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PROJECT PERFORMANCE ASSESSMENT REPORT



TURKEY

# Istanbul Seismic Risk Mitigation and Emergency Preparedness Project

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**PROJECT PERFORMANCE ASSESSMENT REPORT**

**TURKEY**

**ISTANBUL SEISMIC RISK MITIGATION AND EMERGENCY  
PREPAREDNESS PROJECT  
(IBRD-47840 and IBRD-80330)**

**June 22, 2018**

## Abbreviations and Acronyms

DRM	Disaster Risk Management
IBRD	International Bank for Reconstruction and Development
IEG	Independent Evaluation Group
IFI	International Financial Institution
IPCU	Istanbul Project Coordination Unit
INSARAG	International Search and Rescue Advisory Group
ISMEP	Istanbul Seismic Risk Mitigation and Emergency Preparedness Project
MEER	Marmara Earthquake Emergency Reconstruction Project
PCU	Project Coordination Unit
PPAR	Project Performance Assessment Report

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This report was prepared by Stephen Hutton who assessed the project in March 2016. Murat Sungur Bursa provided technical assistance as a local consultant. The report was peer reviewed by Joseph Leitmann and panel reviewed by Vibecke Dixon. Jean-Jacques Ahouansou provided administrative support.

## Preface

This is a Project Performance Assessment Report (PPAR) by the Independent Evaluation Group (IEG) of the World Bank Group on the Turkey Istanbul Seismic Risk Mitigation and Emergency Preparedness Project (P078359, and Additional Financing P122179), known as ISMEP. The project was selected for a PPAR to draw lessons from a flagship disaster risk management project, at the request of the Social, Urban, Rural and Resilience Global Practice, and to contribute to IEG's Urban Resilience evaluation and future work on disaster risk management.

The project was approved on May 26, 2005 and the closing date was extended from the original June 2010 to December 2015 following additional financing. The project continued after World Bank financing ended and remained active as of April 2018. World Bank financing for the project was \$US 563 million IBRD lending. The project received parallel financing from other international financial agencies (European Investment Bank, Council of European Development Bank, Islamic Development Bank, KfW), totaling €2,018 million as of 2018.

This PPAR presents its findings and conclusions based on a review of the World Bank's project documentation, combined with a field mission to Turkey carried out between February 22<sup>nd</sup> and March 9<sup>th</sup>, 2018. IEG conducted interviews with a range of different stakeholders linked to the program including project coordination unit staff, project beneficiaries, both provincial and central government counterparts and partners, World Bank staff, and civil society members.

Following standard IEG procedure, copies of the draft PPAR were shared with relevant Government officials for their review and comment. All comments are included in Appendix H of this report.

# Summary

## Project background and description

Turkey faces high vulnerability to earthquakes, with Istanbul posing the most serious risk due to its high seismic risk and its role as the population and economic center of Turkey. A major earthquake near Istanbul in 1999 led to over 17,000 deaths and damage estimated at \$US 5-13 billion. The World Bank supported a post-earthquake reconstruction project over 1999-2006, but vulnerability to earthquakes remained high, especially for Istanbul. A major earthquake in Istanbul would be catastrophic, and could derail the country's development trajectory. The government was committed to undertaking disaster risk mitigation, but needed external assistance and support to do so. The World Bank was a suitable partner based on its financing capacity, technical expertise in disaster risk management and mitigation, and credibility and trust in Turkey based on prior disaster risk management engagements. These considerations motivated the creation of the Istanbul Seismic Risk Mitigation and Emergency Preparedness Project (ISMEP) as a proactive risk mitigation effort.

ISMEP's project development objective in the Loan Agreement was "to assist the Borrower in improving the city of Istanbul's preparedness for a potential earthquake, through enhancing the institutional and technical capacity for disaster management and emergency response, strengthening critical public facilities for earthquake resistance, and supporting measures for better enforcement of building codes." The project sought to improve earthquake preparedness and reduce vulnerability through several pathways. Designing, financing, and implementing retrofits and reconstruction of priority public buildings (especially schools and hospitals) were expected to reduce deaths, injuries, and damage from public buildings. Establishing emergency communication, information management, and response capacity were expected to allow for more effective disaster response. Awareness raising campaigns and training programs would also seek to change behavior to improve household and institutional preparedness as well as disaster response. Private sector housing risks were addressed indirectly, through standards and training of engineers on retrofitting, and through pilot efforts in municipalities to improve compliance with building codes and land use plans.

The project received \$US 300 million in an initial loan, and additional financing of \$US 150 million in 2011, but it also created a platform which attracted close to \$US 2,000 million (€ 1,600 million) from other international financial institutions. This enabled the project to increase its scale for retrofits and especially for reconstruction, within the same scope.

## What worked, and why?

The project was highly successful in achieving its objectives. Several key factors led to this.

ISMEP was one of the first in a new generation of projects that supported disaster risk reduction without being in response to a particular disaster. The project design focused on reducing disaster risk and vulnerability as a standalone project, rather than as an emergency



response and reconstruction project. A major success driver was the decision to adopt a sub-national, multi-sectoral approach, with the project and its implementation unit housed locally within Istanbul. The project design covered many of the most critical needs for improving disaster risk management. The design set an appropriate project scope, setting ambitious but realistic goals. The decision not to expand the project scope further by including financing for risk reduction of private buildings is likely to have been correct given the limited government appetite at the time, limited willingness to pay by homeowners, and unresolved issues of financing models. Financial disaster risk management remains a challenge for Turkey, but at a national level. Thus, on balance it would not have been advisable to seek to address in a sub-national project.

Project implementation benefited greatly from a semi-autonomous, highly capable, professional project coordination/implementation unit. A strong project platform structured with extensive World Bank support attracted substantial additional financing from international financial institutions (IFIs) and so to increase its scale. The project developed and implemented an evidence-based system for identifying investment priorities. It also benefited from practical and effective approaches to procurement, and from sustained and useful support from the World Bank over a decade.

Project evidence shows that there has been a significant reduction in vulnerability to earthquakes in Istanbul for public buildings. ISMEP produced high quality buildings, superior to typical new public buildings construction in Turkey. Sub-projects were cost-effective because of the use retrofitting techniques where appropriate, reduced operations and maintenance costs (particularly from energy efficiency), and synergies in carrying out multi-sector investments through a single project. The project supported a dramatic improvement in disaster management and emergency response capacity in Istanbul. Furthermore, evidence from impact assessments carried out by the project suggests that awareness raising and training activities have had a positive effect.

### **What didn't work, and why?**

The project was highly successful and had few deficiencies, but there were some missed opportunities largely for increasing the impact of the project beyond its scope and objectives. Some design elements – the sub-national implementation model, the professional coordination/implementation unit, and the extra-budget financing arrangements – contributed both to the success of the project but also to a lack of replication of the project model. The project had only partial success in demonstrating the effectiveness of retrofitting: demonstration was successful at a technical level but many non-engineer policymakers remain unconvinced because they favor more expensive reconstruction approaches that allow for more amenities. While successful in achieving its objectives, the project has had not induced replication elsewhere in Turkey because of a lack of ownership by central government and limited resources for large scale disaster risk reduction investments. Pilot efforts on improving compliance with building codes were successfully implemented, but data was not collected to assess their impact on disaster vulnerability. Progress on reducing the vulnerability of cultural heritage buildings was slow, as there was difficulty in reaching consensus between civil engineers (who prioritized protection) and cultural heritage specialists (who prioritized preservation).

## Project ratings

IEG ratings are described Appendix A.

<b>Outcome:</b>	Highly Satisfactory
<b>Risk to Development Outcome:</b>	Negligible
<b>Bank Performance:</b>	Satisfactory
<b>Borrower Performance:</b>	Highly Satisfactory

## Lessons

The project offers the following lessons:

- **A sub-national multisector model can be highly effective for reducing disaster risk in a well-functioning major metropolitan area, even in a country where these approaches are unusual.** In this project, the institutional and physical mapping of the project to the provincial government in Istanbul was a key driver of success. This approach was unique in Turkey in adopting, where major government projects are typically nationwide and managed from the capital through a single line ministry. A multisector project design (supporting disaster risk management across multiple beneficiary ministries and agencies) allowed the project to reach critical mass, to build synergies across activities, and to include activities for smaller agencies as well as the priority works for the education and health sectors. Basing the project in Istanbul improved its ability to identify respond to the needs of beneficiaries and to build relationships with local stakeholders - which were crucial to effective implementation. Housing the PCU outside of line ministries or direct beneficiaries contributed to stakeholder perceptions of impartiality and improved its ability to serve as a coordinating platform.
- **A semi-autonomous professional project coordination unit can help to ensure effective and efficient project implementation even when dealing with many stakeholders and beneficiary agencies.** This implementation approach was unusual for Turkey, where most projects are implemented centrally through national line ministries. The PCU included staff with prior experience in World Bank disaster risk management projects and was able to manage relationships constructively with Turkish government agencies, the Bank and other IFIs. It was able to attract, develop, and retain significant technical expertise and project management experience. These helped it to deliver high quality outputs in a timely and cost-effective manner.
- **Even highly successful project models may not be replicated if they cannot generate strong government ownership and if they rely on exceptional measures.** In this project, there has been no replication of the model in Turkey due in part to

financing constraints, but also due to inconsistent ownership of the project and approach by central government agencies, and by government concerns about exceptional features in the model (operating at a sub-national level in a highly centralized country; operating under unique enabling legislation outside of normal budget procedures). These exceptional features helped to achieve the results in Istanbul, but also made it more difficult to replicate the model elsewhere in Turkey.

- **The World Bank can achieve large scale impact by creating effective project platforms that are able to attract additional financing from other institutions.** Here, the Bank established an institutional framework for project implementation, a set of financial management and procurement procedures, and a track record of success which provided confidence to other IFIs that they would be able to achieve their desired development objectives, and that their resources would be used efficiently and responsibly. This allowed the program to reach a much larger scale than initially envisioned, with roughly 80% of program financing (thus far) coming from non-World Bank sources, even though the Bank was not directly involved in engagements that led to this financing.
- **The World Bank can offer significant value to clients from financing, access to technology, project management experience, and influence - even in megacities in high capacity upper middle-income countries.** Budget constraints meant that large scale investments in risk reduction were likely to be challenging to finance within existing line ministry budgets, so IFI financing was a major part of their appeal, especially given lower interest rates and longer tenure than what the government could access at the time from financial markets. The Bank provided valuable knowledge on technology in some specialist areas. Advice from the task team to the PCU was useful throughout implementation. The technical credibility and impartiality of the Bank helped reassure decisionmakers of design decisions. And the Bank helped to foster dialog and coordination between stakeholders.
- **Pilot efforts may not support learning if they do not have monitoring and evaluation systems that assess their contribution to program objectives and draw conclusions for the design of future interventions.** In this project, municipality pilots in the project were intended to contribute to disaster risk management by improving compliance of private sector construction with building codes and land use plans. It sought to do this through an innovative method, working indirectly by supporting digitization of municipal processes. If this approach was effective in contributing towards disaster vulnerability reduction, there would be a case for including this approach in future disaster risk management interventions. However, even after successful implementation of the pilots, there is little evidence on the efficacy of the pilots on building code enforcement or disaster management, because the monitoring and evaluation systems focused on data that was most interesting to the municipalities (e.g. efficiency of processes, customer satisfaction) but not on how the pilots contributed to the project objective.
- **Small grants to support municipalities in digitizing their processes can have a significant impact on efficiency and transparency if coupled with highly**

**motivated municipal leadership.** In this project, grant payments of roughly \$US 2 million to each municipality for equipment coupled with advice from the Bank helped to trigger much larger reform efforts by municipalities using their own resources (with at least 10 times the funding). The reforms to processes and systems led to simplification and reduced time to issue permits, along with improved transparency and governance, and customer satisfaction. Even without direct support from the project, the reforms are diffusing further and being replicated in other municipalities.

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## Özet

### Proje arka planı ve açıklaması

Türkiye depremlere karşı yüksek derecede hassas bir ülkedir ve İstanbul taşıdığı yüksek sismik risk ve ülkenin nüfus ve ekonomi merkezi olarak sahip olduğu rol sebebiyle ülkenin en ciddi risk taşıyan şehridir. 1999 yılında İstanbul yakınlarında meydana gelen büyük bir deprem 17.000’den fazla insanın hayatını kaybetmesine ve yaklaşık 5 – 13 milyar ABD\$ arasında tahmin edilen bir maddi kayba yol açmıştır. Dünya Bankası 1999 ile 2006 yılları arasında bir deprem sonrası yeniden inşa projesini desteklemiştir, ancak özellikle İstanbul için olmak üzere depremlere karşı yüksek derecedeki kırılganlık halen devam etmektedir. İstanbul’da yaşanabilecek büyük bir deprem feci sonuçlar doğurabilecek ve ülkenin kalkınma yörüngesinden çıkmasına yol açabilecektir. Hükümet afet riskinin azaltılması konusunda kararlılık göstermiştir ancak bunun için dışarıdan yardıma ve desteğe ihtiyaç duymuştur. Finansman kapasitesi, afet riskinin yönetilmesi ve azaltılması konusundaki teknik uzmanlık birikimi ve afet riskinin azaltılması konusunda daha önce yapılan çalışmalara dayalı olarak Türkiye’ye olan güveni göz önüne alındığında, Dünya Bankası uygun bir ortak olmuştur. Bu hususlar,, proaktif bir risk azaltma çalışması olarak İstanbul deprem Riski Azaltma ve Acil Durum Hazırlık Projesinin (İSMEP) oluşturulmasına yol açmıştır.

İSMEP’in Kredi Anlaşmasında belirtilen proje kalkınma amacı, “afet yönetimi ve acil durum müdahalesi için kurumsal ve teknik kapasitenin geliştirilmesi, kritik kamu binalarının depreme karşı güçlendirilmesi ve yapı yönetmeliklerinin daha iyi uygulanması yoluyla İstanbul şehrinin olası bir depreme karşı hazırlık durumunun iyileştirilmesinde Borçluya yardımcı olmaktır.” Proje çeşitli yollarla depreme karşı hazırlık durumunu iyileştirmeyi ve afetlere karşı kırılganlığı azaltmayı amaçlamıştır. Öncelikli kamu binalarının (özellikle okullar ve hastaneler) depreme karşı güçlendirilmeleri ve yeniden inşaları için yapılan tasarım, finansman ve uygulama çalışmalarının kamu binalarından kaynaklı ölümleri, yaralanmaları ve maddi hasarları azaltması beklenmekteydi. Acil durum haberleşme, bilgi yönetimi ve müdahale kapasitesi oluşturulmasının ise afetlere karşı daha etkili bir müdahale sağlaması beklenmekteydi. Farkındalık yaratma kampanyaları ve eğitim programları yoluyla, hanehalklarının ve kurumların afetlere karşı hazırlık durumlarının ve müdahale kapasitelerinin geliştirilmesine yönelik davranışlarının değiştirilmesi amaçlanmıştır. Standartların geliştirilmesi ve mühendislerin güçlendirme konusunda eğitilmeleri yoluyla ve aynı zamanda belediyelerde yapı yönetmeliklerine ve imar planlarına uyumun geliştirilmesine yönelik pilot uygulamalar yoluyla özel sektör konut riskleri dolaylı olarak ele alınmıştır.

