasing the penetration of compulsory insurance.

5. Enhancing preparedness to respond to disasters

Objective 4 — Strengthen disaster preparedness for effective response at all levels

5.1 Coordination and response plans

AFAD and the Turkish system in general are very well equipped and organised for emergency aid, response and recovery after a disaster. A lot of activities are still being rolled out, or have only been piloted; in the years to come, Turkey will develop a very robust response system. In some areas, notably SAR brigades, equipped vehicles, logistics warehouses and speed of aid delivery, Turkey can claim to be one of the leading countries at international level. In particular, the effort that Turkey is making to accommodate the Syrian refugees is most impressive. Moreover, Turkey has provided a high level of humanitarian aid in recent years.
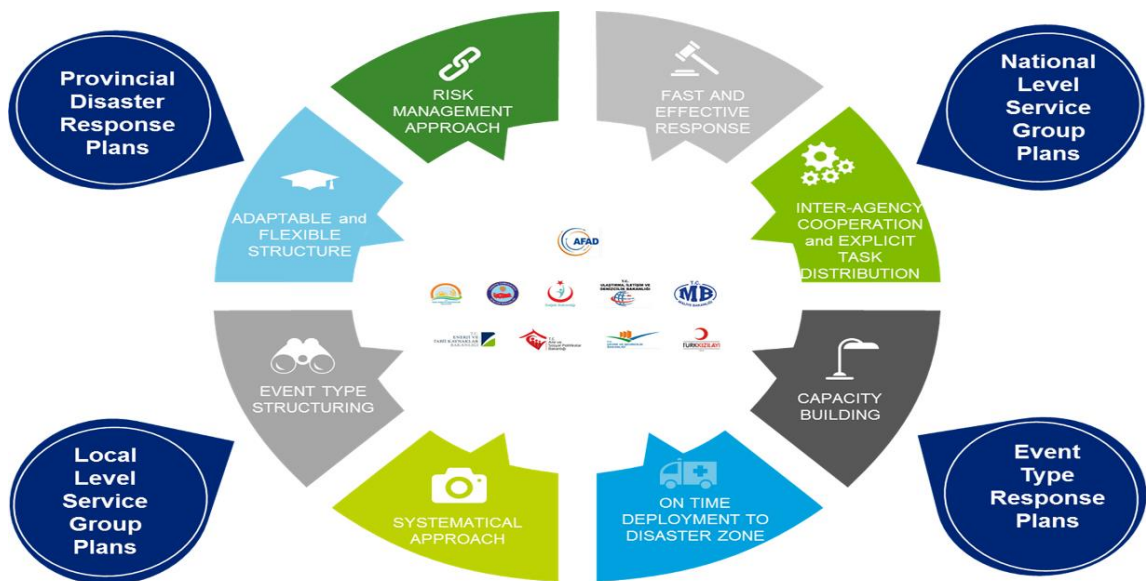
Figure 5: Structure of TAMP

Turkey's national disaster response plan (TAMP), the result of a two-year study conducted particularly in the light of the 2011 Van earthquake, was adopted in January 2014. TAMP is flexible, modular and adaptable to all types and scales of disaster. It clarifies the planning and coordination of public institutions and NGOs in the event of a local/national disaster to minimise the loss of life and property by efficient resource management. As TAMP was adopted quite recently, it will need to be tested through training and exercises.

Response and recovery activities are divided between the national and the regional level. The national level consists of AFAD, eight ministries and key 'solution partners'

such as TRC, while the local level is made up of governorships, AFAD's 81 provincial directorates and the eight ministries local agencies.

There are 28 national service groups, covering all the main sectors of disaster response and grouped in four types of service: operation, information, logistics and maintenance, and finance and administration. These service groups coordinate and organise at ministry level to ensure the sustainability of interrupted services in disaster and emergency situations. All service groups should work in coordination with AFAD, with a ministry assigned as major associate.
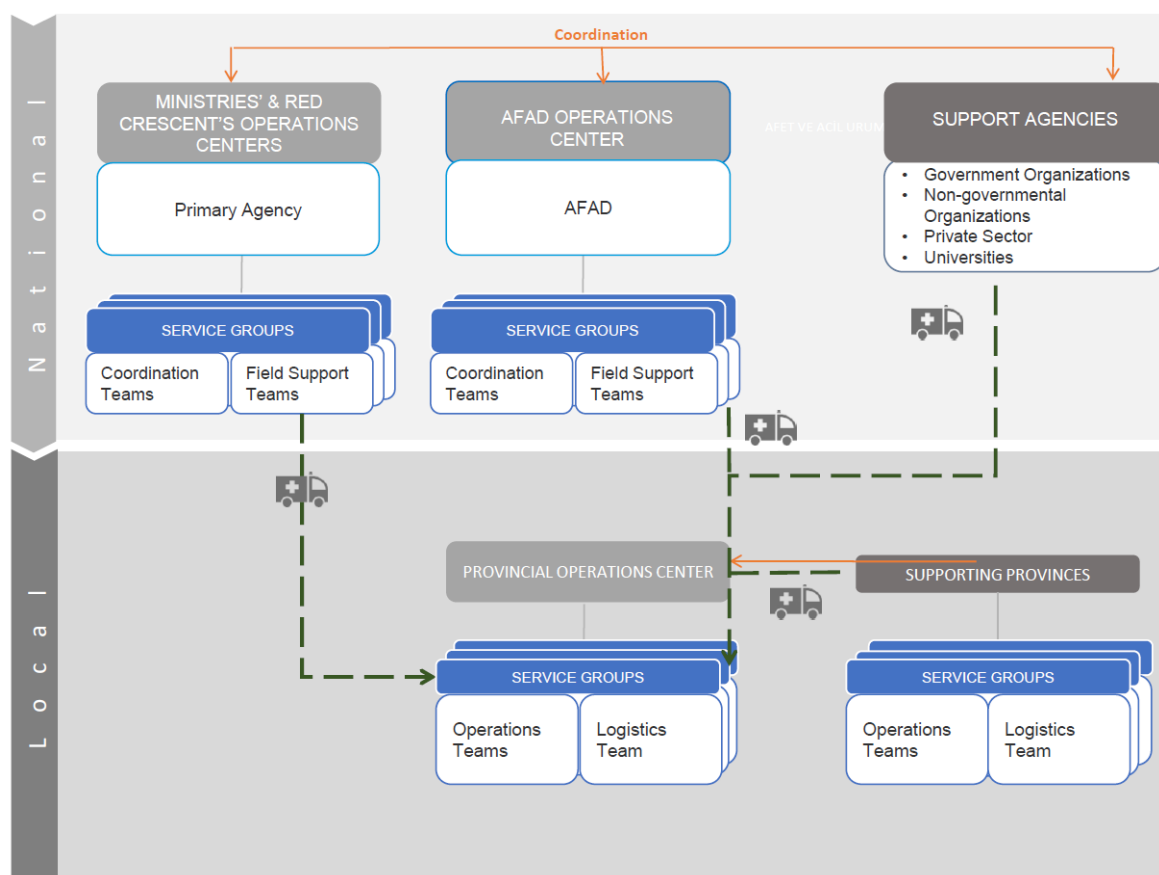
Figure 6: Coordination structure in Turkey

AFAD ensures overall coordination between the service groups and leads 10 of them. It determines the roles and tasks of institutions and organisations. The supporting associates, including government authorities, NGOs, private-sector actors and universities, should take part in the preparation of operational plans, support the execution of operations and meet the demands of the major associates, while providing capabilities such as trained personnel, equipment and tools.

Primarily, national service group plans are prepared together with all major national-level associates. The plans define roles and responsibilities in the event of a disaster or emergency. The next step is the preparation of provincial disaster response plans and local service group operation plans, which determine roles and responsibilities at local level. There is disaster-preparedness and contingency planning at all levels.

National legislation ensures that emergency plans (such as the chemical and biological substance emergency plan) are in place to prevent and respond to major chemical accidents. Arrangements for monitoring chemical transport incidents, where a local municipality or province should react when something happens (e.g. a derailed train with tank wagons), have yet to be clearly defined. The European agreement concerning the international carriage of dangerous goods by road (ADR covers certain issues, but does not ensure that a central authority is informed about transports on a day-by-day basis. Moreover, failure completely to exploit information available at the municipality level could limit the efficiency of the central system.

5.2   Information management

AYDES is an information system designed and developed by AFAD to monitor and conduct all stages of disaster and emergency management on a common platform in a fast and effective way. It is an integrated platform which contains desktop applications, GIS-based web applications (in 2D and 3D) and mobile applications, and connects a network of a number of in-house and external systems. It is part of an integrated structure designed according to TAMP and developed for use by AFAD, related ministries and their provincial organisations. AYDES is a three-phase project and its ongoing development is scheduled for completion in the first half of 2017.

The AYDES software-based management model consists of three main components (the incident command system, the spatial information system and the improvement system) and their sub-components. The incident command system manages the preparation, planning and response processes of the service groups defined under TAMP. AYDES enables preparation for and response to disasters and emergencies at local and national levels, and the main management process (resource management, transportation, demand management) provides for flexible and effective management of disasters and emergencies. In response to a disaster at local or national level, text and email notifications are sent to the service groups, which then interact and communicate through the system.

AYDES is clearly used for preparedness, response and recovery, but it is still unclear how it is used for prevention and mitigation activities. Moreover, a considerable volume of data will be generated during a response to a large-scale disaster impacting several provinces simultaneously and this demands a very strong information management team. While the software supports decisions, information still needs to be cleaned, curated, compiled and compared.
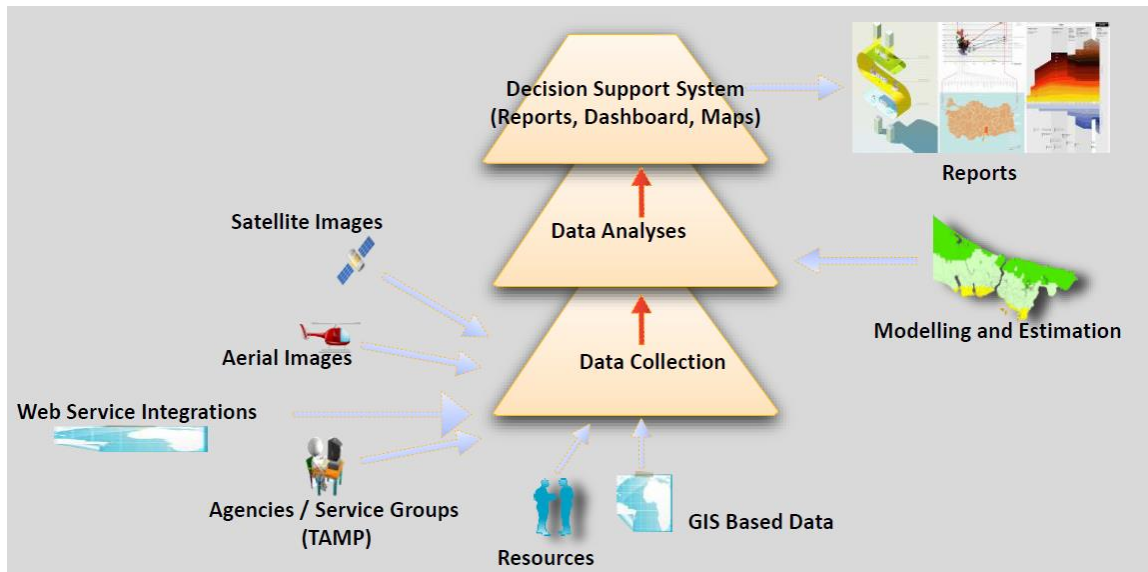
Figure 7: General structure of AYDES

The Earthquake Data Centre of Turkey (AFAD TEDC) project aims to ensure the efficient and productive use of state resources. In line with international standards, AFAD has therefore assessed, merged and individually stored the data obtained from the stations established and operated by AFAD, and from universities and other institutions across Turkey, before sharing them with other users.

The AYDES information about the disaster area is essentially based on data from the field (service teams, vehicles with night thermal cameras, satellite and aerial images). AFAD's rapid earthquake damage and loss estimation (AFAD-RED) software uses a range of information available on a national scale, including population, district boundaries, number of buildings, active faults and geology. The system works automatically and is also used for scenario earthquake studies. The AFAD-RED software generates information on damage, loss, shelter and seismic intensity, and PGA and peak ground velocity (PGV) maps. Particularly in the first few minutes after an event, when information from the field is not yet available, it is important to have models and software allowing a preliminary estimate of damage and losses. AFAD-RED is an example of this, but it is limited by the absence, at least nationwide, of building vulnerability data. It generates shake-maps that are very useful for evaluating earthquake intensity, but does not provide detailed information on victims and losses. The availability of efficient loss estimation software could be particularly useful in the event of medium-magnitude earthquakes, when real-time information on damages is essential for deciding whether or not to activate the emergency plan.

Another important issue is the usability of the damage survey and safety assessment of buildings for post-disaster (in particularly post-earthquake), which determines whether people can return to damaged houses. It is very useful to provide specific pre-training to form a task force of public- or private-sector specialists (engineers, architects, geologists) to carry out damage and safety assessment surveys after an earthquake. It is equally important to use a common (nationwide) standardised form for damage assessment. In the selection of resettlement areas for post-disaster reconstruction, account should be taken of the Ministry of Environment and

Urbanisation's microzoning studies, which should be extended nationwide. In the reconstruction of inhabiting units, it would be advisable to take into account the cultural heritage of the cities and villages affected.

5.3   Emergency logistics warehouses

The network of provincial emergency centres and 23 emergency logistics warehouses provides great added value in ensuring the transparent tracking and tracing of assets. These logistics warehouses are distributed throughout the country. Locating warehouses that are fully equipped with first-aid emergency assistance, including tents, blankets, food rations, etc. in earthquake-risk areas makes it easy to distribute supplies in the event of an emergency. The containers are tracked via GPS by AFAD headquarters and can reach any area of Turkey within two hours. There are clear procedures for acquiring and distributing supplies. In addition, AFAD has acquired supplies for the many refugees living in southern Turkey for years rather than months.

Picture 2: Overview of the distribution of AFAD logistics warehouses and example of a warehouse
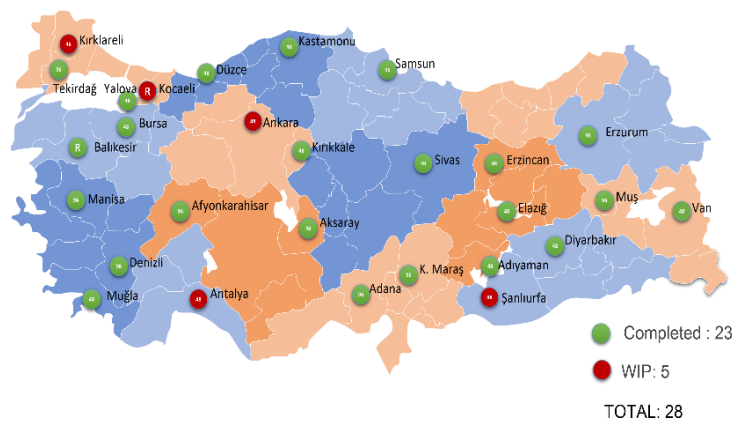
5.4   Syrian refugee crisis

Turkey is making an outstanding effort to meet the needs of refugees from Syria, particularly in terms of shelter, healthcare and education. Its 26 temporary sheltering centres (20 tent cities, six container cities) host 270 858 people. The number of Syrians registered under temporary protection across the country has reached 2 746 607.[10]

The refugees are allowed to choose representatives who can provide input to decision-making as to how the camps will be run. They are provided with many services, to resemble the basic services offered in a town. Turkey has gained good experience from providing support to the refugees and is willing to share this with other countries in a similar position.

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[10] Data as of May 2016.

NGOs have been very active in providing humanitarian aid to the Syrian refugees. In particular, they participated actively in the 'A bread, a blanket' and 'I need you' campaigns, conducted in cooperation with AFAD, to help children, women and elderly or ill people, in particular, to survive and to meet their needs. Emergency shelter and nutritional services are provided in refugee camps or disaster recovery camps. The WFP and TRC have signed an agreement to implement an e-voucher food programme in camps where Syrian citizens are sheltered. TRC is the main 'solution partner' of the TAMP nutrition service group and support 'solution partner' of eight service groups.

The AFKEN software system is used to manage temporary accommodation centres, including container and tent cities. It is coordinated by AFAD and geared to providing disaster survivors with the best possible service. All statistical data and reports on the following can be followed up electronically from a single centre:

- registration and identification of guests living in temporary settlement centres;
- entry-exit controls at temporary accommodation centres;
- education and course management;
- healthcare processes management;
- aid management;
- warehouse management; and
- staff management.

The use of AFKEN has facilitated the establishment of a standard approach to the management and administration of accommodation centres. By collecting data on the capacity and available services of accommodation centres and the needs of the Syrian guests in the same database, AFKEN makes it possible to provide equal and optimum service to all. AFKEN carries sufficient information on the refugees for the administration of the AFAD Card and Red Crescent Card, which allow them to make purchases in supermarkets according to their everyday needs.

5.5   Early warning systems

Turkey has a number of early warning systems (EWSs), including the Turkish State Meteorological Service (MGM), the forest fire early warning system and fire management system, the earthquake early warning system (EEWS) and early warning environmental radiation monitoring system (EWERMS). The prediction and early warning of extreme meteorological events likely to cause disasters (forest fires, sudden floods, inundations, hail, etc.) are carried out by the MGM's General Directorate of Meteorology and shared instantly with the relevant institutions.

The integrated warning and alarm system (İKAS) project will bring these systems together in one integrated EWS under the supervision of AFAD. The goal of the project is to establish a system in 81 provinces that notifies the public, by means of sirens, audio warnings, mobile phone and social media messages, of aerial strikes, disasters and emergencies, and CBRN threats. The combination of text messages, mobile app messages and sirens seems to be a sound and appropriate means of reaching as many people as possible. The approach is strengthened by the fact that

all other ministries will use the same integrated system via AFAD, especially when combined with the classical emergency messages via national radio and TV.

The uninterrupted and secure communication system (KHGS) project aims to ensure uninterrupted and secure audio functionality, visual and data communication for emergency management. AFAD plans to set up a satellite-supported fusion centre that will consolidate into a single data structure all data received from sources such as satellites, aerial vehicles, ground cameras and sensors.

AFAD has established performance standards to guide the development of Turkey's EWSs. These have a notification function and standardised grades of alert, and are continually strengthened with functions that meet users' needs. Emergency plans are activated on the basis of EWS notifications. The EWSs are set up in coordination with international stakeholders from technical organisations and end-users.

The EEWS generates a warning signal for high-speed trains, factories, NPPs, gas pipelines, etc. so that it is possible to avoid the secondary effects of earthquakes. It should be noted that the forecast time in the event of an earthquake is restricted to a few seconds, allowing only for the automatic shut-down of critical systems and lifelines.

The Turkish Atomic Energy Authority (TAEK) has established an early warning system network (RESA) to issue warnings about radiation leaks that might affect Turkey and permanently to monitor environmental radiation. RESA can monitor information from (currently) 193 stations across the country from a single central location and share this information with the public through a website.