Proje için başlangıçta 300 milyon ABD\$’lık bir kredi ve daha sonra 2011 yılında 150 milyon ABD\$ tutarında bir ilave finansman temin edilmiştir; ancak proje aynı zamanda diğer uluslararası finansal kuruluşlardan yaklaşık 2 milyar ABD\$’na (1.6 milyar €) yakın finansman çeken bir platform oluşturmuştur. Bu finansman olanakları, projenin aynı kapsam içerisinde güçlendirme ve özellikle de yeniden inşa için ölçeğini arttırmasını sağlamıştır.

### Neler işe yaradı ve sebepleri neydi?

Proje amaçlarına ulaşmada oldukça başarılı olmuştur. Bunu sağlayan birkaç kilit faktör vardır.

İSMEP, belirli bir afete cevaben hazırlanmamış olup afet riski azaltımını destekleyen ilk yeni nesil projelerden biridir. Proje tasarımı, bir acil durum müdahale ve yeniden inşa projesinden ziyade ayrı bir proje olarak afet riskinin ve kırılganlığın azaltılması üzerinde odaklanmıştır. Önemli bir başarı etkeni, yerel ve çok sektörlü bir yaklaşım benimseme kararı olmuş ve proje ile uygulama birimi yerel olarak İstanbul'dan yürütülmüştür. Proje tasarımı, afet riski yönetiminin iyileştirilmesi için en kritik ihtiyaçların çoğunu kapsamıştır. Tasarım, uygun bir proje kapsamı ile iddialı ancak gerçekçi hedefler belirlemiştir. O zaman için hükümetin proje için iştahının sınırlı olduğu, ev sahiplerinin ödeme istekliliğinin sınırlı olduğu ve finansman modelleri ile ilgili çözülememiş sorunlar göz önüne alındığında, özel mülkiyetli binaların risk azaltımına yönelik finansmanın dahil edilmesi yoluyla proje kapsamını daha fazla genişletmeme kararının doğru olduğu görülmektedir. Finansal afet riski yönetimi Türkiye için bir zorluk teşkil etmeye devam etmektedir, ancak bu ulusal bir zorluktur. Dolayısıyla, tüm bu hususlar göz önüne alındığında, bunun yerel bir projede ele alınması tavsiye edilebilir olmayacaktır.

Proje uygulamasında, yarı özerk, yüksek derecede yetkin ve profesyonel bir proje koordinasyon / uygulama birimi oldukça faydalı olmuştur. Kapsamlı bir Dünya Bankası desteği ile yapılandırılmış güçlü bir proje platformu uluslararası finansal kuruluşlardan önemli miktarda ek finansman temin edilmesini ve proje ölçeğinin artırılmasını sağlamıştır. Proje ile yatırım önceliklerinin tespitine yönelik kanıta dayalı bir sistem geliştirilmiş ve uygulanmıştır. Projede ayrıca pratik ve etkili satın alma yaklaşımlarından, dolayısıyla Dünya Bankası'nın on yıldan uzun süredir devam eden faydalı desteğinden de yararlanılmıştır.

Proje kanıtları, İstanbul'da kamu binalarının depremlere karşı kırılganlığında önemli bir azalma olduğunu göstermektedir. İSMEP ile, Türkiye'de inşa edilen tipik yeni kamu binalarından daha üstün, yüksek kaliteli binalar üretilmiştir. Uygun olduğunda güçlendirme tekniklerinin kullanılması, düşük işletme ve bakım maliyetleri (özellikle enerji verimliliği kaynaklı) ve tek bir proje yoluyla çok sektörlü yatırımlar gerçekleştirmenin getirdiği sinerjiler sayesinde alt projeler oldukça maliyet etkin bir şekilde gerçekleştirilmiştir. Proje İstanbul'daki afet yönetimi ve acil durum müdahale kapasitesinden önemli bir iyileşmeyi desteklemiştir. Ayrıca, proje kapsamında gerçekleştirilen etki değerlendirmelerinden elde edilen kanıtlar farkındalık yaratma ve eğitim faaliyetlerinin olumlu bir etkisi olduğunu göstermiştir.

### **Neler işe yaradı ve sebepleri nelerdi?**

Proje yüksek derecede başarılı olmuştur ve çok az sayıda eksiklik yaşanmıştır; ancak büyük ölçüde proje etkilerinin proje amacı ve kapsamı ötesinde artırılması bakımından kaçırılan bazı fırsatlar olmuştur. Bazı tasarım unsurları – yerel uygulama modeli, profesyonel koordinasyon / uygulama birimi ve bütçe dışı finansman düzenlemeleri– bir yandan projenin başarısına katkıda bulunurken aynı zamanda proje modelinin tekrarlanamamasına da yol açmıştır. Proje güçlendirme tekniğinin etkililiğinin gösterilmesinden sadece kısmi bir başarı elde etmiştir: teknik düzeyde gösterim başarılı olurken, çok saydaki mühendis olmayan politika yapıcı daha fazla imkanlar sunan daha pahalı yeniden inşa yaklaşımlarını tercih ettikleri için ikna edilememiştir. Proje amaçlarına ulaşmada başarılı olurken, merkezi yönetim tarafından sahiplenme olmadığı ve büyük ölçekli afet riski azaltma yatırımları için sınırlı kaynak mevcut olduğu için Türkiye'de başka yerlerde tekrarlanmamıştır. Yapı yönetmeliklerine uyumun artırılmasına yönelik pilot çalışmalar başarılı bir şekilde uygulanmıştır, ancak bunların

afetlere karşı hassasiyet üzerindeki etkilerini değerlendirmeye yönelik veriler toplanmamıştır. Korumaya öncelik veren inşaat mühendisleri ile muhafazaya öncelik veren kültürel miras uzmanları arasında bir uzlaşmaya varmada yaşanan güçlüklerden dolayı, kültürel miras niteliğindeki binaların kırılmalıklarını azaltma yönündeki ilerleme yavaş olmuştur.

### Proje derecelendirme puanları

Bağımsız Değerlendirme Grubu (IEG) derecelendirme puanları Ek-A'da açıklanmaktadır.

<b>Sonuç:</b>	Yüksek derecede tatmin edici
<b>Kalkınma Sonucu Riski:</b>	Göz ardı edilebilir
<b>Banka Performansı:</b>	Tatmin edici
<b>Borçlu Performansı:</b>	Yüksek derecede tatmin edici

### Çıkarılan Dersler

Projeden aşağıdaki dersler çıkarılmıştır:

- **Bu yaklaşımların olağan dışı olduğu bir ülkede bile, iyi işleyen bir metropol bölgesinde, yerel bir çok sektörlü model afet riskinin azaltılmasında oldukça etkili olabilir.** Bu projede, projenin kurumsal ve fiziksel olarak İstanbul'daki il yönetimine bağlanması kilit bir başarı faktörü olmuştur. Bu yaklaşım, büyük kamu projelerinin tipik olarak ülke genelinde uygulandığı ve tek bir bakanlık aracılığıyla başkentten yönetildiği Türkiye'de benzersiz bir yaklaşım olmuştur. Çok sektörlü bir proje tasarımı (çok sayıda faydalanıcı bakanlık ve kurum arasında afet riski yönetimini destekleyen bir tasarım) projenin kritik bir kütleye ulaşmasına, faaliyetler arasında bir sinerji oluşturulmasına ve daha küçük kurumlara yönelik faaliyetlere ve eğitim ve sağlık sektörlerine yönelik öncelikli çalışmalara yer verilmesine olanak tanımıştır. Projenin İstanbul merkezli olarak uygulanması, faydalanıcıların ihtiyaçlarını belirleme ve bu ihtiyaçları olanaklarının geliştirilmesine ve aynı zamanda etkili bir uygulama için büyük önem taşıyan yerel paydaşlar ile ilişkilerin geliştirilmesine imkan sağlamıştır. Proje Koordinasyon Biriminin ilgili bakanlıkların veya doğrudan faydalanıcıların dışında oluşturulması, paydaşların tarafsızlık algılarına katkıda bulunarak bir koordinasyon platformu işlevi görme imkanını arttırmıştır.
- **Yarı özerk bir profesyonel proje koordinasyon birimi, çok sayıda paydaş ve faydalanıcı kurum ile ilgilenmenin gerektiği bir ortamda dahi etkili ve etkin proje uygulaması sağlamaya yardımcı olabilir.** Bu uygulama yaklaşımı, çoğu projenin ulusal düzeyde ilgili bakanlıklar yoluyla merkezi olarak uygulandığı Türkiye'de sıra dışı bir yaklaşım olmuştur. Proje Koordinasyon Biriminde, Dünya Bankası'nın afet riski yönetimi projelerinde önceden deneyim edinmiş ve Türkiye'deki kamu kurumları, Banka ve diğer uluslararası finans kuruluşları ilişkileri yapıcı bir şekilde yönetebilecek personel yer almıştır. PKB, gerekli teknik uzmanlık birikimini ve proje yönetimi

deneyimini çekebilmiş, geliştirebilmiş ve bünyesinde tutabilmiştir. Tüm bunlar yüksek kaliteli çıktıları zamanlı ve maliyet etkin bir şekilde sunmasına yardımcı olmuştur.

- **Çok başarılı proje modelleri bile, hükümet nezdinde güçlü bir şekilde sahiplenme oluşturamadıkları ve sadece istisnai önlemlere dayandıkları sürece başka yerlerde tekrarlanamazlar.** Bu projede, kısmen finansman kısıtları, ancak aynı zamanda projenin tutarsız bir şekilde sahiplenilmesi, merkezi yönetim kurumlarının yaklaşımı ve modelin istisnai özellikleri (oldukça merkezi bir ülkede yerel düzeyde işletilmesi; normal bütçe prosedürlerinin dışında benzersiz bir sağlayıcı mevzuat kapsamında işletilmesi) hakkında kamunun endişeleri sebebiyle model Türkiye’de başka yerlerde tekrarlanmamıştır. Bu istisnai özellikler İstanbul’da sonuç alınabilmesini sağlamıştır ancak aynı zamanda modelin Türkiye’nin başka yerlerinde tekrarlanmasını daha güç hale getirmiştir.
- **Dünya Bankası, başka kuruluşlardan ilave finansman çekebilecek etkili proje platformları yaratarak büyük ölçek etkisi sağlayabilmektedir.** Burada, Banka proje uygulamasına yönelik bir kurumsal çerçeve ile bir dizi finansal yönetim ve satın alma prosedürü oluşturmuş ve diğer uluslararası finans kuruluşlarına istedikleri kalkınma amaçlarına ulaşabilecekleri ve kaynaklarının etkin ve sorumlu bir şekilde kullanılacağı yönünde güvence sağlayan bir başarı geçmişi ortaya koymuştur. Bu durum programın başlangıçta öngörülenden çok daha büyük bir ölçek elde etmesine olanak tanımıştır ve (şimdiye kadar) program finansmanının yaklaşık yüzde 80’i Banka’nın bu finansmanı sağlayan çalışmalarda doğrudan katılımı olmamasına rağmen Dünya Bankası dışındaki finansman kaynaklarından gelmiştir.
- **Dünya Bankası finansman, teknolojiye erişim, proje yönetimi deneyimi ve sahip olduğu nüfuz gibi olanaklar sayesinde müşterilere önemli değer sunabilmektedir - yüksek kapasiteli üst orta gelirli, ülkelerdeki mega şehirlerde bile.** Bütçe kısıtları, risk azaltma alanında yapılacak büyük ölçekli yatırımların ilgili bakanlık bütçeleri dahilinde finansmanının zorlu olabileceğini göstermiştir. Dolayısıyla uluslararası finansal kuruluşların sağladığı finansman, Hükümet’in o zaman için finansal piyasalardan temin edebileceği finansmana göre daha düşük faiz oranlarına ve daha uzun vadelere sahip olması bakımından da önemli bir cazibe unsuru oluşturmuştur. Banka bazı uzmanlık alanlarında değerli teknoloji bilgileri sunmuştur. Görev ekibinin PKB’ye sağladığı bilgiler uygulama boyunca yararlı olmuştur. Banka’nın teknik alanlardaki güvenilirliği ve tarafsızlığı tasarım kararlarını verecek karar vericilere güvence sağlamıştır. Öte yandan, Banka paydaşlar arasında diyalog ve koordinasyonunu geliştirilmesine de yardımcı olmuştur.
- **Pilot çalışmalar, program amaçlarına katkıları değerlendiren gelecekteki müdahalelerin tasarımları için sonuçlar çıkaran izleme ve değerlendirme sistemlerine sahip değillerse öğrenmeyi destekleyemezler.** Bu projede, belediye pilot çalışmaları ile, özel sektör inşaatlarının yapı yönetmeliklerine ve imar planlarına uyumlarının iyileştirilmesi yoluyla afet riski yönetimine katkıda bulunulması amaçlanmıştır. Bunun için, belediye işlemlerinin dijitalleştirilmesi desteklenerek dolaylı yoldan işleyen yenilikçi bir yöntem kullanılmıştır. Eğer bu yaklaşım afetlere karşı hassasiyetin azaltılması hedefine etkili bir şekilde katkıda bulunabiliyor ise, bu



yaklaşımın gelecekteki afet riskini azaltma müdahalelerine dahil edilmesi için kabul edilebilir bir gerekçe olacaktır. Ancak, pilot çalışmalar başarılı bir şekilde uygulandıktan sonra bile, izleme ve değerlendirme sistemleri pilot çalışmaların proje amacına nasıl katkıda bulunduğundan ziyade belediyeler için en ilginç olan konular üzerinde (örneğin süreçlerin verimliliği, müşteri memnuniyeti) odaklandıklarından dolayı pilot çalışmaların yapı yönetmeliklerinin uygulanması veya afet yönetimi alanlarındaki etkililikleri hakkında çok az kanıt mevcuttur.

- **Belediyelerin süreçlerini dijitalleştirmelerini desteklemeye yönelik küçük hibeler, yüksek düzeyde motivasyona sahip belediye yönetimleri ile buluştuğunda verimlilik ve şeffaflık üzerinde önemli bir etki yaratabilirler.** Bu projede, her bir belediyeye ekipman için sağlanan yaklaşık 2 milyon ABD\$ tutarındaki hibe ödemeleri ve Banka danışmanlık desteği belediyelerin kendi kaynaklarını (finansmanın en az 10 katı kadar) kullanarak çok daha büyük reform çabalarına girişmelerine yardımcı olmuştur. Süreçlerde ve sistemlerde yapılan reformlar ruhsatlandırma sürecinde sadeleştirme sağlayarak süreleri kısaltmış, aynı zamanda şeffaflığı, yönetimi ve müşteri memnuniyetini arttırmıştır. Projenin doğrudan desteği olmadan bile reformlar yayılmakta ve başka belediyeler tarafından da tekrarlanmaktadır.