5.6   Capacity-building

Capacities are periodically reviewed and tested through national and international exercises. There are laws to regulate emergency planning and operations, e.g. Law No 902 on the organisation and functions of the disaster management presidency, Law No 7269 on measures and assistance to be put into effect in response to disasters affecting the life of the general public and Law No 7126 on civil defence. There is a legal basis for the deployment of the army in peace-time crises.

Capacity-building is governed by a strategy and a plan for all relevant stakeholders and levels which focuses on training, exercises and evaluations. NGOs help by training their staff. Disaster-preparedness training, exercises and evacuation drills are held regularly. Turkey participates in international training courses such as those held by EU and NATO EADRCC or organised regionally or bilaterally.

Response is coordinated by AFAD and involves the Turkish armed forces (SAR helicopters), the Ministry of Health (national medical SAR), municipalities (fire brigades), the Ministry of Interior (water SAR), NGOs (SAR teams) and AFAD itself (11 regional SAR brigades across its 81 provincial disaster and emergency directorates). Training is provided at several disaster and emergency training centres (AFEDEM).

AFAD's Istanbul USAR Brigade was classified by the INSARAG Secretariat's 'heavy team' in 2012. The SAR brigades have been involved in many national and international exercises and have been deployed internationally to several major disasters. All Turkish SAR brigades are trained and examined on INSARAG awareness and knowledge of the OSOCC guidelines.

The Ministry of Health developed the health organisation project in disasters (HOPD) on the basis of lessons learned from the 1999 Marmara earthquake and with the aim of creating a health DM capacity throughout the country. The project sought to develop methods whereby well-trained and adequately equipped teams would provide medical rescue services as quickly as possible to disaster zones inside and outside the country. These methods would also ensure the fast and secure transportation of injured persons and supplies to the emergency treatment units. Another outcome was the creation of the necessary professional management organisation for performing these tasks. In 2009, the Ministry of Health established the Health Disaster Coordination Centre (SAKOM), which ensures integration with the 112 emergency call centres and monitors health incidents 24/7, allowing for efficient and fast response. The Ministry of Health's inventory includes 35 inflatable and 12 constructible field hospitals to be used in disasters and emergencies in Turkey and elsewhere. Teams have been set up and trained to assemble the tents.

Figure 8: Overview of the AFAD SAR brigades

Turkey has many registered NGOs, including 404 with 'public benefit association' status. If too many organisations respond to a crisis, operations could be hampered, so an NGO accreditation project was launched in 2016 to develop a well-structured response system. All NGOs' data will be registered in the AYDES system so as to enable AFAD to coordinate and deploy qualified units, assign positions to all organisations and agencies, and deliver aid more efficiently, faster and better.

TRC has an important role in Turkey and is very well organised and active in humanitarian aid and assistance (food, logistics, sheltering, healthcare) at both national and international levels.

5.7 International assistance

Turkey has become a major actor in offering humanitarian aid when other countries experience a disaster that is beyond their capacity to handle alone. It has a response plan for emergencies abroad, but response is sometimes coordinated by an organisation other than AFAD. It also has an international emergency aid plan, which guides capacity development for humanitarian aid, and there is cooperation with private and public stakeholders for the management of various types of emergency.

Turkey has participated in the ECPM (which facilitates cooperation in civil protection between European countries) since May 2015 (ratified April 2016). The ECPM enables the improvement of prevention, preparedness and response, and provides opportunities for active international cooperation on civil protection. Turkey is invited to ECPM meetings. It cooperates regionally with countries in Europe and the Middle East. It has conducted emergency operations in Asia and is a member of the Prevention, Preparedness and Response to Natural and Man-Made Disasters South (PPRD South) programme.

Plans and communication systems are in place at European level for situations that exceed national capacity. Turkey has a 24/7 contact point for international requests for assistance and has standard procedures for providing and receiving international assistance (response level 4 in TAMP). Turkey cooperates and exchanges information with EU ERCC and NATO EADRCC.

The establishment of sites for a joint base of operation for international teams in the vicinity of AFAD provincial directorates is key to enhancing the operational capacity of international teams and their deployment. Turkey will revise its host nation support (HNS) in line with the EU's HNS document and its national document has already been shared with the Commission and IPA countries during the IPA II civil protection programme.

> **Good practice:**
> - TAMP is well structured and comprehensive, and clearly identifies the organisational structure and roles in the event of a disaster. The very elaborate service group structure facilitates efficient response and recovery operations.
>
> - AYDES is a system integrating information from various sources, service groups and plans, providing high-quality visualisation. Combining a wealth of sources and users is a very sound approach, with a common database and 'views' depending on the user's role in DM.
>
> - The 'beneficiary management' is a good development. This could also be of importance to teams from outside Turkey and is one of the examples of good practice that Turkey can share with other countries.
>
> - AFAD is very well organised operationally (logistics warehouses, etc.).
>
> - AKOM and the AFAD Provincial Disaster and Emergency Directorate in Istanbul – the coordination room is highly technological and well-organised for the use of many city services for DM.

- Humanitarian aid and management of the Syrian refugee crisis – AFAD is ensuring that refugees are protected and that a civil society develops in the camps.

- AFKEN ensures a standardised approach and includes a 'credit card', sponsored by AFAD and TRC, that refugees can use to buy food.

- There are several EWSs, of which some are general meteorological forecasts and others are targeted for a specific type of hazard such as forest fires, earthquakes or radiation incidents.

- Istanbul's Earthquake Rapid Response and Early Warning System (ERREWS), established by Decree of the Council of Ministers in 2001, has been cited as an example of good practice in ECORYS's *Good Practices in Disaster Prevention 2013*, which has been distributed to all EU countries.

- A Disaster and Emergency Training Centre that teaches a variety of general courses.

- The Istanbul USAR brigade has received INSARAG certification.

- Through SAKOM and the National Medical Rescue Team (UMKE), the Ministry of Health has quickly deployable field hospitals across the territory of Turkey.

- AFAD's training centre in Bursa covers all the main natural and man-made hazards (USAR, CBRN, submarine activities for floods, winter equipment for avalanches, etc.).

- The engagement and professionalism of TRC, which provides food, logistics, sheltering and healthcare.

- Turkey has made an incredible transition from a country that accepted humanitarian aid to one that provides it to many countries in the world.

Recommendations:
- Enhance the coordination between the various coordination centres. Formalise the coordination in command posts between teams on the ground, the service group crisis centre, the provincial emergency management centre, the 112 dispatch centre and the municipality crisis centre.

- Ensure that all activities and service groups at national and local level operate as planned by organising regular drills and exercises.

- Use disaster data effectively to prepare a range of risk scenarios and associated contingency plans that will enhance disaster preparedness. Ensure that data collection and analytical processes can be shared with neighbouring and EU countries. This could focus on the costs of disaster losses and costs/benefits of prevention activities.

- Develop a general common standardised form for nationwide post-disaster impact assessments and pre-train specialists (engineers, architects, geologists, etc.) in order to create a task force specialised in carrying out damage and safety assessment surveys after a disaster.

- Select resettlement areas for post-disaster reconstruction on the basis of the

Ministry of Environment and Urbanisation's microzoning studies, which should be extended nationwide.

- Upgrade AFAD-RED with a building vulnerability database in order to ensure accurate loss estimation, as in similar software modules (HAZUS, ELER). Derive site geotechnical information and V_{S30} from microzoning studies.

- Improve the monitoring system for chemical transports, which enables AFAD to ensure the correct response measures are taken in the event of a chemical accident during transport of hazardous materials. Turkey should participate in an official capacity and on an ongoing basis in the activities of the OECD Working Group on Chemical Accidents, and implement the Guiding Principles and Guidance on Safety Performance Indicators.[11]

- Develop a common information management methodology based on AYDES and invest in information management officers who can manage information and data, beyond gathering data for data analyses and scenario-building. As AYDES represents the IT backbone for response, special attention should be given to ensuring its continuous functioning in the event of a large-scale disaster.

- Consider how information from international response teams active in Turkey can be used and integrated into AYDES as a temporary 'solution partner'.

- Consider (in line with the Sendai Framework and Sustainable Development Goals) to investing in environment-friendly technology such as solar energy (using roof panels) and the warehouses' existing technical infrastructure. The same applies to investments in retrofitting and strengthening schools, universities and hospitals.

- Make the camp management system available in English as a stand-alone application. This would be of great benefit to international organisations such as UNHCR and IFRC, and other countries.

- Set up an efficient EWS to monitor the water level of basins, by improving the water monitoring system and establishing an efficient connection between AFAD, MGM, the Ministry of Forestry and Water Affairs and other relevant 'solution partners'.

- Implement the project of accrediting the most relevant NGOs and clarifying their roles and responsibilities in the emergency response system.

- Share parts of the plans with international rescue teams in the region (e.g. USAR or field hospitals), *inter alia* as regards the particularities of the TAMP and how the Turkish system is organised.

- Prepare certain arrangements for HNS, e.g. a field hospital adjusted (fast-track) to custom procedures for medical items, licensing of medical personnel, a fact sheet with information on coordination and the links between AFAD and AKOM, the health disaster coordination centre, the provincial DM centre and the municipal health directorate.

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[11] http://www.oecd.org/chemicalsafety/chemical-accidents/

6. Public awareness and resilience

Objective 5 — Use knowledge, innovation and education to build a culture of safety and resilience at all levels

6.1 Public awareness strategy

From 2013, the Disaster and Emergency Training Centre (AFADEM) has run a 'Disaster-Prepared Turkey' campaign to raise public awareness of disaster issues and create a disaster-sensitive culture. Four different projects have been planned, focusing on disaster-prepared families, schools, workplaces and young volunteers. The campaign was expected to reach 5.5 million people by the end of 2015. A total of 124 314 students have received disaster-awareness education in the Earthquake Simulation Centre. A call centre and a website have been set up and popular sitcoms and television commercials have been used to raise awareness. Training materials have been prepared and sent to AFAD's 81 provincial directorates. The total cost of information activities (training, workshops, organisation, preparing material, printing, distribution, costs of trainers, etc.) in 2013-2014 was TL 8.617 million (approximately EUR 2.7 million).

Figure 7: The four pillars of the 'Disaster-Prepared Turkey' project

Emergency plans for public institutions and organisations (e.g. hospitals and schools) and for private-sector buildings and facilities are prepared on the basis of the Regulation on emergencies in workplaces, which came into force in 2013. The Regulation provides for specific drills in workplaces to take place at least once a year. Annual evacuation drills are carried out in primary and secondary schools. The Ministry of Health has prepared an Application Regulation on hospital disaster and emergency plans (HAP) and published a *Hospital disaster and emergency plan guide*.

The schools and citizens training centre in Bursa, which offers practical demonstrations, experiments and games about all the main hazards (earthquakes, floods, landslides, storms, fires) is considered an outstanding example of how to increase public awareness and preparedness. A capacity-building strategy targets specific public sectors, communities and volunteers. DRM training programmes are offered to various target groups.

Emergency preparedness instructions and programmes are prepared for schools and higher education institutions. AFAD plans to have educational programmes in disaster awareness and preparedness in place in all Turkish schools within 5-10 years; this is covered in several actions under the Ministry of National Education's strategic action plan. Disaster prevention is covered across primary and secondary school curricula. Teachers receive training and course materials. This training programme has been developed in cooperation with the United States and Japan.

In order to promote a 'security culture', AFAD's 'Disaster-Prepared School' campaign stresses the need for school disaster plans and action plans. Earthquake, fire, research-rescue, evacuation, gas-leak, first-aid, etc. drills should take place at least once a year, especially in schools. The 'Disaster-Prepared Workplace' campaign calls for public institutions, private companies and workplaces to produce disaster and emergency plans.

The Ministry of Youth and Sports has set up a Young Volunteers[12] web portal to promote and support volunteering among young people. Based on membership, young people and adults can respond to ads calling for volunteers for activities in the fields of education, environment, sports, culture and tourism, health and social services, and DM. The Ministry also provides training for people who want to channel their physical strength, time, knowledge, ability and experience to be useful for society without expecting anything in return. In response to ads on the portal, the young volunteers can attend AFAD training and register in any of the 28 TAMP service groups. Volunteers can sign up to the portal via email or text message. The portal currently has 30 000 members and a total of 1 076 volunteering activities have been carried out by 649 member public institutions.[13]

Under the project, the 'Disaster-Prepared Turkey Training System' (AHATES) monitors and evaluates change in people's (in particular children's) behaviour every three to six months. Educating children is particularly important, because they encourage their parents to think about family disaster plans. When they become adults, they will have a different perspective informing their normal behaviour. It is recommended that the work of preparing emergency preparedness instructions and programmes for schools and higher education institutions be built on, and information included on the need for disaster prevention, including concrete examples of prevention measures.

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[12]   www.gencgonulluler.gov.tr
[13]   Data as of May 2016.

TRC manages a 'mobilisation of community leaders' project in cooperation with several stakeholders (the Presidency of Religious Affairs, the Ministry of Education, the Ministry of Interior, AFAD, the Turkish Natural Catastrophe Insurance Pool, universities). The project targets community leaders, because they have effective organisational structures throughout the country, are able to reach villages and districts, and are usually main actors in awareness and risk mitigation programmes. To date, 1 153 trainers have been trained (70 % of trainers are volunteers) in 68 provinces and 66 351 community leaders have been reached, including teachers, religious leaders and high-level government officers.

Turkey works strategically to strengthen public education and awareness, including by identifying objectives, responsibilities, activities and target groups. Disaster databases are maintained, but the information is not available to the public. TABB is intended to form a common platform gathering all relevant electronic and printed material relating to disasters.

Accessible information about risks, crisis management plans and expected behaviour (e.g. short films, animations, brochures and posters on CBRN threats and dangers) is publicly available (e.g. on the internet).

There is ongoing dialogue with research institutes on new technologies that can enhance disaster resilience and research is carried out into their local application. However, this dialogue could be further enhanced.

Similarly, booklets and guidelines have been produced on risk assessments (e.g. as regards rockfalls and floods). With the increased focus on risk assessment and prevention, more information will become available on risks in certain areas. The team would recommend that available risk information be shared and the public informed, in order to build resilience.

AFAD's DEPREM application aims to provide fast and reliable information about earthquakes across Turkey and the surrounding areas. The application includes a questionnaire ('Did you feel the earthquake?'), which is based on the Mercalli intensity scale. The questionnaire becomes active just after an earthquake with a magnitude greater than 4.5 is declared by AFAD's Earthquake Department. The borders of the affected area are determined on the basis of the magnitude and the application can be used by those living there.

Picture 3: DEPREM app

6.2   Role of media

A public dialogue is carried out through media and social media. The Press and Public Relations Office maintains and develops active relations with the media and the public to inform the public before, during and after disasters and emergencies. It develops communications strategies in support of AFAD's strategic objectives and raises awareness about disaster prevention in line with AFAD's mission to create a disaster-resilient society.

To avoid confusion and misleading information, AFAD is the only source of information used by the media. Social media (Twitter) are used but as yet there is no two-way communication to respond to messages received and incoming information is not used to build a common operational picture. As 'solution partner' for the uninterrupted communication project, the public Turkish Radio and Television Corporation (TRT) has a direct channel of communication with AFAD and is obliged to provide correct and neutral information. Stakeholders emphasised the need for training on methods that can be used to limit false news and misleading information.

Good practice:

- The Disaster-Prepared Turkey campaign and AHATES monitor and evaluate the effects of the training given across the country.

- The training centre offering schools and citizens practical demonstrations, experiments and games teaching the basic concepts of all the main hazards and risks, how to service a major incident and how to provide first aid is an outstanding example of how to increase public awareness and preparedness. AFAD also has a mobile risk centre to reach schools and children on disaster preparedness better.

- Sitcoms and films are used to explain the rules of behaviour during disasters.

- Turkey promotes disaster-awareness and a culture of resilience to disasters through research and development projects and educational activities.

- Disaster prevention disciplines are included in primary, secondary and high-school curricula.

- Teachers receive ongoing training in risk awareness and behaviour during an emergency.

- The TRC-managed 'mobilisation of community leaders' project is a good example of interaction at local level.

- The Young Volunteers web portal (motto: 'Devote your heart too!') acts as a meeting point for those seeking volunteers and young people/adults willing to volunteer.

- Accessible information on risks, crisis management plans and behaviour in the event of an emergency is publicly available.

- The public is encouraged to provide feedback on early warnings. Questionnaires are sent out and responses are taken into consideration. The DEPREM mobile phone app provides information on recent earthquakes and on seismic zones.

- AFAD ensures that all TV channels broadcast the same 'breaking news' strip.

Recommendations:

- Merge the various channels for volunteering (youth and sports, forestry, health, NGOs, etc.) to create a single legally based resilience capacity of volunteers with a general standard basic training. Ensure the effective use of the database of volunteers for the management of volunteer activities.

- Collaborate internationally with other national and local governments to increase the use of scientific knowledge and strengthen public education and

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awareness.

- Use the good examples of lessons learned to create a national framework to ensure a consistent and systematic approach to implementing lessons learned from post-disaster reviews, in order to influence DM and limit vulnerability and losses.

- Initiate educational programmes on climate-change adaptation to mitigate the impacts of increased rain, downpours, snow, droughts, forest fires, etc.

- Arrange an international city-to–city exchange on safe schools using the good example presented by Turkey at the Sendai Conference in 2015 (Safe Schools Objective 3).

- Support innovative and unconventional approaches to information dissemination, awareness-raising and the sharing of risk information. Develop the DEPREM app to produce an all-hazard crisis communication/information device.

- Offer special training to improve the media's knowledge of risk reduction, including prevention and climate-change adaptation activities.

- Organise a workshop with AFAD and all relevant media on the methods for producing factual and timely information, with behavioural advice in the event of an emergency or disaster.

- Work more with owners of social media to develop a common operational picture and 'official voice' by monitoring and responding to messages in a two-way process in the event of an emergency or disaster (see the OECD publication on *The use of social media in risk and crisis communication*).[14]

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[14]   http://www.oecd.org/gov/risk/social-media-in-risk-and-crisis-communication.htm

Annex I: Terminology and abbreviations

The following definitions are working definitions for the purpose of the peer review documents only. They are based largely on EU legislation and guidelines. Where official EU definitions were not available, UNISDR definitions have been used.[15]

Definitions

Contingency planning A management process that analyses specific potential events or emerging situations that might threaten society or the environment and establishes arrangements in advance to enable timely, effective and appropriate responses to such events and situations.

Disaster refers to any situation which has or may have a severe impact on people, the environment, or property, including cultural heritage;

Emergency services refer to a set of specialized agencies that have specific responsibilities and objectives in serving and protecting people and property in emergency situations.

Hazard is a dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. In technical settings, hazards are described quantitatively by the likely frequency of occurrence of different intensities for different areas, as determined from historical data or scientific analysis;

Peer review is a governance tool by which the performance of one country in a specific area (in this case risk management / civil protection) is examined on an equal basis by fellow peers who are experts from other countries;

Preparedness is a state of readiness and capability of human and material means, structures, communities and organisations enabling them to ensure an effective rapid response to a disaster, obtained as a result of action taken in advance;

Prevention is understood as (i) where possible preventing disasters from happening, and (ii) where they are unavoidable taking steps to minimise their impacts.";

Resilience is the ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential structures and functions.