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# 1. Project Background and Context

1.1 Turkey faces high vulnerability to earthquakes. A major earthquake in the Marmara region (roughly 75 km from Istanbul) in 1999 led to over 17,000 deaths and estimated economic damage of \$US 5 to 13 billion.<sup>1</sup> The effects of a major earthquake closer to Istanbul could be catastrophic. The 1999 earthquake triggered a recognition of these risks in government and in society in Turkey, and the government enhanced its efforts to develop a comprehensive hazard management strategy for the country.

1.2 Building on a history of prior support for disaster risk management in Turkey, the World Bank provided support after the 1999 earthquake through the Marmara Earthquake Emergency Reconstruction Project (MEER). MEER provided direct support for housing reconstruction and infrastructure restoration, as well as the establishment of an earthquake insurance system and some initial institutional reforms. But this and previous projects had been focused on reconstruction, rather than risk reduction. Efforts to reduce risks and build emergency response capacity had not been at large scale.

1.3 Istanbul remained highly vulnerable. The existing stock of buildings had mostly been constructed prior to 1998 building codes, which were the first to specifically address earthquake disaster prevention and to require modern construction practices which would minimize earthquake risk. Emergency preparedness was weak. An earthquake master plan had been established, but faced challenges in being operationalized, in particular to carry out the needed investments.

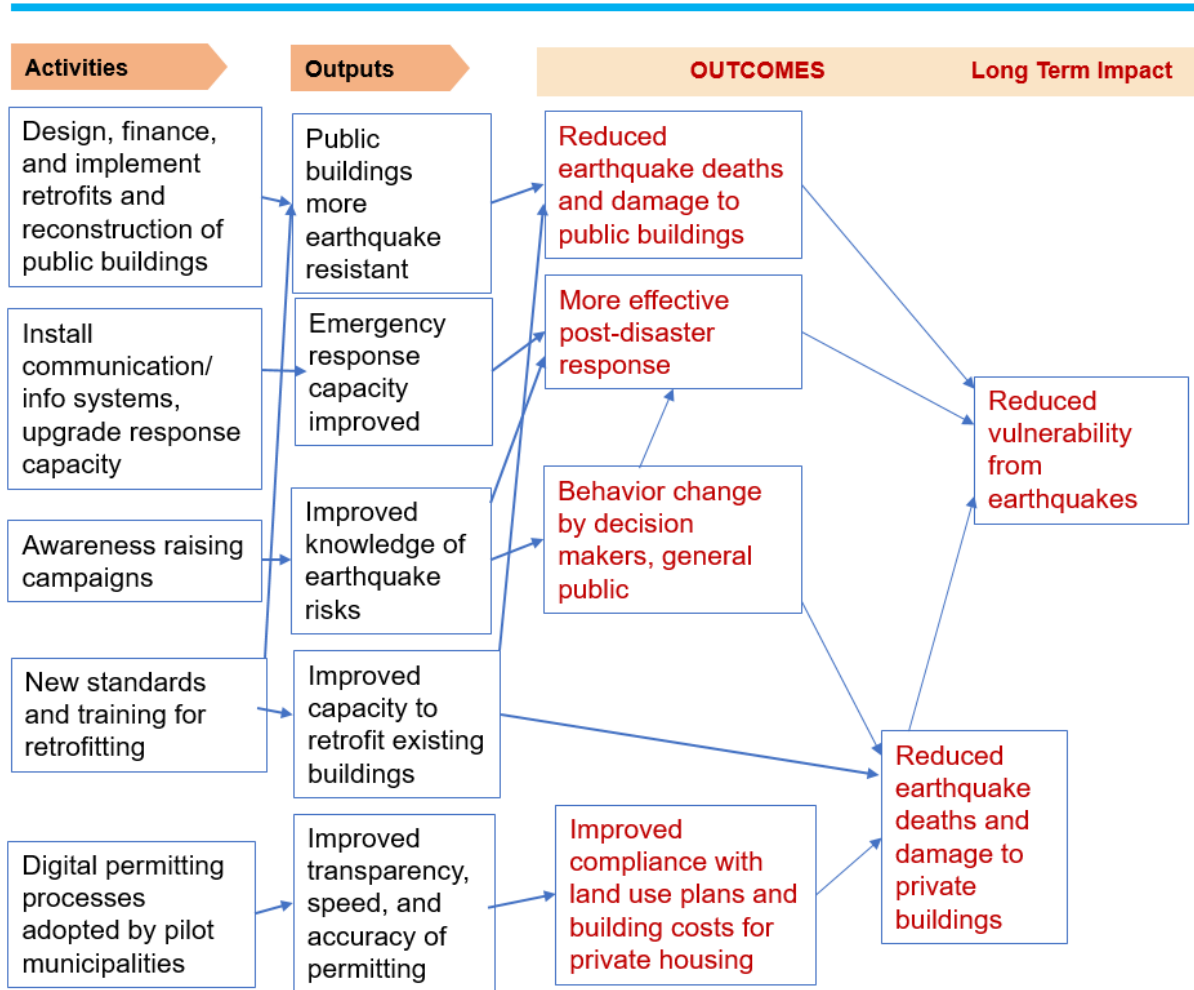
1.4 The government was committed to undertaking disaster risk mitigation, but needed external assistance and support to do so. Financing risk reduction at scale would not have been possible within the existing investment budget envelopes of government ministries. At the time, some government agencies lacked the capacity to carry out major construction projects. While the domestic construction and engineering sectors were strong, there were some niche areas where technical knowledge was lacking, and international knowledge was needed on institutional aspects of disaster risk management, awareness raising, regulation, and other issues. The World Bank was a suitable partner based on its financing capacity, technical expertise in disaster risk management and mitigation, and credibility and trust based on its prior engagements. These led to the creation of the Istanbul Seismic Risk Mitigation and Emergency Preparedness Project (ISMEP). ISMEP was one of the first in a new generation of projects that supported disaster vulnerability reduction without being in response to a particular disaster.

## **Project design and financing**

1.5 The project theory of change was premised on acting at scale, to directly support a large number of the necessary activities needed to reduce risks and improve preparedness. The project design sought to reduce disaster risks in public buildings through retrofitting and reconstruction of public buildings - primarily for education and health sector, which were deemed to be priorities because of their importance in a post-disaster phase as emergency shelters and medical service providers. It sought to improve emergency preparedness focusing on communication systems, information management systems, and emergency

management capacity. The design also included pilot efforts and other activities aimed at reducing vulnerability in cultural heritage buildings and for the private sector (through training of engineers and transparency in municipal permitting). Awareness raising activities were included across its components.

**Figure 1. ISMEP Theory of Change for Principal Activities**



Source: IEG

1.6 The project included four components:

- Component A supported enhanced emergency preparedness through establishing an emergency communication system, an emergency management information system, and an emergency management center. It also upgraded emergency response capacity, and supported public awareness raising and training.
- Component B supported seismic risk mitigation for public buildings through retrofits and reconstruction of priority public buildings, and providing technical assistance for cultural heritage buildings.

- Component C (labeled “enforcement of building codes”) supported indirect efforts to mitigate seismic risks in private buildings, through awareness programs, training of engineers, and pilot efforts to digitize municipal permitting processes.
- Component D supported project management.

1.7 The World Bank initially provided \$US 400 million in financing from the International Bank of Reconstruction and Development, followed by an additional \$US \$150 million in additional financing. Additional resources were used to expand the scale of the project and fund additional activities.

**Table 1.1. World Bank financing for ISMEP by component, in millions of \$US**

<b>Component</b>	<b>Appraisal estimate (2005)</b>	<b>Additional financing estimate (2011)</b>	<b>Total estimate</b>	<b>Actual cost (2015)</b>
<b>Enhancing emergency preparedness</b>	68.7	38.2	107.9	78.7
<b>Seismic risk mitigation for public facilities</b>	283.9	108.9	392.8	440.8
<b>Enforcement of building codes</b>	6.4	0	6.4	6.7
<b>Project management</b>	7.9	3	10.9	9.25
<b>Contingencies</b>	33.0	0	33	
<b>Total</b>	<b>400</b>	<b>150</b>	<b>550</b>	<b>535.5</b>

Source: World Bank ICR, 2016

1.8 Financing of the project can be distinguished between the World Bank financing (from the initial loan and an additional financing) and parallel financing provided by four other international financial institutions (IFIs) through 8 separate loans.

**Table 1.2. Financing of the ISMEP program**

<b>Financing source</b>	<b>Committed financing (millions of Euro)</b>	<b>Financing disbursed as of January 2018 (millions of Euro)</b>
<b>World Bank</b>	<b>419.8</b>	<b>415.3</b>
<b>European Investment Bank</b>	<b>600</b>	<b>512.4</b>
<b>Council of Europe Development Bank</b>	<b>500</b>	<b>406.6</b>
<b>Islamic Development Bank</b>	<b>247.9</b>	<b>146.1</b>
<b>KfW</b>	<b>250</b>	<b>16.0</b>
<b>Total</b>	<b>2,017.7</b>	<b>1,496.5</b>

Note: World Bank financing disbursed by December 2015. Financing from non-World Bank sources is ongoing as the program remains active.

Source: IPCU.

## **2. What Worked, and Why?**

### **Design and Preparation**

2.1 **The project design was specifically focused in reducing disaster risk and vulnerability as a standalone project, rather than as an emergency response and reconstruction/rehabilitation project.** This was the first such large scale disaster risk reduction project in Turkey that was implemented without being a direct response to a disaster, and it came at a time when such projects were also not common in the World Bank. While the project occurred in part because of awareness to disaster risk raised by the 1999 Marmara earthquake, the World Bank capitalized well on this opportunity to encourage a risk reduction project, and the government remained engaged and focused on disaster risk reduction even several years after the disaster had occurred.

2.2 Istanbul was the logical highest priority for earthquake risk reduction and the project rightly selected Istanbul as its focus. Istanbul faced a high seismic risk: expert projections in 2004 estimated the probability of a major earthquake in Istanbul in 30 years as 62%, with estimated damage of US\$ 20-60 billion (World Bank 2005). It was the center of economic activity in Turkey: the largest population center, and 28% of national GDP, 38% of national industrial output, and 44% of tax income (World Bank 2016). Though with higher average income than the rest of Turkey, Istanbul was also home to many poor and vulnerable residents. A major earthquake in Istanbul would be catastrophic, and could risk derailing the country's development trajectory in a way that few other risks could trigger.

**2.3 A major success driver was the decision to adopt a sub-national, multi-sectoral approach, with the project and its implementation unit housed locally within Istanbul.** The project was housed at the provincial level (initially under the Istanbul Special Provincial Administration, and then under the Istanbul governorship), with a project coordination unit based in Istanbul, and a governance structure based around a multi-agency steering committee chaired by the Governor of Istanbul, and supporting project beneficiaries across multiple ministries and agencies.<sup>2</sup> This approach was unique in Turkey, which has a highly centralized government and where development projects are typically run through a single central government line ministry. This model required legislation to be passed to enable the project, to allow international financial institution funds to be channeled to a subnational entity, and to allow the project investments to occur outside of the regular national budgeting process.<sup>3</sup> This was possible because of the support in government at the highest levels for risk reduction in Istanbul, based on the belief that only in this model could implementation be expedited and funds used efficiently.

**2.4** The approach had several advantages. A focus on a single city rather than a national project allowed for a critical mass of activity and synergy between different components. Some stakeholders raised concerns that a project operated out of Ankara and through national ministries would have had difficulty resisting pressures for resources to be spread through the country rather than concentrated in Istanbul, the area of highest need. Locating the PCU in Istanbul made it much easier to engage and to build relationships with local agencies, stakeholders, and beneficiaries, and to identify and address their needs. Stakeholders interviewed by IEG argued that projects housed in Ankara often faced difficulty in communications between central government ministries and their provincial directorates. It facilitated faster, more efficient, and better decision-making. It enabled easier interaction with contractors, consultants, and construction sites.

**2.5** Stakeholders in Istanbul interviewed by IEG universally preferred this place-based multi-sector model (as compared to a centralized model of sectoral projects carried out by national line ministries), and argued that such an approach should be replicated elsewhere in Turkey. Yet, one downside of the approach is that it may have hindered central government ownership and replication, and it may also hinder sustainable capacity building (see section 3).

**2.6 The project design covered many of the most critical needs for improving disaster risk management.** The project largely covered aspects of disaster risk management laid out in typical typologies. For example, the World Bank's CityStrength Diagnostic tool for assessing urban resilience identifies disaster risk management needs in terms of institutional capacity, risk identification, financing, planning, preparedness, risk awareness, recovery, and financial protection (World Bank 2015). The project included elements to address all of these except financial protection (see below).

**2.7** The selection of activities was based on a sound analysis of needed disaster risk management priorities, including significant analysis carried out under the previous MEER project. The physical vulnerability of the building stock was high. Building codes had not included high levels of earthquake engineering until 1998, and most structures had been built before this time. Government priorities at the time of preparation were for schools, hospitals,

and bridges and viaducts; ISMEP focused on the first two as infrastructure was covered by other projects.<sup>4</sup> These were logical priorities as schools could function as emergency shelters in the wake of a disaster, hospitals would be needed for treating those injured by a disaster, and transport infrastructure would be needed to facilitate emergency response. The weaknesses in emergency response and preparedness capacity had been revealed by the 1999 Marmara earthquake. But the World Bank worked successfully to ensure that the project was more than a construction project, with government agreeing to include awareness raising, training, and other “soft” activities.

2.8 There is evidence of synergies between components. Combining multiple types of activities through a single PCU led to more efficient delivery than if they had been managed by separate implementers. There were synergies from covering works across multiple sectors – while in principle works could have been carried out for health and education ministries, it would have been more difficult and more expensive to carry out upgrades for smaller agencies (dormitories agency, surveying and monuments agency) if they had not been part of a large single project. It was easier to get approval from decision-makers to fund the “soft” interventions such as awareness raising, training and pilots when they were combined with major expenditure on civil works. The existence of major works combined well with awareness raising efforts. School retrofits and reconstruction served as an entry point for talking to families about disaster risk management and emergency response, and the visibility of risk reduction works being carried out also contributed to awareness raising. Repeated exposure to disaster risk reduction efforts through different channels may have had a cumulative effect on awareness raising. During the IEG mission, stakeholders interviewed by IEG on one part of the project would often volunteer their impressions on other parts of the project – e.g. that their child or a relative went to an ISMEP-supported school, or had been through the schools training program.