Response is any action taken at national or sub-national level in the event of an imminent disaster, or during or after a disaster, to address its immediate adverse consequences;

Risk is a combination of the consequences of an event (hazard) and the associated likelihood/probability of its occurrence.

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[15]   http://www.unisdr.org/we/inform/terminology

Risk assessment is the overall process of risk identification, risk analysis, and risk evaluation. Risk identification is the process of finding, recognising and describing risks. Risk analysis is the process to comprehend the nature of risk and to determine the level of risk. Risk evaluation is the process of comparing the results of risk analysis with risk criteria to determine whether the risk and/or its magnitude is acceptable or tolerable. (ISO 31010);

Risk management capability is the ability of a Member State or its regions to reduce, adapt to or mitigate risks (impacts and likelihood of a disaster), identified in its risk assessments to levels that are acceptable in that Member State. Risk management capability is assessed in terms of the technical, financial and administrative capacity to carry out adequate:
     (a) Risk assessments;
     (b) Risk management planning for prevention and preparedness
     (c) Risk prevention and preparedness measures;

Stakeholders with an interest in disaster risk management include amongst others scientific communities (including engineering, geographical, social, health, economic and environmental sciences), practitioners, businesses, policy-makers, central, regional or local levels of government, and the public at large.

Sub-national level refers to regional, provincial or local government level tasked with disaster risk management.

Abbreviations

Abbreviation	Definition
AFAD	Disaster and Emergency Management Authority
AFADEM	disaster and emergency training centre
AFAD TDVM	AFAD Earthquake Data Centre
AFAD-RED	AFAD rapid earthquake damage and loss estimation software
AFKEN	Disaster Temporary City Management System
AKOM	Disaster Coordination Centre (Istanbul)
APELL	awareness and preparedness for emergencies at the local level
AYDES	disaster management and decision support system
CI	critical infrastructure
CBRN	chemical, biological, radiological and nuclear
DASK	Turkish Catastrophe Insurance Pool
DEPREM	
DM	disaster management
DRM	disaster risk management
DRR	disaster risk reduction
EADRCC	Euro-Atlantic Disaster Response Coordination Centre
EC	Eurocode
ECPM	EU civil protection mechanism
EEWS	earthquake early warning system
EFDRR	European Forum for Disaster Risk Reduction
EMME	earthquake model of the Middle East region project
ELER	earthquake loss estimation routine
ERREWS	earthquake rapid response and early warning system
EU	European Union
EU ERCC	
EUR-OPA	European and Mediterranean Major Hazards Agreement
EWERMS	early warning environmental radiation monitoring system
EWS	early warning system
FTE	full-time equivalent
GEM	global earthquake model
GIS	geographical information system
GPS	global positioning system
HNS	host nation support
IAEA	International Atomic Energy Agency
IFRC	International Federation of Red Cross and Red Crescent

IKAS	integrated warning and alert system
INSARAG	International Search and Rescue Advisory Group
IOM	International Organisation for Migration
ISMEP	Istanbul seismic risk mitigation and emergency preparedness project
ISO	International Organisation for Standardisation
JICA	Japan International Cooperation Agency
KHGS	uninterrupted and secure communication system project
MGM	Turkish State Meteorological Service
MSB	Swedish Civil Contingencies Agency
NATO	North Atlantic Treaty Organisation
NCTV	national coordinator for security and counterterrorism
NFPA	National Fire Protection Association
NGO	non-governmental organisation
NIMH	National Institute of Meteorology and Hydrology
OECD	Organisation for Economic Cooperation and Development
OSOCC	
SAKOM	Health Disaster Coordination Centre
SAR	search and rescue
SHARE	seismic hazard harmonisation in Europe project
SWOT	strengths, weaknesses, opportunities and threats
TABB	Turkish Disaster Data Bank
TADYUS	disaster-sensitive settlement convenience maps
TAF-RISK	Turkish disaster risk management system project
TAMP	national disaster response plan
TARSIM	Agricultural Insurance Pool
TEC	Turkish Earthquake Code
TL	Turkish *lira*
TRC	Turkish Red Crescent
UDSEP	national earthquake strategy and action plan
UMKE	National Medical Rescue Team
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNESCAP	United Nations Executive Secretary Member States Secretariat Programme
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
UNFPA	United Nations Population Fund
UNISDR	United Nations International Strategy for Disaster Risk Reduction

UN OCHA	United Nations Office for the Coordination of Humanitarian Affairs
USAG	National Seismic Observation Network Development
WB	World Bank
WFP	World Food Programme
WHO	World Health Organisation

Annex II: Overview of stakeholders

Representatives of the following institutions were involved in the peer review:

- General Directorate of Combating Desertification and Erosion
- General Directorate of Mineral Research and Exploration
- General Directorate of State Hydraulic Works
- General Directorate of Water Management
- Turkish Water Institute
- General Directorate of Forestry
- National Hydrological Commission
- Ministry of Development
- Ministry of Defence
- Ministry of Interior
- Ministry of Education
- Ministry of Energy and Natural Resources
- Ministry of Environment and Urbanisation
- Ministry of Family and Social Policies
- Ministry of Food, Agriculture and Livestock
- Ministry of Forestry and Water Affairs
- Ministry of Health
- Ministry of Science, Industry and Technology
- Ministry of Transport, Maritime Affairs and Communications
- Ministry of Youth and Sports
- Department of Administrative Services
- Department of Earthquake
- Department of Information Technologies and Communication Department
- Department of planning and mitigation
- Department of Response
- Civil Defence Department
- Fire Department
- Recovery Department
- Strategy Development Department
- TAMP Working Groups
- Technological Disasters Risk Reduction Working Group
- Natural Disasters Working Group
- Faculty of Hydrology of Hacettepe University
- Scientific and Technological Research Institution (MAM-UZAY-ULAKBİM-BİLGEM)
- Legal Consultancy
- Earthquake Simulation Centre
- Turkish Armed Forces
- Turkish Atomic Energy Authority
- Turkish State Meteorological Service
- Natural Catastrophe Insurance Pool
- Agricultural Insurance Pool
- Mass Housing Administration of Turkey
- AFAD Ankara Provincial Directorate
- AFAD Ankara Search and Rescue Brigade
- AFAD Education Centre (AFADEM)
- Ankara Metropolitan Municipality

NGOs
- Red Crescent
- Islamic World Association
- Earth doctors Association

- Verenel Association
- Cansuyu Association
- Charity Association
- IHH Foundation
- Lighthouse Association
- Besir Association
- NESAR (National Emergency Search and Rescue Association)
- UMKE
- GEA
- MAG
- SAR Search and Rescue
- AKDF (Search and Rescue Association Federation)
- TRAC
- Istanbul 911 Search and Rescue

Media
- Turkish Radio and Television Corporation
- Representatives from Media
- Anatolian Agency

Bursa
- Bursa AFAD Provincial Director
- Disaster Logistic Warehouse
- Search and Rescue Brigade
- Bursa Disaster Training Centre

Istanbul
- Istanbul Metropolitan Municipality
- Istanbul Provincial Directorate of AFAD
- İSMEP Stakeholders

Annex III: List of documents

The following documentation was used to prepare for the review:

Nr	Title	Clarification	Version
Laws and regulations			
1	Law No 5902 on the organisation and functions of the Disaster and Emergency Management Authority (AFAD)	This law covers the taking of necessary measures for efficient country-wide execution of services relating to disasters, emergencies and civil defence, making preparations prior to the occurrence of incidents, mitigating the damage sustained, providing coordination among institutions and organisations that manage the responses to incidents and recovery works to be performed afterwards, and creating and implementing policies on these matters.	29 May 2009
2	Law No 6525. on the amendment of certain laws and decrees		20 February 2014
3	Law No 6305 on catastrophe insurance	The objective of this law is to determine the procedures and principles for compulsory earthquake insurance to cover the financial losses which may arise in buildings due to earthquakes.	9 May 2012
4	Law No 7126 on civil defence	Beside other regulations, this law contains provisions on civil defence planning, warning and alarm, and civil defence training which will be evaluated with mitigation.	9 June 1958
5	Law No 4123 on the execution of services concerning the damage and destruction caused by natural disasters		23 July 1995
6	Law No 7269 on measures and assistance regarding disasters affecting the life of the general public	Beside other regulations, this law addresses 'possible disasters' and covers the determination of 'disaster exposed areas' requiring DRR practices.	15 May 1959
7	Law No 4373 on protection against floods and overflows		21 January 1943
8	Regulation on duties regarding chemical, biological, radiological and nuclear threats	The main purpose of this regulation is to determine duties and responsibilities of public and private organisations (and other instructions) before, during and after a CBRN incident.	3 May 2012
9	Regulation on disaster and emergency management centres		29 May 2009

Nr	Title	Clarification	Version
10	Regulation on disaster and emergency response services	The purpose of this Regulation is to plan all powers and resources which may be required to respond to disasters and emergencies, to ensure that these are delivered to the event area rapidly and efficiently, and to determine the duties and responsibilities of the stakeholders responsible for their coordination.	
11	Regulation on Turkish search and rescue		20 September 2001
12	Law No 6306 on the restructuring of areas under risk of disaster	The law aims to make cities and buildings resilient to disasters. By means of this law, particularly the Ministry of Environment and Urbanisation, central administrations (Ministry of Interior and Housing Development Administration – TOKİ), local administrations (municipalities, special directorates), professional chambers, NGOs and society at large are encouraged to cooperate in order to create disaster-resilient buildings and cities.	16 May 2012
Abstracts of the following laws and regulations (one document):			
13	Law No 5302 on special provincial administrations	Special provincial administrations are appointed to draw up disaster and emergency plans, which must contain DRR elements.	
	Law No 5216 on metropolitan municipalities	Metropolitan municipalities are required to draw up disaster and emergency plans, which must contain DRR elements. They are required to demolish buildings which have disaster risk and are responsible for urban transformation within their territories.	
	Law No 5393 on municipalities	Municipalities are required to draw up disaster and emergency plans, which must contain DRR elements. They are required to demolish buildings which have disaster risk and are responsible for urban transformation within their territories.	
	Law No 5403 on soil preservation and land utilisation	In order to reduce soil loses because of landslides, floods and winds, governorates are required to constitute soil protection projects.	