2.9 **The design set an appropriate project scope, setting ambitious but realistic goals.** The project design focused largely on reducing risk in public buildings, with relatively little support for reducing private sector disaster risk, which remains very high (especially for private housing). During preparation, the project considered including more substantial intervention seeking to carry out risk reduction retrofits for private housing. Vulnerability assessments were conducted for apartment buildings, and feasibility studies were carried out to estimate residents’ willingness to pay for retrofits.

2.10 Private housing risk reduction was dropped from the project design for several reasons, and given these it may not have been realistic to proceed. The appetite at the time from central government for financing support for private housing retrofits was mixed, based on concerns about the appropriateness of using public funds and international financing to effectively subsidize private assets.<sup>5</sup> Household willingness to pay for retrofits was relatively low. There were many details of financing models and approaches which were unresolved at the point of project preparation and would have been difficult to resolve quickly. The project might have either had to delay approval of the project to seek to resolve these, or defer major design decisions to the implementation phase. At the time, concepts of upgrading were at the individual building level; over time many experts have come to believe that area-based concepts for urban transformation are more appropriate, and these did not exist in Turkey at the time of project design. The legal basis of many aspects of urban



transformation did not exist at the time of project design. The project design was already ambitious, and the necessary scale for financing for public buildings far outstripped the initial project financing of \$US 400 million. The decision not to expand the project scope further by including financing for risk reduction of private buildings is likely to have been correct given the country circumstances at the time.

2.11 Private housing remains vulnerable, and could still benefit from future support. Concepts of “urban transformation” or “urban renewal” have become a priority for government and private stakeholders. Models of urban transformation have not yet been very successful in Turkey and face many complicated challenges (see Appendix H).

2.12 Financial disaster risk management remains an issue for Turkey, but on balance it would not have been advisable to seek to include this in the design. ISMEP never proposed a financial disaster risk management component, but this was not a design flaw. A catastrophic insurance system (TCIP) exists for private housing, supported by a previous World Bank project. Coverage under TCIP in principle is compulsory, but there are no penalties or enforcement for dropping coverage. The participation rate of private housing covered by the program has increased over time but has remained relatively low, with less than one third of buildings in Istanbul covered by the insurance (Başbuğ-Erkan and Yılmaz, 2015).<sup>6</sup> Private insurance covers only asset damage, not loss of business income. There is scope for reform that might increase insurance coverage further or provide incentives for risk reduction investments. For the public sector, there is minimal financial disaster risk management, and it is prohibited under Turkish law for public agencies to purchase insurance. This leaves major explicit and implicit risks to public entities at all level; a major earthquake would have very serious fiscal consequences that the government may struggle to manage. Yet, these are national problems that would require national policy reform and legislative change; it would have been difficult for ISMEP to make progress on this issue given its design as a city-based risk reduction project, and expanding the project to cover national level issues might have weakened its ability to deliver city-level results. There was little interest in central government for alternatives such as catastrophe bonds, and seeking to add complex financial instruments may have over-complicated the project.

## **Implementation and Supervision**

2.13 **Implementation benefited greatly from a semi-autonomous, highly capable, professional project coordination/implementation unit.** Many stakeholders identified the performance of the Istanbul Project Coordination Unit (IPCU) as a major driver of project success, and that this was based on structural factors as well as strong performance from staff and leadership. The PCU was housed under the provincial government and was supervised by them, but acted relatively independently from government agencies as both an implementer and a coordinating body between stakeholders. This gave the unit some freedom to maneuver, improving efficiency and timeliness of decision-making. Projects in Turkey are typically managed by career civil servants housed in line ministries, so the use of a model of a professional project implementation unit was unusual and innovative for Turkey.

2.14 The unit brought in some staff from the Prime Minister's implementation unit who had prior experience in World Bank projects, which helped with ensuring that there was understanding of the rules and approaches of the Bank.<sup>7</sup> The PCU built and expanded its capacity over time through rigorous and meritocratic hiring, and through training and peer learning. Private sector salaries meant that the unit was able to attract and retain high quality staff, which contributed to sustained capacity and continuity.

2.15 The PCU earned trust and support from actors in Istanbul and from IFI financiers based on effective relationship building, a track record of delivery capability, high quality service, and responsiveness to the needs and requests from project beneficiaries. It was seen as impartial between stakeholders and beneficiaries, and fair. Stakeholders interviewed by IEG were unanimous in their praise for the unit. The unit demonstrated high technical capacity, especially on engineering issues and project implementation experience, which helped to overcome capacity constraints within the line ministries. A self-evaluation carried out by Deloitte for the PCU also emphasized the project implementation model and performance as a success factor (IPCU 2014).<sup>8</sup> Many stakeholders emphasized the potential of the PCU to be used in the future to support other disaster risk management projects, or for any future DRM projects elsewhere in Turkey to draw on the staff and institutional experience from ISMEP.

2.16 **A strong project platform made it possible for the project to attract substantial additional financing and so to increase its scale.** The World Bank helped the project to establish its core model, including its implementation arrangements and its financial management, procurement, monitoring & evaluation systems. Based on this well-functioning and transparent system and PCU, and confidence in World Bank standards and oversight, other IFIs were comfortable in adding their own financial support largely using the existing systems (though with some small tweaks to meet their own internal rules), allowing the project scale to be increased substantially. The Turkish Treasury was effective in working with other IFIs to establish their financing support for ISMEP, and interviews with World Bank and IFI officials made it clear that the World Bank involvement in establishing this core project model was critical for accessing broader IFI finance.

2.17 The initial project cost was €10 million (\$US 400 million), fully financed by the World Bank. But over the course of the project, parallel financing was provided by the European Investment Bank, Council of Europe Investment Bank, Islamic Development Bank, and KfW.<sup>9</sup> As of 2015 when World Bank financing was completed, total financing committed was €1,780 million, and this had reached €2,018 million as of February 2018 (roughly \$US 2,300 million). The World Bank continued to provide detailed technical support through supervision, while other IFIs contributed primarily through their financing, and their focus was largely on the building retrofits and reconstruction rather than other components of the project.

2.18 IFI financing offered advantages to Turkey. IFIs offered interest rates below that of market rates for Turkish government bonds, and IFIs were able to provide much longer loan tenure than for public financing, which was important for the long-term nature of the investments. The economic analysis carried out under the project estimated the cost

advantage to Turkey from IFI rather than government financing, as government Eurobond financing would have been roughly 11% more expensive than IFI financing (ISMEP 2016).

**2.19 The project developed and implemented an evidence-based system for identifying investment priorities especially for schools and hospitals.** Overall decisions on prioritization across sector and major decisions were taken by a high level multi-stakeholder steering committee chaired by the governorship. This helped to balance competing priorities across stakeholders and, by acting jointly and transparently across the stakeholders, helped to insulate the project from any hypothetical political pressure, and to decline some requests for funding for items which were not closely related to disaster mitigation.<sup>10</sup> Beneath this, the project selected investment priorities within sectors using a points system based on risk and utility, drawing on technical data about buildings, capacity, accessibility, proximity to fault lines, and other factors. This helped to avoid subjective decision-making and to avoid disputes between beneficiaries. Creating a rank-ordered list of investment priorities also made it easier to manage scale-up of the program over time. As additional financing was added, implementation was straightforward as there was a clear schedule of procurement packages, and additional resources could then be applied to this list.

**2.20 The project benefited from practical and effective approaches to procurement.** Many stakeholders cited the project procurement systems following World Bank rules as superior to those used by most government projects. International competitive bidding was used for large assets like hospitals where there could potentially be benefits from international expertise, but domestic competitive bidding was used for smaller packages, which made sense given substantial capacity and experience of Turkish construction sector. Eligibility standards for domestic bidders were higher than for typical government construction contracts, which may have helped with quality of works and timeliness of completion. A few stakeholders argued that publication of international competitive bidding tenders in English and use of foreign consultants from IFIs to prepare some specifications made it more difficult for domestic contractors to compete for some contracts. Private companies broadly praised procurement contracts as clearly written, with detailed specifications and a high degree of transparency. Most works used a lump-sum contracting approach, which provided incentives for cost minimization and efficient delivery. Physically nearby buildings were combined in procurement packages to promote efficient resource use.

**2.21 The project benefited from sustained support from the World Bank over a decade.** Even in a large and high capacity country such as Turkey, World Bank involvement was able to provide significant added value. Financing itself was of significant value – with €420 million across the original loan and additional financing, the Bank was the third largest financing source for the project. The World Bank was able to help provide linkages to technical knowledge in niche areas where there were gaps in domestic knowledge or capacity – for example in helping to introduce seismic base isolation technology to Turkey. Even where domestic expertise existed, the Bank involvement helped to provide credibility to reassure stakeholders that solutions being proposed were correct – for example in providing confidence that retrofitting guidelines met international good practice standards. The World Bank involvement helped ensure and bring confidence that tenders were meeting international standards and would be competitive and fair. In design and through supervision, it helped to emphasize the “soft” elements of the program (awareness raising,

pilots, etc.), and especially the social aspects of the project. The Bank involvement and engagement with the central government helped to protect the project from political pressure, and to retain meritocratic and evidence-based approaches to staffing and decision-making. The World Bank's involvement helped to create platforms for stakeholders to work together. When the World Bank completed its financing in 2015, the project still had further scope for additional financing of construction works, which were largely proceeding well without World Bank involvement, but which arguably were not the Bank's comparative advantage over other IFIs.<sup>11</sup>

## Results

**2.22 There has been a significant reduction in vulnerability to earthquakes in Istanbul for public buildings.** The project financed retrofits and reconstruction of 1,325 buildings across 1,049 campuses as of January 2018, achieving the project objective on strengthening critical public facilities for earthquake resistance.<sup>12</sup> This represents a large share of earthquake-vulnerable public buildings in Istanbul, especially for schools. The project retrofitted or reconstructed 1,096 of the 1,352 public schools in Istanbul constructed prior to 1998 – 88% of the full population known to need structural improvements. These schools have more than 1,447,533 users who are now safer.<sup>13</sup> Reconstructions were carried out under modern building standards which mandate standards for structural performance in earthquakes and retrofits were carried out under technical guidance established under the project (and which also meet structural performance standards as laid out in the Turkish building code and regulations).

**Table 2.1. Retrofits and reconstruction works under ISMEP as of January 2018**

TYPE OF BUILDING		ISMEP TOTAL	
		Campus	Building
Schools	Retrofitting	632	784
	Reconstruction	283	312
Hospitals	Retrofitting	12	48
	Reconstruction	6	6
Policlinic & Health Centers	Retrofitting	59	59
	Reconstruction	2	2
Dormitories	Retrofitting	12	28
	Reconstruction	1	10
Social Service Buildings	Retrofitting	8	16
	Reconstruction	2	6
Administrative Buildings	Retrofitting	25	43
	Reconstruction	7	11
TOTAL		1049	1325

Source: IPCU

Note: This includes both those works financed by the World Bank (806 buildings) but also those financed by other IFIs. The World Bank share of buildings is much larger than its share of financing because the World Bank interventions focused more on retrofits, especially for smaller buildings such as schools, whereas other IFIs financed a larger share of expensive hospital reconstructions.

2.23 These upgrades will save lives. All the project buildings are significantly more resistant to earthquakes than in past, and will lead to reduced mortality, injury, and structural damage when an earthquake occurs, as well as improved service continuity. An assessment by the project of ISMEP schools suggested that damage to buildings would be reduced from 40% without the project to 5% with the project (World Bank 2016), with other estimates of even larger benefits.<sup>14</sup> The World Bank’s economic analysis estimated that the works covered under World Bank financing would save at least 3,000 lives in the event of a major earthquake (or more depending on the time of day of the event) (World Bank 2016). One government official noted an example where a major building complex collapsed as demolition work was commencing, indicating that the building was in very poor condition and would almost surely have been destroyed during a major earthquake, leading to hundreds of deaths. A replacement building constructed under ISMEP is much safer.

2.24 **ISMEP produced high quality buildings, superior to typical new construction for public buildings in Turkey.** This contributed to achieving the objective on strengthening critical public facilities for earthquake resistance. Project beneficiaries argued passionately that ISMEP construction works (especially for schools and hospitals) were of dramatically higher quality than typical public construction in Turkey. Some argued that these works were the best in the country for public structures. (An important caveat is the new design of “city hospitals” being constructed through public private partnership approaches completely separate from ISMEP; most stakeholders argued that these buildings had learned from but also surpassed ISMEP designs in several ways – though that they also came at significantly higher cost.)

2.25 Several factors in the design and implementation of subprojects contributed to this. ISMEP buildings used customized designs suited to each individual site, even for smaller works such as schools; typical school construction in Turkey follows mass-production of pre-determined models, without customization to the specific site. ISMEP designs used better and more durable materials, included factors that reduced maintenance especially for building exteriors. Designs emphasized energy efficiency (meeting LEED standards) and green principles (in materials, water efficiency, etc.) at a time when this had been a marginal priority in Turkey. These are leading to lower operational and maintenance costs. Designs sought to adopt a holistic view of building needs and users. Retrofit designs did not just carry out structural retrofitting to address seismic risk but also brought structures into line with other standards including safety and disability access. Designs addressed psycho-social factors and improved amenity values such as creating interior spaces with higher use value than older schools, landscaping, and other features.<sup>15</sup> Designs introduced some new technologies to Turkey. In particular, ISMEP hospitals brought the first use of seismic base isolation in Turkey. This has been standardized, and now the ministry of health adopts this technology for all large new hospitals.<sup>16</sup>

2.26 ISMEP construction projects used a model with a consulting engineer to supervise construction, even for relatively smaller projects such as schools. This added some upfront costs, but helped to ensure higher quality of materials used, and several stakeholders argued it contributed to construction processes that ran more smoothly than was the norm for public works.

**2.27 ISMEP civil works were cost-effective.** This contributed to achieving the objective on strengthening critical public facilities for earthquake resistance, as cost savings allowed for a larger than expected number of buildings to be covered. Cost comparisons can be made most easily for newly constructed schools. ISMEP schools had upfront costs that were 10-20% higher than standard construction for national schools (ISMEP, 2017).<sup>17</sup> But a number of factors mean that this is an incomplete comparison. ISMEP schools were constructed solely in Istanbul, which faces a number of higher cost factors as compared to the rest of Turkey.<sup>18</sup> ISMEP school costs included a number of features not covered in typical school construction costs, including infrastructure connections, landscaping and amenities, service continuity measures (water storage, generators, etc.), and ability to function as an emergency shelter. ISMEP schools also included higher quality materials and energy efficiency measures. ISMEP's approach did involve some additional expenditures over typical construction models through use of site-specific customized designs and supervising engineers during construction – but stakeholders argued that these contributed to higher quality and superior facilities. Nearly all stakeholders interviewed by IEG argued that evidence suggests that marginally higher upfront costs for ISMEP schools were likely to be outweighed by lower life cycle costs based on longer lasting buildings, reduced operations and maintenance requirements, and improved energy efficiency. For hospitals, ISMEP hospital construction costs were lower than those constructed under the PPP city hospital program by roughly 10-15%, but those city hospitals may have higher quality levels and features in some aspects. Some ISMEP hospitals have faced cost overruns and delays, driven in part by increases in standards during the project period and by higher costs for imported materials due to exchange rate depreciation.