Nr	Title	Clarification	Version
	Law No 5363 on agriculture insurance	This law also covers insurance for drought, floods, typhoons, earthquakes, landslides, fire, hail and frost.	
	Law No 2958 on Housing Development Administration (TOKİ)	TOKİ is an important partner for urban transformation.	
	Law No 5366 on the usage of historical and cultural property with restoration and protection	One of the main aims of this law is to protect historical and cultural property from natural disasters.	
	Law No 3194 on land development planning	The law aims to ensure the 'appropriate formation of settlements and buildings'. Relevant ministries are empowered to draw up land development plans in the disaster-affected area.	
	Law No 3234 on the organisation and duties of the General Directorate of Forestry	Beside other regulations, this law contains provisions on protecting forests and the ecosystem against disasters such as fire, erosion, desertification, floods, avalanches, etc.	
	Law No 3234 on the organisation and duties of the General Directorate of Meteorology (MGM)	MGM is required to carry out research and development on natural meteorological disasters, hydrometeorology, sea and agricultural meteorology, climate, climate change and other related topics.	
	Law No 6831 on forests	The Ministry of Forestry and Water Affairs is required to conduct projects on erosion, flooding, avalanches and landslide mitigation in forest areas.	
	Decree Law No 644 on the organisation and functions of the Ministry of Environment and Urbanisation	Beside other regulations, this law provides for the drawing-up and approval of risk management and mitigation plans and the production, commissioning or approval of research criteria for these plans.	
	Decree Law No 655 on the organisation and duties of the Ministry of Transport, Maritime Affairs and Communication	One of the duties of the Ministry is 'using space environment and technologies, conducting or commissioning studies on the protection of human health and the environment, reducing damage from natural disasters by forecasting, using natural resources and developing the country'.	
	Regulation on infrastructure for disasters	The purpose of this Regulation is to set out the procedure and principles to create disaster-resilient infrastructures such as water pipelines, sanitation and waste-water purification facilities.	

Nr	Title	Clarification	Version
	Regulation on the operation principles and procedures for the Board of Directors of the Turkish Natural Catastrophe Insurance Pool	The purpose of this Regulation is to set out the operation principles and procedures of the Turkish Natural Catastrophe Insurance Pool (TCIP), which is established in order to provide compulsory earthquake insurance and other disaster coverage where this cannot be provided by insurance companies.	
Abstracts of the following laws and regulations (one document):			
13	Empowering law on arrangements for the elimination of damages from natural disasters and measures to be taken against natural disasters.		
	Decree Law on mandatory earthquake insurance		
	Disaster regulation for infrastructures		
	Environmental impact assessment regulation		
	Regulation on working principles of natural disaster insurance institution		
	Disaster regulation for road route engineering structures		
	Population on typical zoning for planned areas		
	Unplanned areas zoning regulation		
	Regulation on environmental order plans		
	Regulation on buildings to be constructed in earthquake regions		
	Regulation on the structures to be constructed in disaster regions		
	General communique of the Law on the transformation of areas under disaster risk		
Plans and policies			
14	AFAD strategic plan 2013-2017		
15	10th development plan 2014-2018		

Nr	Title	Clarification	Version
16	National progress report on the implementation of the Hyogo Framework for action 2013-2015		January 2015
17	Integrated urban development strategy and action plan 2010-2023 (KENTGES)		2010-2023
18	National disaster response plan		
19	Technological disasters roadmap 2014-2023		2014-2023
20	All over the world, international activities		2013
21	Ready for the world		
22	Disaster information bank		
23	Report on governance and accountability of the Hyogo framework for action: the European Perspective		
Climate change			
24	National climate change adaptation strategy and action plan (2011-2023)		2011-2023
25	Republic of Turkey climate change strategy 2010-2023		2010-2023
26	Turkey's fifth national communication under UNFCCC		
27	National climate change action plan		
Earthquake — floods — mass movement			
28	National earthquake strategy and action plan 2012-2023	Roadmap for earthquake mitigation	2012-2023
29	National earthquake strategy and action plan	Leaflet on the national earthquake strategy and action plan	
30	Landslides — rockfalls mass movements	Main guideline for the preparation of disaster hazard maps	
31	Response, recovery and the socioeconomic aspects of the 2011 Van Earthquake	This study summarises the response and recovery efforts following the Van earthquake, and evaluates casualties and loss of property resulting from the disaster.	
32	Upper catchment flood control action plan 2013-2017	Flood control implementation works will be realised in 227 flood catchments that are determined around Turkey in 4 155 201 hectares of land in total. This action plan will be implemented in 2013-2017.	

Nr	Title	Clarification	Version
Refugees			
33	Lending a hand to neighbour Syria	Information brochure on Syrian refugees	
34	Population influx from Syria to Turkey	Field studies to profile the Syrians living in the camps and in various provinces outside the camps across Turkey	2014
35	Syrian guests in Turkey		2014
36	Syrian refugees in Turkey – 2013 field survey results		2013
37	Syrian women in Turkey		2014
38	Temporary refugee centres	Leaflet	
Leaflets			
39	Turkey risk management system	Leaflet	
40	Logistics centres	Leaflet	
41	Technological disasters risk reduction division	Leaflet	
42	Disaster awareness 1	Leaflet to inform the public and increase disaster awareness and preparedness	
43	Disaster awareness 2	Leaflet to inform the public and increase disaster awareness and preparedness	
44	Emergency training kit	Brochure to inform the public and increase disaster awareness and preparedness	
45	Suspicious packages	Brochure to inform the public and increase awareness and preparedness on suspicious packages	
46	Civil protection mechanism	ECHO factsheet on the civil protection mechanism	

Annex IV: General peer review framework

Peer reviews are conducted using standard frameworks that guide the peers in:
- collecting information; and
- analysing the DRM structure in the country under review and the way it implements its policies.

The standard frameworks consist of objectives, requirements and indicators for different DRM areas. Example questions included in the frameworks can be used to guide the peer review team in the preparatory phase and during the mission. The teams can devise further questions during their review.

The essential policy components under review are the objectives and, to a lesser extent, the requirements. Review questions should therefore relate closely to the objectives, particularly those where the preliminary information received was not sufficiently clear or showed gaps.

The indicators cover a wide area of policies, tools and methodologies and can be used by peers to help them identify:
- examples of good practice;
- areas for improvement; and
- possible gaps.

The indicators do not represent a 'checklist' against which the country should be formally assessed.

No	Key Indicators
	Overall objective review: An integrated, cross sectoral and multi-hazard approach to disaster risk management (DRM) with strong prevention and preparedness elements in place and functioning at national, regional and local level
	Objective 1: Integrated approach to DRM: Ensure that Disaster Risk Management (DRM) is a national, regional and local priority with a strong institutional basis for implementation
	Example questions: - Have legislative and/or regulatory provisions been made for managing disaster risk? What regulatory framework is in place? - What are lessons learnt from past disasters and how where they feed back into legal and regulatory framework - How are (inter)national practices and experiences used in developing and evaluating country's disaster Risk Management policies? - What is the role and responsibility of the national level on DRM? - What is the role and responsibility of the regional level on DRM? - What is the role and responsibility of the local level on DRM? - In which way are stakeholders and neighbouring countries involved in early warning systems? - Which procedures for cooperation and information exchange with neighbouring countries are in place? - In which EU projects with regard to DRM are national, regional or local authorities involved?
	1.1 National policy and legal framework for DRM exists
1.1.1	**Strategy:** Security and Safety Policy Strategy based on international disaster reduction and civil protection guidelines (UN, EU, OECD, etc.) is adopted at the parliament or governmental level
1.1.2	• **Platform for DRR:** A national DRM Authority is clearly designated, a multi-sectoral platform for disaster risk reduction is functioning with a division of tasks at national, regional and local levels and clear areas of responsibilities are established
1.1.3	**National DRM legislation:** Legislation on DRM is available at national level and it stipulates the obligations at national, regional, local levels as well as cooperation and coordination between different state authorities and sectors. It is based on multi-sectoral