**2.28 ISMEP supported a dramatic improvement in institutional and technical capacity for disaster management and emergency response in Istanbul, achieving this objective.** Prior to the project, there was little capacity to coordinate disaster response efforts. After the 1999 earthquake, it took 5 days to get information flows from the site of the disaster to the central government, because all systems had failed. Management of disaster risks by government agencies was almost non-existent, responsibilities for DRM were scattered across disparate agencies separate agencies and were a low priority for most of them. Resources for DRM work were limited.

**2.29** With ISMEP support, both the technical and institutional capacity were created to manage disaster response. Agencies were brought together under a provincial disaster risk management agency which served a coordination function, which was then also established at the national level. Expertise, prioritization, and ownership of DRM has been improved in key government agencies. Coordination between agencies has been significantly improved. Emergency response command and control centers have been constructed with world class information management systems. These improvements have been tested and sustained through simulation exercises, including major drills with participation from senior officials and from the 114 public and private organizations under the coordination of the provincial disaster management agency. A new disaster plan was created for Istanbul under ISMEP, and this helped to trigger creation of a national disaster plan. Old disaster plans expected large-scale use of tent cities in the wake a disaster, but under the new plans and ISMEP civil works, schools are outfitted and capable to be used as shelters.<sup>19</sup>

2.30 Search and rescue capacity was boosted to world class level, and the Istanbul agency received the highest level of international certification from International Search and Rescue Advisory Group (INSARAG) hosted by the United Nations, which demonstrates achievement a high level of capacity and interoperability for international relief efforts.<sup>20</sup> This has had positive spillover effects elsewhere in Turkey through knowledge sharing and training by the Istanbul agency, including supporting accreditation of the Ankara agency, and creation of a national certification system that is creating incentives to raise standards for search and rescue elsewhere in the country. Improved capacity has been used within Turkey, such as for the Van earthquake in 2011, and for the catastrophic earthquake in Nepal in 2015.

**2.31 Awareness raising and training activities have had a positive effect, and were successful in part because of their scale and synergy with other project activities.** These contributed to disaster management and emergency response capacity, as well as to overall preparedness. The project supported by far the largest public awareness raising and training programs for disaster risk management that Turkey had seen. 15 training modules were developed and used across a range of topics including what to do after an earthquake, awareness raising for disaster insurance, risk mitigation measures, disaster emergency aid planning, and urban planning and reconstruction. These programs included school and university students, other children, civil society organizations, parent-teacher associations, community centers, and government agencies. Collectively these programs trained over 1 million people – far exceeding initial project targets of 75,000, due to both expanded financing and high interest from participants. Public awareness campaigns were estimated to reach 2.5 million people (mostly through the Safe Life website).

2.32 There is some evidence of success of awareness raising and training programs. A qualitative evaluation of the “Safe life” program (one of the main training programs covering over 250,000 people) carried out by the project found some evidence that those trained had significantly higher rates of carrying out earthquake safety behavior than those who did not (AKADEMETR 2012b).<sup>21</sup> Stakeholders reported that school training programs facilitated dialog between parents and schools around emergency preparedness. In interviews, some stakeholders credited awareness raising under ISMEP with contributing to behavior change by homeowners. They suggested that homeowners were more likely to question whether their building was safe, and to prefer housing that had met standards or had been retrofitted. In principle, this could begin to affect investor incentives to favor safer buildings, and household willingness to pay for retrofits.

2.33 Stakeholders argued that several factors helped to support positive outcomes from the awareness raising campaign: the large-scale effort and high level of funding, consistent support and promotion from the PCU, the involvement of government decision-makers, the wide range of programs with synergies and mutual reinforcement, the repetition of messages and branding across programs, and a coherent overall design approach. There were synergies between the awareness raising and investment activities. For example, earthquake retrofitting or reconstruction of schools became a discussion point that expanded the interest of families in emergency preparedness.

2.34 Most awareness raising programs are being at least partially sustained and institutionalized (though at a lower pace than in earlier periods when World Bank financing

was available), and some are being scaled up and replicated elsewhere in Turkey. The awareness raising programs have established a structure, approach, and materials that other disaster awareness programs are seeking to adopt. The Safe Life and school trainings are being implemented nationwide. An important exception is the volunteer program, where the program lacks resources and has not seen much continuity as of 2018, but plans are in progress to do so.

### 3. What Didn't Work, and Why?

3.1 The project was very successful and had few deficiencies. However, there were some missed opportunities largely for increasing the impact of the project beyond its scope and objectives.

#### Design and Preparation

3.2 **Some design elements – the sub-national implementation model, the professional implementation unit, and the extra-budget financing arrangements – contributed to a lack of replication of the project model.** All three elements were important for the project's success in Istanbul (section 2). Without the implementation unit being institutionally and physically based in Istanbul, it would have been difficult to have a multi-sectoral project coordinating with multiple line ministries, and it would have been more difficult for the project to work and coordinate with local government agencies. Yet this design choice also made it more difficult to manage relationships and coordinate with national agencies. The sub-national approach caused frictions with the centralized line ministry model of Turkish government – placing funds and authority in local entities was unpopular in some central government agencies, as ministries were reluctant to give up control over expenditure. The professional implementation unit model allowed for creation and retention of significant project management expertise – yet some stakeholders claimed that it caused tension with civil servants who thought the out-sourcing model made them look inefficient or who resented the higher salaries paid to PCU staff. The financing of the project outside of the regular budgeting process made it possible to channel IFI resources to a sub-national entity, and allowed for large-scale investment to be carried out beyond what would have been feasible within existing ministry investment budgets. Yet the approach also raised concerns in central government about breaching good public financial management practice, and contributed to a reluctance to authorize similar approaches in future, based in part on concerns about threats to fiscal discipline and to weakened control by central government.

3.3 The professional implementation unit model also presents some disadvantages in terms of capacity building in Turkey. A substantial amount of capacity for project implementation has been built – but in a unit with no clear institutional longevity. It is not clear if this capacity will be sustained when IFI financing is completed and the project ends. In contrast, standard implementation unit models within government line ministries may be more likely to build long term capacity.



## Implementation and Supervision

3.4 **The project had only partial success in demonstrating the effectiveness of retrofitting, and many policymakers remain unconvinced.** Demonstration of retrofitting was not a formal objective or target of the project, but was informally part of the strategy being adopted by the project. Retrofitting rather than reconstruction of older buildings offers advantages in terms of being able to improve the structural resilience of buildings at much lower cost than demolition and reconstruction. There had initially been significant public opposition to retrofitting, and a preference for reconstruction, believing that retrofitting would be inadequate for achieving earthquake safety. The initial project design and World Bank loan was intended to carry out risk mitigation in public buildings primarily through retrofitting<sup>22</sup>, though a project restructuring allowed for additional resources to be used for reconstruction after evidence showed that a larger than expected share of buildings would require reconstruction.<sup>23</sup>

3.5 ISMEP successfully demonstrated retrofitting on a technical level. The project directly financed and implemented retrofitting approaches in public buildings (especially schools), it supported the creation of national building standards for retrofitting<sup>24</sup> which could help to ensure that seismic risks would be handled appropriately, and it supported a large-scale training exercise on these standards for 3,631 engineers (as compared to a target of 2,000) across 30 sessions. The project used a practical rule of thumb for identifying retrofitting needs: retrofitting would be selected only if it was expected to cost less than 40% of reconstruction costs.<sup>25</sup> Under this approach, the cost of retrofitting was much lower than reconstruction costs: reconstruction of schools cost roughly 3.6 to 3.8 times as much as retrofitted schools. Retrofitted schools (carried out separately from ISMEP) performed well during an earthquake in Van in 2011, which also helped to convince technical experts. Engineers interviewed by IEG were unanimous in arguing that retrofitting approaches were cost-effective and appropriate in some circumstances.

3.6 Yet most public officials interviewed by IEG still expressed concerns about or opposition to retrofitting. Some of this may have been driven by the preference of constituents and beneficiaries for newly constructed buildings, which could provide improved amenities and modern design in addition to seismic strengthening. But this did not consider the cost of providing such facilities. Many officials also still expressed skepticism that retrofitted buildings would really be safe. Arguably, more could have been done during ISMEP to work to convince government officials of the advantages of retrofitting as a means of reaching satisfactory safety standards in a cost-effective manner.

## Results

3.7 **While successful in achieving its objectives relating to Istanbul, the project has had little success in achieving replication elsewhere in Turkey.** Although not a specific objective of this project, replication would be technically feasible and desirable in other high large high-risk cities like Izmir or Bursa, or for the greater Marmara region. Istanbul stakeholders interviewed by IEG were unanimous in noting the potential for replication based on both the need for similar upgrades, and the demonstrated success of the model.<sup>26</sup> Yet no other examples of the sub-national multi-sector risk reduction project have been carried out

in Turkey. No national ministries have implemented large structural risk reduction investment programs. The ministry of national education is completing the design for a major program of school construction (in cooperation with the World Bank), and the ministry of health is carrying out a construction program of new hospitals through PPP which meet earthquake safety standards.<sup>27</sup> Plans for risk reduction investments have been created by the national disaster risk agency, but these are not being implanted due to financing constraints, as well as gaps in staffing, project planning, and implementation experience.

3.8 Lack of replication has occurred in part because of a lack of ownership in some central government ministries for the project. While a few central government agencies were represented on the high level steering committee (and others through their provincial directorates), this seemed insufficient to lead to broader ownership. Staff in central government agencies had a positive opinion of ISMEP, but were not always familiar with details of the program. Recently, high turnover of staff in central government especially following internal changes in Turkey after the 2016 attempted coup d'etat has contributed to a lack of knowledge. The location and housing of the PCU in Istanbul also made it more difficult to liaise with and generate central government ownership. Some stakeholders noted wryly that ISMEP seemed to be better known outside of Turkey than in Ankara – the World Bank and the IPCU supported dozens of visits by international delegation to learn from the ISMEP model and success, but contacts from elsewhere in Turkey were less common. Arguably, more could have been done by the World Bank and by the PCU with central government agencies to encourage dissemination, ownership, and replication of the ISMEP model, especially after the creation in 2009 of a national disaster management agency.

3.9 A lack of resources for disaster risk reduction investment is also an important factor. Budget limitations mean that many investments can't be financed at once, and Istanbul was a logical priority. Though financed by IFIs outside of the budget, the loans still added to Turkish debt, and the project had opportunity costs in that IFI resources could have been devoted to other activities that could be perceived as more closely linked to short term growth. Some stakeholders argued that another contributing factor was that the national disaster risk management agency became responsible for managing the government response to the influx of Syrian refugees. This placed a substantial workload on a newly created agency, and made disaster risk reduction efforts a secondary priority. The World Bank also engaged substantially on helping manage the refugee issue, which may have contributed to the Bank being less focused on rolling out disaster vulnerability reduction programs elsewhere in Turkey.

3.10 **Pilot efforts on improving compliance with building codes were successfully implemented, but data was not collected to assess their impact on building code enforcement or disaster vulnerability.** This made it difficult to assess the achievement of the project objective on better enforcement of building codes. The project provided grants to two municipalities in efforts to improve transparency and accountability by adopting digitization in municipal permitting processes. The pilots were successfully implemented in both municipalities, and in both cases helped to trigger substantial additional reforms and investments in service improvement by the municipalities (see section 4). The targeting of the pilots made sense, as both municipalities had high population, ongoing construction, and motivated municipal leadership. The logic of the pilots was plausible: transforming

municipal permitting from paper-based systems to digital systems might lead to improved compliance with building codes (and thus buildings that were less vulnerable to earthquakes) through several pathways:

- Improved access to information and data (for permit processors and building inspectors) and reduced discretion in permitting might improve consistency and reliability of permitting;
- Improved internal transparency and ability of managers to monitor the permitting process might catch accidental errors or reduce the potential for corruption by increasing the likelihood of detection;
- Reducing the time taken for permits to be issued, as well as improving the transparency of the system in terms of timeliness and fairness, might make developers more willing to work through the system and less likely to instead carry out unlicensed construction.

3.11 However, there is little evidence on the degree to which there has been an improvement in building code enforcement or a reduction in earthquake vulnerability. The project preparation and design did not include collection of baseline data on the level of building code compliance prior to the pilots, and no information was generated on compliance afterwards. Some claims on this in the World Bank's completion report were misleading.<sup>28</sup> Experts interviewed by IEG had mixed views on the extent to which permitting processes were actually a major barrier to building code compliance. There was no consensus on the degree to which new private construction violated building codes or land use plans, or on the degree to which any such violations posed a threat to disaster vulnerability – the most commonly cited violations involved constructing additional levels beyond those allowed, or creating building encroachments, in order to expand the number of square meters generated by the development.<sup>29</sup> Some experts argued that the main problem is that zoning plans are revised too easily to make exceptions, and so changing permitting processes would not make much difference. Others argued that the main problem was misaligned incentives for building inspectors<sup>30</sup>, or weaknesses in construction quality, or weaknesses in geotechnical surveys, or from a lack of separate building code for high rise buildings.<sup>31</sup> Stakeholders interviewed by IEG varied in their perspective on the likelihood that the pilots would make much difference for disaster vulnerability of new construction. All these factors would make it more important to have quantitative evidence on the effects of the pilot on disaster vulnerability – such a study might have helped encourage replication of this approach as part of disaster risk reduction efforts in other countries.<sup>32</sup> Instead, the project monitoring and evaluation system focused on permit issuance time, and an impact assessment carried out by the project focused on customer satisfaction with municipal processes.

3.12 Disaster risk mitigation was not the main goal of the pilots from the municipality perspective, so this lack of evidence has not inhibited replication of the digitalization within Turkey. From the project perspective, the goal of the digitalization pilots was as an indirect way of reducing disaster vulnerability. But the municipalities' main motivations for digitization were for efficiency, transparency, and customer service benefits from improved

service provision. The pilots were successful in generating these benefits; they helped to trigger much broader improvements in municipal management in the pilot municipalities, helped serve as a basis for wider investments carried out by the municipalities with their own funds.<sup>33</sup> A degree of replication is occurring elsewhere in metropolitan Istanbul<sup>34</sup>, triggered in part by these pilots, and through inter-municipality knowledge sharing and study tours carried out separately from ISMEP. Stakeholders emphasized the high degree and consistency of ownership and leadership shown by mayors and deputy mayors of the municipalities as the most important factor in the successful implementation and of the pilot and the degree to which municipalities went well beyond the pilots in reforming municipal processes. This and the ability to motivate municipal staff to be open to change are the main barriers to further replication.