	and inter-disciplinary, public, private and civil society participation principles
1.1.4	**Cooperation:** Disaster Risk Management is developed in cooperation with the relevant stakeholders such as scientific communities, including social, health, economic and environmental sciences, practitioners and businesses, people at risk and policy makers. Traditional and local knowledge complements scientific knowledge in the development and implementation of policies, plans and programs
1.1.5	**Implementation:** National plans are implemented to address short, medium and long term disaster risks management goals, with targets, indicators and timeframes
1.1.6	**Evaluation:** A mechanism is in place that monitors, periodically assess, ensure compliance and publicly report on progress on national plans and policies by all public and private stakeholders
1.1.7	**(International) lessons learned:** Lessons learned from accidents at home or abroad, changed risks and changes in international agreements find fast reflection in internal legal space.
1.2 Responsibilities and capacities for DRM are decentralised on regional level	
1.2.1	**Regional responsibilities:** Regional level DRM areas of responsibility are established
1.2.2	**Regional disaster risk reduction platform:** A platform for disaster risk reduction for planning and implementation of DRM activities is formed at the regional level.
1.2.3	**Cooperation:** Regional Disaster Risk Management is developed in cooperation with the relevant stakeholders
1.2.4	**Implementation:** Regional plans are implemented to address short, medium and long term disaster risks management goals, with targets, indicators and timeframes
1.2.5	**Evaluation:** A mechanism is in place that monitors, periodically assess, ensure compliance and publicly report on progress on regional plans and policies by all public and private stakeholders
1.3 Responsibilities and capacities for DRM are decentralised on local level	
1.3.1	**Local responsibilities:** Local level DRM areas of responsibility are established
1.3.2	**Local disaster risk reduction platform:** A platform for disaster risk reduction for planning and implementation of DRM activities is formed at the local level.
1.3.3	**Cooperation:** Local Disaster Risk Management is developed in cooperation with the relevant stakeholders
1.3.4	**Implementation:** Local plans are implemented to address short, medium and long term disaster risks management goals, with targets, indicators and timeframes
1.3.5	**Evaluation:** A mechanism is in place that monitors, periodically assess, ensure compliance and publicly report on progress on local plans and policies by all public and private stakeholders
1.4 International cooperation takes place in the field of risk management, early discovery and warning. Best practices and scientific achievements of different countries are implemented	
1.4.1	• **Scientific developments:** Academia and research entities to focus on the evolving nature of risk and scenarios in the medium and long terms, increase research for local application and support action by local communities and authorities, and support the interface between policy and science for effective decision-making
1.4.2	**Statistical data:** Statistical data assisting in risk assessment and monitoring is used and applicable in early warning. Statistical databases are developed.
1.4.3	**Regional cooperation:** Regional cross-border cooperation and cooperation between countries in the monitoring of risks and assessment of cross-border impacts is ensured. Mutual information exchange and cooperation in the field of early warning is in place
Objective 2 - Achieving a high level of protection against disasters: risk assessment Assess (Identify, evaluate and monitor) disaster risks at local, regional and (inter)national levels	
Example questions: Risk Assessment - Is an up to date risk assessment available? Which main risks are identified in the risk assessment?	

- How was the risk assessment developed:
   - who was involved
   - what methodology was used
   - In which way are stakeholders involved in the development of the risk assessment
 - How are the results of the risk assessment implemented?
 - How and with whom are the outcomes of risk assessments shared?
 <u>Capability Assessment</u>
 - Which administrative management capabilities to carry out and update risk assessments are available?
 - Which technical management capabilities to carry out and update risk assessments are available?
 - Which financial management capabilities to carry out and update risk assessments are available?	

A coherent system of national, regional, local, cross border and sectoral risk assessments is developed and used to provide a good understanding of the risks in the reviewed (member)state

2.1.1	**Framework:** The risk assessment fits within an overall framework
2.1.2	**Risk assessment:** Up to date, multi hazard, risk assessments, based on unitary methodology, are available on different levels and in different sectors, and are linked to climate change adaptation strategies/plans
2.1.3	**Involvement of relevant networks:** National risk assessments should aim at making the relevant actors reach a common understanding of the risk assessment methodology, the risks faced and of their relative priority [same requirements for regional, local and sectoral risk assessments
2.1.4	**Risk assessment methodology:** A shared understanding is reached on both the range of risks considered relevant and the levels of severity for which preparedness planning would be judged appropriate
2.1.5	**Risk identification:** The national risk assessment is based upon a sound risk identification: the finding, recognizing and describing of risks
2.1.6	**Risk analysis:** For every risk and risk scenario identified in the previous risk identification stage, the risk analysis process carries out a detailed (and if possible quantitative) estimation of the probability of its occurrence and the severity of the potential impacts
2.1.7	**Risk evaluation:** The results of the risk analysis are compared with risk criteria to determine whether the risk and/or its magnitude is acceptable or tolerable
2.1.8	**Coherent system:** the system for risk assessments shows coherence between the different levels of government and between different sectors

2.2 Following the development of the national risk assessment and maps, the involved authorities should seek to interface in an appropriate way with the ensuing

2.2.1	**Capability assessment:** The risk assessment is followed by a capacity analysis and capability planning
2.2.2	**Recommendations:** The risk assessment results in specific recommendations for related policy fields (if relevant)
2.2.3	**Implementation:** the implementation of the recommendations is ensured; relevant stakeholders are involved.

2.3 The development and outcome of (national)risk assessments is transparent and accountable for the stakeholders and general public (with exception of sensitive information)

2.3.1	**Risk communication:** Potential risk scenarios are published to inform the population
2.3.2	**Consultation stakeholders:** Draft risk assessments should be widely consulted with stakeholders and interested parties, including central and regional levels of government and specialized departments

2.4 Administrative, technical and financial capabilities to carry out and update risk assessments are available

2.4.1	**Framework:** see indicator 1.1
2.4.2	**Coordination:** A risk management structure assigns clear responsibilities to all entities involved in the risk assessment so that overlaps or mismatches between responsibility and capability are avoided

2.4.3	**Expertise:** The experts carrying out the risk assessment have the competencies and responsibilities and received adequate training to carry out the risk assessment
2.4.4	**Other stakeholders:** see indicator 2.1.2/2.3.2
2.4.5	**Information & communication:** see indicator 2.3.1
2.4.6	**Methodology:** see indicator 2.1.3
2.4.7	**Infrastructure:** The infrastructure and appropriate information is available to carry out the risk assessment
2.4.8	**Financing:** Financing includes the identification, estimation and reservation of funds required to carry out and update risk assessments

Objective 3 -Achieving a high level protection against disasters: Risk management planning Reduce the underlying risk factors through structural and non-structural measures to ensure the physical, economic, ecological, social, cultural resilience of persons, communities, countries and their assets

Example questions:
Risk management planning
- In which way are identified risks taken in to account in policies and planning?
- Which key development areas are relevant: health, education, agriculture, Critical Infrastructure, water, ecosystem management, housing, cultural heritage, public awareness, financial and risk transfer mechanisms?

Identify for each relevant area in which way:
- legislation is established
- standards and service providers are appointed
- public-private partnerships established
- Are risk analyses available for each key development area? How are they integrated into processes of risk analyses? How cross border effects are taken into account in the risk analyses?

Capability Assessment
- Which administrative management capabilities for risk management planning are available?
- Which technical management capabilities for risk management planning are available?
- Which financial management capabilities for risk management planning are available?

3.1 Identified risks are taken in to account in policies and planning

3.1.1	**Risk management planning:** Risks are taken into consideration in planning to ensure more efficient calculation of dangers and risks and along with it larger safety of the inhabitants living environment

3.2 Investments are done in resilience for key development areas such as: health, education, agriculture, Critical Infrastructure, water, ecosystem management, housing, cultural heritage, minorities, public awareness, financial and risk transfer mechanisms

3.2.1	**Risk information:** It is ensured that institutions in key development areas have the information about risks and risk related prescriptions and restrictions
3.2.2	**Innovation:** Invest in research, innovation and technology and promote a long-term multi-hazard approach and solution-driven research for disaster risk management. Strengthen public investments in critical facilities and physical infrastructure
3.2.3	**Key development areas:** There is a continued integrated focus on key development areas, such as health, education, agriculture, Critical Infrastructure, water, ecosystem management, housing, cultural heritage, minorities, public awareness, financial and risk transfer mechanisms
3.2.4	**Continuity:** Protection, continuous operation and recovery of the key development area is legally regulated
3.2.5	**Resilience and risk reduction:** Services and standards for resilience and risk reduction for the key area are stipulated
3.2.6	**Service operators and providers:** Service operators and service providers of the key area are appointed
3.2.7	**Cooperation:** Involvement and cooperation with various public and private stakeholders is established to ensure the resilience of the key development area
3.2.8	**Risk assessment methodology:** Methodology of risk assessment and compilation of plans for the continuous operation of the key development area is established

3.2.9	**Risk assessment:** Risks of the key development area are integrated into the process of risk assessment. Risks causing suspension of services, likelihood of the suspension and possible consequences are described in the risk analysis
3.2.10	**Risk scenarios:** Risk assessment scenarios are created where vulnerability of the key development area is evaluated and possible chain reactions are identified
3.2.11	**Cross border effects:** Cross-border effects are taken into account in the risk analysis
3.3 Administrative, technical and financial capabilities for risk management planning are available.	
3.3.1	**Leadership and coordination:** A risk management structure assigns clear responsibilities to all those involved in the risk management planning, so that overlaps or mismatches between responsibility and capability are avoided
3.3.2	**Expertise:** Methodologies for workforce planning are in place so that optimal staffing is ensured. The experts tasked to carry out the risk management planning have the necessary information and receive adequate training
3.3.3	**Methodology:** A methodology is developed to carry out risk assessments. Expected impacts of identified risks are assessed according to a methodology developed and risks accordingly prioritised
3.3.4	**Other stakeholders:** Various public and private stakeholders (such as disaster risk management agencies, health services, fire services, police forces, transportation / electricity / communication operators, voluntary organisations, citizens / volunteers, scientific experts, the armed forces, or organisations in other Member States), cooperate with each other and are involved in risk management planning
3.3.5	**Information & communication:** Rules and procedures are in place that allow for information sharing, data sharing and communication with various stakeholders
3.3.6	**Equipment:** The part of the technical capacity assessment evaluates if equipment necessary to plan prevention and preparedness measures is available
3.3.7	**Financing:** Financing comprises the overall identification, estimation and reservation of funds regarded necessary to meet potential financial obligations from the management of risks
Objective 4 - Strengthen disaster preparedness for effective response at all levels	
Example questions:	

Preparedness
- In which way are Emergency Managing Authorities prepared for an emergency?
- In which way are stakeholders involved in emergency preparedness and response?
- Which emergency preparedness plans are available?
- In which way is internal information exchange between authorities and stakeholders managed?
- Are (financial, staff, physical) resources ensured in times of crisis?
- In which way is capacity building in preparedness (inter)nationally organised?
- In which way is the organisation prepared for rendering international assistance?
- What procedures are followed when international assistance is received?
- What kind of early warning systems are established?