### **3.13 Progress on reducing the vulnerability of cultural heritage buildings was slow.**

In terms of contributing to project objectives on strengthening public buildings the project targets were achieved, but stretch goals that were added were not reached. The project approach to retrofits for cultural heritage buildings made sense: vulnerability assessments were carried out for 176 buildings<sup>35</sup>, three buildings were selected as pilots for designing and conducting structural retrofits (one modern, one from the Ottoman period, one ancient building) and designs for retrofits were produced.<sup>36</sup> (The initial project targets included only the vulnerability assessments; the designs and pilots for retrofits were added during implementation.) But as of March 2018, of the three pilots only one was complete, and one partially complete. The main challenge was in reaching agreement between engineers and historical preservation specialists on the appropriate interventions to support for retrofitting. How much strengthening can be done without jeopardizing cultural heritage value? What is an acceptable level of risk to retain? These are difficult questions to resolve, and the World Bank is relatively new to engaging on these issues.<sup>37</sup> Restoration has been carried out for heritage buildings throughout Istanbul, but no other retrofitting has been carried out. However, publication in 2018 of detailed technical guidelines on retrofitting for cultural heritage buildings are likely to be a major step forward. The project helped play a convening role in bringing large groups of stakeholders together in workshops and seminars to discuss and debate issues feeding into these guidelines. Some progress was also made under the pilots at bringing in international expertise, by supporting development of some materials needed for retrofits, and by supporting learning by Turkish experts and workers.

## **4. Other Important Findings**

4.1 Municipal pilots had a range of benefits not directly related to disaster risk management. These were not unexpected, but were not part of the project objectives on disaster vulnerability reduction. As part of the pilots, permitting processes were simplified and streamlined; the number of documents needed for a building permit was reduced (81 to 52), the number of steps needed for building permit issuance was reduced (25 to 18) and the average time taken for building permit issuance was reduced (90 days to 10 days). There were many pure efficiency gains by reducing duplication and overlaps. Impact assessment studies in the pilot municipalities found improved satisfaction levels with municipal services by people visiting permitting and inspection departments (Akadameter Research and

Strategic Planning, 2012). Permitting processes are separate from those about environmental impact assessment or social assessment; no stakeholders interviewed by IEG raised any concerns about potential negative side effects of the simplification.

4.2 There were a number of positive spillover effects from the program. The design of hospitals under ISMEP had some influence on disaster resilience in the design of hospitals under the “city hospital” construction program of the ministry on health. By creating a demand, markets were created for producing some new seismic resistance materials in Turkey. Construction companies and others gained experience in retrofitting techniques and prioritizing seismic resistance through learning by doing. ISMEP may have had some influence on encouraging private sector disaster risk reduction through the creation of a citywide disaster plan which brought private sector stakeholders into the conversation and assigned them roles and responsibilities. Anecdotally, private insurance companies are requiring stricter earthquake risk analysis for clients, which encourage private companies to undertake risk reduction. Some private sector companies are setting up disaster contingency to improve service continuity.

4.3 The project may also have contributed to changing the mindset of decision-makers in Istanbul by raising their awareness and prioritization for earthquake and disaster risk. This has led to greater support from them to proactive risk reduction, including with their own resources. It helped to shift the disaster risk management agency from a focus on disaster response to higher prioritization for risk reduction and mitigation. The ministry of health has adopted key seismic risk mitigation standards for its own hospitals (particularly use of seismic base isolation); the national ministry of education is carrying out some retrofitting works with their own resources. As one government official noted, “ISMEP broadened our horizons and made us realize what is possible.”

4.4 No major concerns were raised about financial management or procurement (see Appendix B). Stakeholders argued that strong governance systems had been established which allowed for disbursement of very large sums with no questions about misuse of funds.

4.5 No major safeguards issues were reported (see Appendix B).

## 5. Lessons

5.1 **A sub-national multisector model can be highly effective for reducing disaster risk in a well-functioning major metropolitan area, even in a country where these approaches are unusual.** In this project, the institutional and physical mapping of the project to the provincial government in Istanbul was a key driver of success. This approach was unique in Turkey in adopting, where major government projects are typically nationwide and managed from the capital through a single line ministry. A multisector project design (supporting disaster risk management across multiple beneficiary ministries and agencies) allowed the project to reach critical mass, to build synergies across activities, and to include activities for smaller agencies as well as the priority works for the education and health sectors. Basing the project in Istanbul improved its ability to identify respond to the needs of beneficiaries and to build relationships with local stakeholders - which were crucial to effective implementation. Housing the PCU outside of line ministries or direct beneficiaries

contributed to stakeholder perceptions of impartiality and improved its ability to serve as a coordinating platform.

**5.2 A semi-autonomous professional project coordination unit can help to ensure effective and efficient project implementation even when dealing with many stakeholders and beneficiary agencies.** This implementation approach was unusual for Turkey, where most projects are implemented centrally through national line ministries. The PCU included staff with prior experience in World Bank disaster risk management projects and was able to manage relationships constructively with Turkish government agencies, the Bank and other IFIs. It was able to attract, develop, and retain significant technical expertise and project management experience. These helped it to deliver high quality outputs in a timely and cost-effective manner.

**5.3 Even highly successful project models may not be replicated if they cannot generate strong government ownership and if they rely on exceptional measures.** In this project, there has been no replication of the model in Turkey due in part to financing constraints, but also due to inconsistent ownership of the project and approach by central government agencies, and by government concerns about exceptional features in the model (operating at a sub-national level in a highly centralized country; operating under unique enabling legislation outside of normal budget procedures). These exceptional features helped to achieve the results in Istanbul, but also made it more difficult to replicate the model elsewhere in Turkey.

**5.4 The World Bank can achieve large scale impact by creating effective project platforms that are able to attract additional financing from other institutions.** Here, the Bank established an institutional framework for project implementation, a set of financial management and procurement procedures, and a track record of success which provided confidence to other IFIs that they would be able to achieve their desired development objectives, and that their resources would be used efficiently and responsibly. This allowed the program to reach a much larger scale than initially envisioned, with roughly 80% of program financing (thus far) coming from non-World Bank sources, even though the Bank was not directly involved in engagements that led to this financing.

**5.5 The World Bank can offer significant value to clients from financing, access to technology, project management experience, and influence - even in megacities in high capacity upper middle-income countries.** Budget constraints meant that large scale investments in risk reduction were likely to be challenging to finance within existing line ministry budgets, so IFI financing was a major part of their appeal, especially given lower interest rates and longer tenure than what the government could access at the time from financial markets. The Bank provided valuable knowledge on technology in some specialist areas. Advice from the task team to the PCU was useful throughout implementation. The technical credibility and impartiality of the Bank helped reassure decisionmakers of design decisions. And the Bank helped to foster dialog and coordination between stakeholders.

**5.6 Pilot efforts may not support learning if they do not have monitoring and evaluation systems that assess their contribution to program objectives and draw conclusions for the design of future interventions.** In this project, municipality pilots in

the project were intended to contribute to disaster risk management by improving compliance of private sector construction with building codes and land use plans. It sought to do this through an innovative method, working indirectly by supporting digitization of municipal processes. If this approach was effective in contributing towards disaster vulnerability reduction, there would be a case for including this approach in future disaster risk management interventions. However, even after successful implementation of the pilots, there is little evidence on the efficacy of the pilots on building code enforcement or disaster management, because the monitoring and evaluation systems focused on data that was most interesting to the municipalities (e.g. efficiency of processes, customer satisfaction) but not on how the pilots contributed to the project objective.

**5.7 Small grants to support municipalities in digitizing their processes can have a significant impact on efficiency and transparency if coupled with highly motivated municipal leadership.** In this project, grant payments of roughly \$US 2 million to each municipality for equipment coupled with advice from the Bank helped to trigger much larger reform efforts by municipalities using their own resources (with at least 10 times the funding). The reforms to processes and systems led to simplification and reduced time to issue permits, along with improved transparency and governance, and customer satisfaction. Even without direct support from the project, the reforms are diffusing further and being replicated in other municipalities.

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<sup>1</sup> A World Bank study estimated direct costs at \$US 3.1 to 6.5 billion and total damage \$US 5 to 9 billion. Studies by the Turkish State Planning Office and Turkish Industrialisation and Businessman's Association estimated direct costs of \$US 6.6 to 10.6 billion and total damage at \$US 9 to 13 billion. (Bibbee et al, 2000)

<sup>2</sup> The steering committee had representatives from certain central government ministries and provincial directors of beneficiary agencies.

<sup>3</sup> Under a provisional article to the Law on Regulating Public Finance and Debt Management (Law No: 4749), Treasury was allowed to fund natural disaster preparedness projects to be carried out in Istanbul by public institutions and organizations rather than general budget institutions. These institutions were also exempted from some provisions related to budgets and accounting.

<sup>4</sup> It was expected that transport infrastructure could be improved through the ministry of highways, which had significant expertise in engineering and project management and were more able to finance large investment programs.

<sup>5</sup> A lack of support from Treasury for spending public resources on private housing was the proximate cause of dropping the planned component.

<sup>6</sup> Reasons for low coverage include household's rational expectations of an implicit government obligation to provide post-disaster financial support, limitations on coverage requirements to cover private housing but not other private buildings, and that documentation to prove coverage is required only to buy or sell a house or establish a new utilities connection, so coverage can be easily dropped for other years. Other barriers include household perceptions of high premium rates, lack of trust in the insurance system, lack of knowledge about the system, and lack of knowledge on disaster risks and vulnerability/

<sup>7</sup> The Prime Minister's office also played an important role in gathering political support for the project, including the legislation needed to enable its financing model.

<sup>8</sup> The Deloitte-authored self-evaluation emphasized that the organizational culture was different than was typical for projects in Turkey. "During interviews, the vast majority of stakeholders has underscored the fact that ISMEP differs significantly from the projects they have executed to date, and have highlighted the uniqueness of the Project by virtue of its flexible structure, management style, efficiency of its financial practices, procurement procedures compliant with international standards, and immunity from bureaucratic processes. The most important feature of ISMEP is that it is being managed by a team that is competent, professional, well-equipped, open to cooperation and has high-level communication skills. IPCU staff is recognized for their efficiency, accessibility, dynamism and vision." (IPCU 2014)

<sup>9</sup> A successful feature of this multi-IFI model was a revolving system, where one IFI would enter and finance works whose preparatory studies can be financed under a previous window, and in turn that IFI would finance studies for a subsequent phase of investment to be financed by another funding source. This model required trust and confidence from the IFI partners, but improved the efficiency of the program in delivering a sustained pipeline of investments.

<sup>10</sup> Some stakeholders noted that multi-sector projects in Turkey are seen as undesirable because of difficulties in managing turf issues across ministries, but this steering committee model was able to negotiate and manage those challenges.

<sup>11</sup> Compared to other IFIs, the World Bank's main advantages were in the design and preparation work to establish the project and the implementation model, the more hands-on supervision and technical advice provided through implementation, and a greater knowledge and focus on non-construction project activities. The comparative advantage of other IFIs was cheaper finance (in some cases) or larger financing volumes.

<sup>12</sup> 806 buildings were completed as of the end of 2015 when the World Bank project closed. The initial project target at appraisal was for roughly 800 buildings, but these were expected to all be retrofits. After it became apparent that some buildings would require reconstruction, the target was revised down to 550 buildings in 2010, on the grounds that reconstruction is more expensive than retrofitting so fewer buildings could be



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covered. After World Bank additional financing, the target was revised upwards to 763 based on the additional resources.

<sup>13</sup> These users are students, teachers, and school staff physically present in the buildings and so potentially at risk during an earthquake. Hospitals, clinics, dormitories, etc. would have many thousands more such users.

<sup>14</sup> IPCU reports that they are technically convinced based on individual building vulnerability assessments that 100% of all the schools reconstructed and 70 % of all the buildings retrofitted are expected to have high damage or full collapse in case of an earthquake of a probable magnitude.

<sup>15</sup> Multiple stakeholders reported, anecdotally, that new ISMEP schools had higher exam performance, in part because more attractive schools had convinced parents to have their children attend the public ISMEP schools rather than private schools. Some suggested that better designed schools may also have facilitated learning. This evaluation did not seek to substantiate these with data.

<sup>16</sup> Some stakeholders also credited the project for rational decision-making, including resisting pressure to use seismic base isolation for schools, where it would not have been needed; this was challenging as there is pressure from users to have the “best” of everything, regardless of cost or need.

<sup>17</sup> Another source shows similar patterns. Data from the Governate of Istanbul for school construction costs in greater Istanbul in 2016-17 found that ISMEP produced 47 schools at an average cost of 1,379 Turkish Lira per square meter (including demolition and debris removal costs), the ministry of national education constructed 25 schools with an average of 1,220 Turkish Lira per square meter (typically on greenfields sites), and private charities financed by donations constructed 48 schools with average costs of 1,962 Turkish Lira per square meter (typically with high standards of materials, design, and quality comparable to ISMEP).

<sup>18</sup> All ISMEP schools required demolition, excavation and debris removal, whereas typical government new school construction takes place on vacant land. Istanbul has high density and often steep topography, adding costs for retaining walls and ground reinforcement. In some cases, construction in Istanbul faces high costs for environmental protection, especially in historic areas.

<sup>19</sup> Each school can provide shelter for 700 people, so the roughly 1,000 schools covered mean that roughly 700,000 people could be accommodated after a disaster. In interviews one expert noted: before ISMEP an emergency challenge was to get people out of the schools after an earthquake; now the challenge is how to get people into the schools, as the structures will be safe and as they will be able to provide services as an emergency shelter.

<sup>20</sup> Istanbul AFAD received INSARAG External Classification (IEC) at the highest standard in 2012, which demonstrates their capacity to provide the full set of search and rescue services. It also demonstrates a commitment to continued sustainability and upgrading, following new guidance.

<sup>21</sup> Trainees reported at higher rates than a control group that they had secured fittings in their house (44% vs 20%), planned with family what to do after a disaster (44% vs 10%), and had purchased earthquake insurance (33% vs 10%). They also reported higher rates of having their building checked for earthquake safety.

<sup>22</sup> A loan covenant capped the allowable share of financing for reconstruction at 20%, and required a no objection for each such case.

<sup>23</sup> Additional financing by the World Bank and by other IFIs also provided for a mix of retrofitting and reconstruction, with other IFIs placing more emphasis on reconstruction.

<sup>24</sup> The project helped to convene engineering professors to draft technical guidance on retrofitting, and then worked with senior government officials to get this issued as a regulation.

<sup>25</sup> This is in line with United States Federal Emergency Management Agency standards.

<sup>26</sup> Stakeholders in Istanbul almost unanimously preferred the multi-sector subnational approach to a traditional approach of sectoral projects through national line ministries, but many decision-makers in Ankara preferred sectoral approaches on the basis that they would be easier to implement and to coordinate. Yet the ISMEP

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experience shows that the former approach can be very effective and that the coordination challenges are surmountable.

<sup>27</sup> These programs are motivated primarily by a need for new facilities to meet demand from expanding populations in cities; disaster risk reduction is not a major motivation though will likely be a co-benefit. The programs have benefited only to a modest degree from ISMEP. For schools, some specifications and technical guidance from ISMEP are in use, but the program is based on mass-production of model schools rather than individually procured school designs as in the ISMEP model, due to budget constraints and the lack of capacity in the ministry to manage individual design across thousands of schools. For hospitals, initial PPP hospital designs did benefit from some ISMEP technical features such as the use of seismic base isolation, but otherwise the contracting and construction models are quite different.

<sup>28</sup> Some claims made about the efficacy of the pilot program in the World Bank completion report were misleading. The ICR stated that “Under the automated, transparent building permitting systems, 1,400 new apartment building permits are issued annually, resulting in 67,000 people/year living in code-compliant housing” (World Bank 2016). But this does not represent the impact of the program. There was no baseline for the degree of code-compliance prior to the permitting system reforms, and no actual measure of building code compliance after the reform.

<sup>29</sup> Some experts argued that as the main cost of development in Istanbul was land prices rather than construction cost, there was little incentive to cut corners on material costs or construction methods.

<sup>30</sup> When construction companies hire building inspectors, inspectors face incentives to not find problems in order to generate repeat business. At the time of the IEG mission in March 2018, a new law for this system to adopt a centralized method of assigning inspectors was pending. Building inspection was also non-mandatory at the time of project design, but was made compulsory nationwide in 2011, which substantially increased the rate of inspection.

<sup>31</sup> There was also no consensus on the degree to which unlicensed construction was a major problem. Some experts argued that it was widespread; others said that there was less unlicensed construction than in the past after a law which mandated prison sentences for unlicensed construction.

<sup>32</sup> An impact evaluation could have conducted engineering studies of a sample of newly constructed buildings before and after the pilot implementation, in both a pilot area and a control area. The costs of this may have been significant, however, and may have required external concessional financing.

<sup>33</sup> For example, in one municipality (Pendik), there has been a transformational approach to the use of technology in municipal processes. A €1.7 million grant from ISMEP for IT infrastructure for running e-government applications helped to trigger more than 10 times this in expenditure from the municipality; the information technology department went from 3 people before the project, to 45 people now. Improvements in transparency and technology were a plank of the mayor’s re-election campaign.

<sup>34</sup> Out of 39 municipalities in Istanbul province, 4 have fully adopted similar pilots, and 3 others are adopting elements of the pilots.

<sup>35</sup> The project covered the 176 cultural heritage buildings under the Directorate of Surveying and Monuments within the Ministry of Culture and Tourism. However, this did not cover other historic buildings such as mosques, which are managed under a separate ministry and agency and represent a substantial share of historic buildings in Istanbul.

<sup>36</sup> The project also supported creation of a database of 176 cultural heritage buildings, recording historical information (art, architecture, etc.) about the buildings. This database has not been used much, and does not seem very closely related to the disaster risk management objectives of the project, but provided some value to cultural agencies may have helped to build relationships and trust needed for disaster risk management progress

<sup>37</sup> A World Bank knowledge piece on cultural heritage and disaster risk management provides some lessons from experience, and uses the ISMEP example as a case study to compare and contrast to other approaches. (World Bank Group 2017).

## Appendix A: Project Ratings

	ICR*	ICR Review*	PPAR
Outcome	Highly Satisfactory	Satisfactory	Highly Satisfactory
Risk to Development Outcome	Negligible	Negligible	Negligible
Bank Performance	Satisfactory	Satisfactory	Satisfactory
Borrower Performance	Highly Satisfactory	Highly Satisfactory	Highly Satisfactory

\* The Implementation Completion Report (ICR) is a self-evaluation by the responsible Bank global practice. The ICR Review is an intermediate IEG product that seeks to independently validate the findings of the ICR.

### Relevance:

The project objectives were highly relevant given Turkey’s high vulnerability to earthquakes, with Istanbul in particular facing a high natural hazard and high exposure due to older buildings that lacked adequate resilience to earthquakes (section 1, section 2). The objectives were relevant to the government’s 10<sup>th</sup> national development plan, which explicitly identified disaster risk management and earthquakes as a national priority. The objectives were aligned with the 2003 Earthquake Master Plan for Istanbul and current plans for seismic risk reduction. The objectives were consistent with the World Bank’s Country Assistance Strategy (FY 04-06) at appraisal, which aimed to make Turkey more resilient to crises (including natural disasters) that disproportionately affect the most vulnerable. The project was also in line with the Bank’s latest Country Partnership Strategy (FY12-15) which included a focus on risk assessment, disaster mitigation and emergency preparedness programs.

Arguably the objectives could have been framed more effectively if they had included vulnerability or risk reduction rather than only improved preparedness. The objective on “enforcement of building codes” could have been framed better. The related component was not really about just building code enforcement, but also other aspects to strengthen private sector resilience. It also is not completely clear whether or not a lack of “enforcement of building codes” was a major driver of private sector vulnerability, and objectives language about improving compliance with building codes might have been more relevant than language on improved enforcement.

Nonetheless, the intention of the objectives was clear and their relevance is rated *High*.

The project design was strong: it covered many important aspects of disaster risk management (section 2), and was clearly related to the project objectives. The project’s implicit theory of change (section 1) was clear and convincing. The civil works were critical for achieving the objective of strengthened public facilities, and the targeted sectors were logical in meeting critical needs. The emergency preparedness components were critical in meeting urgent needs that had been clearly demonstrated in a previous disaster event, and addressed the most significant gaps in institutional and technical capacity for disaster

management and emergency response (section 2). The design deserves credit however for also including valuable “soft” interventions such as awareness raising and training. An innovative pilot effort to improve building code compliance indirectly by improving municipal permitting system transparency and efficiency through digitization and improved customer service was plausible in contributing to disaster risk management objectives and leading to better enforcement of building codes.

The decision not to engage directly on private sector risk reduction was justified given the context at the time (section 2). The project did not consider financial disaster risk management needs, but this also would have been difficult to include within this design (section 2).

Relevance of design is rated *High*.

### **Efficacy:**

A detailed list of project outputs under the World Bank’s financing is listed in Table 2.1 of the project’s completion report (Table 2.1). The main elements of these were presented above in section 2 and section 3. Efficacy is rated against the project’s objectives – some aspects of the program discussed in section 3 on “What didn’t work” related to aspects beyond the project objectives.

Objective 1: Enhancing the institutional and technical capacity for disaster management and emergency response

The project made a major contribution to this through the communication system, information management system, command and control centers, and search and rescue capacity, as well as institutional improvements to enable their functionality (section 2). Disaster preparedness plans have been significantly upgraded. Capacity improvements have been verified through simulation exercises and international certification (section 2). Training programs for emergency volunteers improved public sector and citizen response capacity, and awareness raising programs improved public preparedness (section 2). Coming from low baselines before the project, the improvements were very significant. The project indicators and targets were qualitative with vague targets, but all were achieved:

- Skills and technical capacities of the relevant emergency response units were strengthened
- The new communication system was installed and is fully operational in emergency response facilities
- Emergency management information and communication systems were installed and are used in daily operations
- The Governorship Disaster Management Center and its successor agency were strengthened, and more importantly two larger disaster management centers were established and are operational

- Public safety units were provided with adequate emergency response equipment
- Training programs were carried out far beyond initial targets

Efficacy rating for achievement of this objective is *High*.

Objective 2: Strengthening critical public facilities for earthquake resistance:

Strengthening of public buildings was carried out far beyond initial expectations, because of the additional resources attracted to the project from other IFIs (section 2) and to some extent because of cost efficiencies in civil works. Evidence shows that works were of high quality, and superior to typical government construction (section 2). The strengthened buildings are expected to reduce mortality, injury, economic damage, and service disruption from earthquakes. Some progress was made on cultural heritage buildings (including meeting the project targets of vulnerability assessments), and with the completion of technical guidance for retrofits on such buildings there is a likelihood of continued further progress in the future (section 3).

Table 1 (section 2) presented the works constructed for the overall program, including other IFI support. For the World Bank financing, Table A1 presents the details of the 806 buildings covered, exceeding the target. The initial target was for 800 buildings (all retrofits), the target was revised to 550 buildings when evidence became clear that some reconstructions would be required included (as reconstruction is more expensive than retrofit), the target was increased to 763 buildings with additional financing (for a combination of reconstruction and retrofitting).

Table A1: Retrofitting and reconstruction carried out with World Bank financing

Facility type	Retrofitted	Reconstruction	Total
Schools	626	13	639
Hospitals	38	1	39
Polyclinics & Health centers	40	1	41
Administrative buildings	39	1	40
Dormitories & social service buildings	41	6	47
TOTAL	784	22	806

Source: World Bank 2016 (ICR)Efficacy rating for achievement of this objective is *High*.

Objective 3: Supporting measures for better enforcement of building codes:

Pilot efforts to improve permitting processes for building codes and land use compliance in two municipalities were likely to have some positive effect on building compliance, though the amount cannot be easily determined (section 3). The pilots did not have quantitative targets beyond completion of the outputs, but both municipalities went far beyond the project expectations using their own resources. They also had positive effects beyond disaster risk management (section 4).

Training and certifying 3,631 engineers (against target of 2,000) on retrofitting techniques for seismic mitigation were not really related to enforcement of building codes, but were valuable in increasing the private sector capacity to undertake risk mitigation measures in buildings.

Efficacy rating for achievement of this objective is *Substantial*.

Under the first objective, establishing effective emergency communication and information systems and emergency management centers, combined with training programs, awareness raising and improved response capacity, is likely to lead to more effective post-disaster response, which would reduce the overall human and economic costs of an earthquake. Under the second objective, the design, financing, and implementation of retrofits and reconstruction in public buildings has led to buildings that are more earthquake resistant and is likely to lead to reduced deaths and damage to public buildings when an earthquake strikes. Under the third objective, digitized permitting processes in pilot municipalities have improved the transparency, speed, and accuracy of permitting, which may have led to improved compliance with land use plans and building codes, and so to reduced earthquake damage and deaths in private buildings. Together these contribute to reduced vulnerability from earthquakes.

### **Efficiency:**

The overall efficiency of the project was strong in several aspects.

The project has yielded significant economic value. The World Bank conducted an economic analysis of the project outputs coming from World Bank financing (World Bank 2016), based on reduced earthquake losses. This calculated an ERR of 10%, an NPV of \$US 187 million. The ERR was driven largely by assumptions about the number and value of prevented deaths as well as the probability of an earthquake. Energy efficiency savings were not included.

The project also carried out its own economic analysis for the full program (as of €1,700 million of financing) (IPCU 2016). This analysis found benefit:cost ratios of 6.6-10.9 in the event of an earthquake depending in the scenario, but also found a benefit:cost ratio of 2.3 even in the absence of an earthquake, based largely on reduced heating costs for more energy efficient buildings.<sup>38</sup>

The main innovations of this economic analysis were to include a detailed model of a value

of a statistical life, and to use input-output models to estimate multiplier effects. The project deserves credit for carrying out a substantial ex post economic analysis, which is not typically carried out for even major public investments in Turkey.

Prioritization of retrofits (rather than reconstruction) was an efficient use of resources, in that it reduced the cost of achieving structural resistance (section 3).

The project was cost-effective in producing civil works compared to Turkish public sector norms, when comparing like with like and considering life cycle costs (section 2).

Though there were some delays for specific sub-projects (perhaps inevitably for a project covering over 1,300 buildings and over €1.5 billion in expenditure) these were generally managed well and outputs were delivered eventually. Recently, some hospitals have faced significant delays, due to changes in technical specifications requested by the ministry of health to meet changing standards (e.g. for one hospital to bring into line with new hospital building standards), or because exchange rate depreciation is leading to costs to rise relative to expectations.

Many stakeholders interviewed argued that delivery had generally been smooth and timely, and much faster than typical government construction projects. For example, stakeholders noted that school construction for typical government schools would take 2 years, but 1-1.5 years for ISMEP. A shorter construction time was valuable in that it meant a shorter period when a school was out of use for students. One reason for this was that government construction typically relied on annual budgeting processes for investments, whereas ISMEP with its clearly established IFI financing commitments was able to operate under multi-year budgets which allowed for better forecasting and preparation for which works would be carried out when.

Efficiency of the project is rated *High*.

Outcome: High ratings for relevance of objectives, relevance of design, efficiency, and efficacy ratings for two of the three objectives (with substantial on the third objective) lead to an overall outcome of **Highly Satisfactory**.

**Risk to development outcome:**

There are few concerns about sustainability risks. In the short term, the ISMEP program remains active and is being continued with support from other IFIs. This allows further expansion of the scale of the project and sustains the institutional presence of the PCU as a platform for institutionalizing and maintaining project achievements.

Civil works are being maintained by the beneficiary agencies and there is no evidence of concerns about maintenance. Emergency response capacity is being maintained through the provincial level disaster risk management agency and through regular simulation exercises. Outputs from municipal pilots have been absorbed within those entities as part of their own programs, and ownership from municipal leadership is very high as demonstrated by their own much larger efforts.

There are only a few areas where additional attention to sustainability could be warranted.

- There are some concerns about the capability of maintaining the IT infrastructure for new emergency communication systems. Some stakeholders argued that the disaster coordination agency AFAD lacked the specialist IT capacity for maintaining complex systems. This means that a few parts of the systems are not fully functional.
- Some training courses (such as sensitizing engineers on retrofitting techniques) were one-off and are not being continued. Awareness is likely to decline without a mechanism for ongoing training of engineers (especially for new engineers entering the profession).
- Volunteer program mechanisms have not yet been institutionalized. There has been little support since the World Bank involvement ended.

Risk to development outcome is rated **Negligible**.

### **Bank performance:**

The presence and involvement of the World Bank was critical to the project being established in its form. While there may have been some financing for vulnerability reduction works in public buildings without the World Bank, the Istanbul-based project model, the implementing arrangements, the support from other IFIs, and the awareness raising and pilot elements would have been unlikely to occur without World Bank involvement.

The project was able to build on the preparatory work carried out by a previous Bank-financed disaster risk management project (MEER) including detailed design reports for IT systems, assessments of retrofit needs for public buildings, and other preparatory work.

The project established a strong implementing model, which was key to the project's success (see section 3).

The Bank team identified relevant risk factors and established strategies for mitigating them.

Some stakeholders argued that the World Bank project preparation process and appraisal document helped to create a focal point around which the large number of involved stakeholders could coordinate in understanding and engaging with a complex program.

The indicators established for the project were imperfect (see M&E quality below). The largest weakness was in not generating evidence on the effectiveness of the municipal pilots on building code compliance (see section 3). This constitutes a minor shortcoming.