Management capabilities
- Which administrative management capabilities for preparedness are available?
- Which technical management capabilities for preparedness are available?
- Which financial management capabilities for preparedness are available?

4.1 Managing Authorities for the emergency resolution are designated and cooperation between authorities in the resolution of emergency	
4.1.1	**Legal and institutional framework:** Areas of responsibilities among authorities and Emergency Managing Authorities are determined
4.1.2	**Responsibilities**: Responsible or lead agency for the planning of emergency preparedness and emergency response are appointed and prepared
4.1.3	**Coordination:** a framework for coordination between authorities is established
4.1.4	**Flexibility**: Management system and responders network in the state is flexible
4.1.5	**Cooperation:** Involvement and cooperation with various public and private stakeholders is covered in legislation, emergency response plans and structures
4.2 Managing Authorities for the emergency resolution are designated and cooperation between authorities in the resolution of emergency	

4.2.1	**Disaster planning**: Disaster preparedness and contingency plans and policies are established at all levels with a particular focus on preventing and responding to possible displacement, and ensuring the participation of all sectors and stakeholders groups, including the most vulnerable in the design and planning
4.2.2	**Risk assessments and update**: The disaster preparedness and contingency plan and policies are based on the risk assessments and is periodically reviewed and updated
4.2.3	**Emergency capabilities**: Analysis of the capabilities involved in the resolving of emergency takes place and proposals are made to solve the gaps of capabilities. Capabilities are flexible to respond to scenarios
4.2.4	**Emergency laws**: Legal regulation is available to declare a state of emergency for a natural disaster in order to limit the constitutional rights of individuals if necessary, involve complementary resources (private sector)
4.2.5	**Large scale evacuation:** Legal basis and methodology are established for a large-scale evacuation, roles are determined
4.2.6	**Emergency plans**: National legislation ensures that emergency plans are in place to prevent and respond to major chemical accidents
4.2.7	**Flexibility**: The Emergency managing authorities are prepared for the situations where the "owner of emergency" does not exist and flexibility in the risk management system.
4.2.8	**Continuity:** Limits of operating conditions of strategic facilities are taken into account. Alternatives for strategic facilities are set
4.2.9	**Emergencies abroad:** An emergency response plan and communication plan for emergencies abroad and connected with the citizens of the affected country is implemented
4.2.10	**Stakeholders:** Principles of cooperation with private and public stakeholders are stipulated
4.2.11	**Military cooperation:** Legal basis for the use of an army in peace time crises and for the planning and utilization of military resources is established
4.3 Early warning systems are in place for all major hazards, with outreach to communities	
4.3.1	**Early warning system**: Hazard detection, monitoring and forecasting of risks in the state is ensured (monitoring of storm, earthquake, tsunami, radiation)
4.3.2	**Dissemination:** An Early Warning Communication System for abrupt effect risks is established (EWS - notification system, SMS, mobile cell note, sirens). The system is planned upon a scale of grades of alert, standardised, comprehensive and recognisable for all. The system is continuously strengthened to the needs of users
4.3.3	**Emergency planning:** Emergency plans are activated based upon notifications from the early warning system
4.3.4	**Coordination:** early warning systems are set up in coordination with (international) stakeholders from technical organisations and end users
4.4 Capacity building is ensured through exercises, trainings, evaluation and implementation of lessons learned	
4.4.1	• **Capacity building strategy**: Capacity building is organised according to a strategy and a plan for all relevant stakeholders and levels is established, focussing on training and exercises, evaluations and the implementation of lessons learned, also updating the capacity building strategy
4.4.2	**Trainings and exercises:** Disaster preparedness trainings and exercises, including evacuation drills, are held regularly
4.4.3	**International trainings and exercises:** Participation at international trainings and exercises (EU, NATO EADRCC, regional, bilateral)
4.4.4	**Modules and experts:** Development of EU Civil Protection Modules and expert capabilities take place according to EU modules standard and INSARAG Guidelines
4.5 Rapid and effective mechanism of notification about international assistance and rendering assistance is established	
4.5.1	**International assistance:** National plans foresee situations under which international assistance would be required
4.5.2	**Regional coordination:** Coordinated regional approaches, regional policies, operational mechanisms are established, making use of best technology and innovation, which may include the use of business facilities and services and military assets upon request

4.5.3	**International planning:** Plans and communication systems to prepare for and ensure rapid and effective disaster response in situations that exceed national coping capacities are in place on regional level
4.5.4	**Contact point:** Unitary 24/7 contact point for the mediation of international requests for assistance is established
4.5.5	**International organisations:** Cooperation and exchange of information with EU ERCC and NATO EADRCC takes place
4.5.6	**Legal base:** Legal basis and standard procedures for providing and receiving of international assistance are established
4.5.7	**Host nation support:** Host nation support concept is composed according to EU and NATO CEP Guidelines

4.6 Administrative, technical and financial capabilities for preparedness measures are available

4.6.1	**Strategy/policy/methodology:** The national or sub-national entities have developed approaches to carry out risk prevention and preparedness measures. Expected impacts of planned prevention and preparedness measures on risk reduction are assessed and measures accordingly prioritised and adapted
4.6.2	**Leadership and coordination:** A risk management structure assigns clear responsibilities to all those involved in the risk management planning, so that overlaps, gaps or mismatches between responsibility and capability are avoided
4.6.3	**Expertise:** Methodologies for workforce planning are in place so that optimal staffing is ensured. Staff performance management tools are in place, which include regular reviews of training and development needs
4.6.4	**Involving partners:** A response network is built that can mobilise all required capacities across a variety of partners
4.6.5	**Procedures:** In the implementation process of prevention and preparedness measures procedures are defined that contribute to the reduction of risk
4.6.6	**Information and communication:** National or sub-national entities ensure that they have rules and procedures in place that allow for information sharing, data sharing and communication with relevant stakeholders including citizens at any time of implementation of prevention and preparedness measures
4.6.7	**Infrastructure including IT:** The infrastructure in place (such as roads, buildings, dams, rails, bridges, satellites, tubes, cables, hospitals, shelter facilities, early warning systems etc.), that is regarded as relevant for the mitigation of the identified risks, fulfils certain security, safety or performance standards
4.6.8	**Equipment and supplies:** It is evaluated if the equipment fulfils the required standards necessary to implement prevention and preparedness measures
4.6.9	**Technical expertise:** The skills available and the methodologies developed for the implementation of prevention and preparedness measures is safeguarded, be it through documentation or sharing and learning
4.6.10	**Financing of implementation measures:** The financial means are available and can be quickly accessed to finance the response on likely emergency situations as identified in the risk assessment and planning

Objective 5 - Use knowledge, innovation and education to build a culture of safety and resilience at all levels

Example questions:
- In which way is the population prepared for emergencies?
- In what way is crisis communication conducted?
- Provide examples of DRM trainings for different target groups

5.1 A country wide public awareness strategy exists to stimulate a culture of disaster resilience, with outreach to urban and rural communities. Relevant information on disasters is available at all levels to all stakeholders.

5.1.1	**Education and awareness strategy:** A strategy to strengthen public education and awareness of risk information and knowledge is established including objectives, responsibilities, activities, target groups and implementation of the risk communication organisation
5.1.2	**Database:** Reports of occurred emergencies are compiled on a basis of a unitary methodology in the state. Cases database is established and is available for the public
5.1.3	**Communication:** Informing public about the risks and crisis management plans is legally regulated

5.1.4	**Message:** Information for the public about risks, crisis management plans and the expected behaviour in case of emergencies is easy to understand and accessible for the whole population. Information considers language, cultural and social factors
5.1.5	**Innovation:** A dialogue with academia and research entities focuses on the evolving nature of technologies to enhance resilience. Research for local application and support action by local communities and authorities, and support the interface between policy and science for effective decision-making
5.1.6	**Awareness:** Population has a clear vision of first response and is aware of the behaviour to be adopted in case of different types of emergencies. The population is aware of the environment they live in and its private duty and public contribution to lower the vulnerability
5.2 Rapid and effective modern technology based crisis communication system is established	
5.2.1	**Role of media:** Dialogue with the population is carried out through media, incl social media. Media is a reliable partner and has an active role in the raising of public awareness, in mediation of alert notifications and information concerning the emergency as well as in support and mobilisation of volunteers
5.2.2	**Training of media:** New approaches and modalities will be developed for the objective of media and public relations following disasters. Representatives of the media and news casters are trained
5.3 School curricula, education material and relevant trainings include DRM and recovery concepts and practices	
5.3.1	**Strategy capacity building:** A strategy is available to build capacity, targeting specific sectors of public servants, communities and volunteers to ensure consistent use of risk assessments and implementation of disaster risk related policies and plans
5.3.2	**Training programme:** Disaster Risk Management training programs for different target groups (spatial planners, officials of local authorities, crisis managers, volunteers etc.) are established
5.3.3	**School curricula:** Risk management and emergency preparedness instructions and programs are prepared for schools and higher education institutions