Quality at entry is rated *Satisfactory*.

The Bank provided sustained support and significant added value through supervision (see section 2)



In addition, the Bank functioned well as an operational partner. There was good turnaround time on requests for no objections, and fast turnaround from requests to the country office in Ankara. The Bank team used the no objections process and supervision mechanisms to provide valuable technical comments and advice. Stakeholders emphasized the constructive cooperation of the Bank team in providing recommendations and ideas for implementation. The Bank team was flexible in considering requests for changes from the PCU, and in agreeing to them when there was a sound technical basis.

Arguably the Bank, particularly through its country office in Ankara, could have done more to help build ownership and confidence in the project at the central government level (section 3). This did not hamper implementation of the model or achievement of the project objectives, but perhaps contributed to a lack of replication. The Bank also perhaps could have established an opportunity for lesson learning and dissemination of these. One downside of the Bank choosing to use its second funding as additional financing rather than a phase 2 project was that it meant there was 11 years between project approval and completion report.

Quality of supervision is rated *Highly Satisfactory*.

These lead to an overall Bank Performance rating of **Satisfactory**.

### **Borrower performance**

The project benefited from a high degree of support from central and sub-national government during preparation. The project was only possible because government decision-makers at the highest level were willing to support the approach including passing legislative exceptions to enable the financing and implementation model. The government was highly committed to investing in risk reduction and prioritizing Istanbul. The provincial ministry of education was highly committed from the outset, and the provincial ministry of health became significantly engaged some time into implementation.

During implementation, the Treasury in particular worked well to bring in other IFIs and expand the scale of the project. Sustained support from the leadership from provincial government (including the governorship and greater municipality, and the provincial directorates of national line ministries) and pilot municipalities through implementation was an important driver of success. The central government adopted retrofitting guidance produced under the project as a national regulation.

By the time of project closure, support from government in Istanbul had remained high ,but central government had limited ownership of the model (see section 3). Yet, this largely weakened the ability to replicate the project, it did not substantially hinder implementation of the project or achievement of project objectives.

Government performance is rated *Highly Satisfactory*.

The project benefited from strong performance by the implementing agency (see section 2). Stakeholders were universally positive in their characterization of the PCU.

The PCU worked well with stakeholders and beneficiaries in Istanbul. Arguably it could have done more to engage central government and work informally on the institutional political issues.

Implementing agency performance is rated *Highly Satisfactory*.

Together these lead to a borrower performance rating of **Highly Satisfactory**.

### **Quality of monitoring and evaluation**

**Design:** The results framework was output-oriented, but in many cases this was difficult to avoid, and they were adequate to provide sufficient information for the first two objectives. For example, the objective on strengthened public buildings was framed as an output, and it would be difficult to find a non-output indicator other than the numbers of buildings retrofitted and reconstructed (in compliance with earthquake resilient standards). Perhaps a better indicator could have been estimated reduction in earthquake damage in a specified population of public buildings.

It is difficult to measure disaster vulnerability or preparedness directly, and the output indicators were broadly adequate to provide evidence of the achievement of objectives. Indicators covered the completion and use of communication and emergency information systems, establishment and testing of disaster management centers, and certification of search and rescue capacity. However, many indicators could have been stated more clearly and in quantitative terms.

A weakness was that the indicators on the municipal pilots were insufficient to generate evidence on the third objective on building code enforcement or compliance (see section 3).

#### **Implementation:**

The project indicators were reported on regularly through implementation.

The project also developed and implemented its own systems for information monitoring separate from the formal results frameworks, particularly for financial monitoring and contract management.

The project carried out 5 “impact assessment” studies during implementation. Most of these were not focused on assessing the impact of project activities, but assessing customer satisfaction and opportunities to improve delivery.

#### **Utilization:**

It is not clear if indicators in the results framework were used to inform decision-making. However, the project did benefit from and make adjustments to how it implemented particular activities based on its studies and other information generated during implementation. In particular, as evidence became available that a larger number of buildings would need reconstruction rather than retrofit, the project adjusted its design and allowed for a higher share of funding to be devoted to reconstruction. The project also devoted additional resources to social guidance and training programs for schools receiving support based on an impact assessment study.

Quality of monitoring and evaluation is rated **Substantial**.

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<sup>38</sup> An attempt was made to estimate energy and water saving based on actual ex post data from individual buildings, but the data collection task turned out to be too difficult and so modeled estimates were used based on actual data on works produced.

## **Appendix B: Other Issues**

### **Financial Management**

The financial management team provided close supervision. The project's management information system was used to monitor all sub-projects efficiently and tracked real-time progress and disbursement status of contracts issued. Interim financial reports were prepared on a regular basis and found adequate by the Bank. Audit reports were submitted on time with unqualified opinions. The project complied with loan covenants at all times. The World Bank rated financial management was rated Highly Satisfactory at project closing (World Bank 2016).

### **Procurement**

Procurement focused on contract bundling and lump-sum contracting, which contributed to cost effectiveness. The project complied with the Bank's procurement procedures (World Bank 2016, ICR para 46). The procurement plan was revised seven times under the original loan and four times under the additional financing to reflect the request from various ministries, actual amounts of the signed contracts and change of dates for milestones specific to procurement packages. The quality of bidding documents was satisfactory and procurement documentation was in order. However, given that the PCU also had to manage several procurement processes of loans from other international financial institutions, it would have been beneficial to hire additional procurement specialists to ensure an even more timely procurement of goods and civil works, especially for hospital construction. (World Bank 2016)

### **Environmental and social safeguards**

The project was classified as category B under OP/BP 4.01 (Environmental Assessment) and triggered OP/BP 4.11 (Physical Cultural Resources). The Environmental Assessment safeguard policy was triggered due to the impact of constructing buildings such as emissions of matter/dust, generation of wastewater, disposal of excavated material, noise pollution, and disposal of hazardous material. An Environmental Management Plan was developed and implemented. The plan identified the responsibilities of civil work contractors, consultants and the PIU. The Bank provided support in assessing the project's compliance with environmental regulations.

The Physical Cultural Resources safeguard policy was triggered due to potential civil works on structures classified as cultural heritage buildings, or on buildings located in close distance to such assets. The Environmental Management Plan included a comprehensive analysis which showed that Turkey's regulation for conserving cultural heritage is aligned with the Bank's requirements. The plan also included mitigation and monitoring measures for sub-projects, which were implemented in a satisfactorily manner. Regular supervision of safeguards did not find any major negative social or environmental impacts due to project activities. Also, the project complied with social safeguards. (World Bank 2016)

## Appendix C: Basic Project Information

**Project cost:** Actual project cost for World Bank financed activities: \$US 563,122,367 vs appraisal cost of \$550,000,000, based on fluctuations of dollar vs Euro exchange rates. There was no Borrower contributed expected or provided.

### World Bank Project Financing:

Country – Turkey

Project Name – Istanbul Seismic Risk Mii

Project ID – P078359, and Additional Financing P122179

ICR Date – June 25, 2016

Original Commitment – \$US 400 million

Revised Amount – \$US 550 million

Environmental Category – B.

IBRD financing of \$US 563,122,367 million was disbursed.

Parallel financing: The initial project design included financing solely from the World Bank (\$400m), but over time other international financial agencies added their own financing, and the World Bank provided additional financing in 2011 (\$150 million).

Total financing was as described below:

<b>Financing source</b>	<b>Committed financing (millions of Euro)</b>	<b>Financing disbursed as of January 2018 (millions of Euro)</b>
<b>World Bank</b>	<b>419.8</b>	<b>415.3</b>
<b>European Investment Bank</b>	<b>600</b>	<b>512.4</b>
<b>Council of Europe Development Bank</b>	<b>500</b>	<b>406.6</b>
<b>Islamic Development Bank</b>	<b>247.9</b>	<b>146.1</b>
<b>KfW</b>	<b>250</b>	<b>16.0</b>
<b>Total</b>	<b>2,017.7</b>	<b>1,496.5</b>

Source: IPCU

**Dates:**

	Expected	Actual
Approval		May 26, 2005
Effectiveness	February 3, 2006	February 3, 2006
Restructuring		March 25, 2010 December 15, 2014
Midterm review	May 30, 2008	October 10, 2008
Additional financing		March 22, 2011
Closing	September 30, 2010	December 31, 2015

- On March 25, 2010 the project was restructured to: i) extend the closing date from September 30, 2010 to December 31, 2011 to allow for more implementation time to compensate for delays related to difficulties contractors were facing during the global financial crisis between 2007 and 2009; ii) reduce the target value for the number of key selected public facilities to be retrofitted/reconstructed from about 800 to 500 facilities to reflect the increased construction unit costs and the higher than anticipated number of priority facilities in need of more expensive reconstruction rather than strengthening.
- On March 22, 2011 an additional loan in the amount of US\$150 million was approved to allow for the acceleration of the implementation of urgent and high priority seismic retrofitting of key public buildings. Also, the project was restructured to: i) extend the closing date from December 31, 2011 to December 31, 2012; ii) revise the Results Framework to reflect the scaled up activities in components A and B; iii) increase the national competitive bidding threshold for civil works based on a portfolio-wide country procurement assessment; and iv) revision of the procurement plan to reflect modifications.
- On December 31, 2012 the original loan was closed and US\$5.0 million was cancelled due to project cost savings.
- On December 5, 2014, the project was restructured to: i) extend the closing date by 12 months due to delays in the provision of site access by two hospitals and; ii) change the Project Implementing Agency from the Istanbul Special Provincial Administration to the Governorship of Istanbul.

## Appendix D: PPAR Overview

### About this Report

The Independent Evaluation Group assesses the programs and activities of the World Bank for two purposes: first, to ensure the integrity of the Bank's self-evaluation process and to verify that the Bank's work is producing the expected results, and second, to help develop improved directions, policies, and procedures through the dissemination of lessons drawn from experience. As part of this work, IEG annually assesses 20-25 percent of the Bank's lending operations through fieldwork. In selecting operations for assessment, preference is given to those that are innovative, large, or complex; those that are relevant to upcoming studies or country evaluations; those for which Executive Directors or Bank management have requested assessments; and those that are likely to generate important lessons.

To prepare a Project Performance Assessment Report (PPAR), IEG staff examine project files and other documents; visit the borrowing country to discuss the operation with the government, and other in-country stakeholders, and interview Bank staff and other donor agency staff both at headquarters and in local offices as appropriate, as well as using other evaluative methods when needed.

Each PPAR is subject to internal IEG peer review, panel review, and management approval. Once cleared internally, the PPAR is commented on by the responsible Bank country director. The PPAR is also sent to the borrower for review. IEG incorporates both Bank and borrower comments as appropriate, and the borrowers' comments are attached to the document that is sent to the Bank's Board of Executive Directors. After an assessment report has been sent to the Board, it is disclosed to the public.

### About the IEG Rating System for World Bank Evaluations

IEG's use of multiple evaluation methods offers both rigor and a necessary level of flexibility to adapt to lending instrument, project design, or sectoral approach. IEG evaluators all apply the same basic method to arrive at their project ratings. Following is the definition and rating scale used for each evaluation criterion (additional information is available on the IEG website: <http://ieg.worldbankgroup.org>).

**Outcome:** The extent to which the operation's major relevant objectives were achieved, or are expected to be achieved, efficiently. The rating has three dimensions: relevance, efficacy, and efficiency. *Relevance* includes relevance of objectives and relevance of design. Relevance of objectives is the extent to which the project's objectives are consistent with the country's current development priorities and with current Bank country and sectoral assistance strategies and corporate goals (expressed in Poverty Reduction Strategy Papers, Country Assistance Strategies, Sector Strategy Papers, Operational Policies). Relevance of design is the extent to which the project's design is consistent with the stated objectives. *Efficacy* is the extent to which the project's objectives were achieved, or are expected to be achieved, taking into account their relative importance. *Efficiency* is the extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared to alternatives. The efficiency dimension generally is not applied to adjustment operations. *Possible ratings for Outcome:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

**Risk to Development Outcome:** The risk, at the time of evaluation, that development outcomes (or expected outcomes) will not be maintained (or realized). *Possible ratings for Risk to Development Outcome:* High, Significant, Moderate, Negligible to Low, Not Evaluable.

**Bank Performance:** The extent to which services provided by the Bank ensured quality at entry of the operation and supported effective implementation through appropriate supervision (including ensuring adequate transition arrangements for regular operation of supported activities after loan/credit closing, toward the achievement of development outcomes. The rating has two dimensions: quality at entry and quality of supervision. *Possible ratings for Bank Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

**Borrower Performance:** The extent to which the borrower (including the government and implementing agency or agencies) ensured quality of preparation and implementation, and complied with covenants and agreements, toward the achievement of development outcomes. The rating has two dimensions: government performance and implementing agency(ies) performance. *Possible ratings for Borrower Performance:* Highly Satisfactory, Satisfactory, Moderately Satisfactory, Moderately Unsatisfactory, Unsatisfactory, Highly Unsatisfactory.

## **Appendix E: Methods and Evidence**

This evaluation is based largely on a) interviews with over 50 project stakeholders in Istanbul and Ankara carried out during a field mission in February-March 2018, b) interviews with international financial agency staff in person or by phone, and c) review of project documents and additional data supplied by the project coordination unit or other sources.

The mission was focused on Istanbul, where the project was housed and where all project works were carried out. The mission included meetings with central government, provincial directorates of central government, the project coordination unit, municipalities (including both pilot municipalities), private sector, and civil society (see Appendix F).

The project already had a solid based of evidence on many of its effects, from a self-evaluation by the World Bank (World Bank 2016), and a self-evaluation by the PCU (IPCU 2014). The IEG evaluation methods sought to complement this existing knowledge.

Stakeholder interviews focused on generating lessons from the program, and on specific questions around: a) the effectiveness of “soft” interventions, b) prospects and barriers for scaleup and replication, c) potential design gaps, d) the added value of the World Bank, e) lessons from the project experience. Stakeholders also often volunteered information on the performance of the PCU, the quality of construction works, and the transformational nature of the project.

The evaluation findings have high confidence, as there was a very high degree of consistency (and sometimes unanimity) among stakeholders on most findings.

Site visits to specific works were not carried out, as these were well documented by existing evidence, and as secondary sources through interviews confirmed this evidence



## **Appendix F: List of Persons Interviewed**

### **World Bank:**

Johannes Zutt, Country Director  
 Tamara Sulukhia, Program Lead  
 Steve Karam, former Program Lead  
 Elif Ayhan, Task Team Leader  
 Jolanta Kryspin-Watson, Task Team Leader  
 Ayse Erkan, Disaster Risk Management specialist  
 Pinar Ariken, Disaster Risk Managemt Analyst  
 Artessa Saldivar-Sali, Senior Municipal Engineer

### **Government of Turkey:**

Undersecretariat of the Treasury:  
 Comments received in writing from Mr. Sedef Aydas

Ministry of Development:  
 Mustafa Bulut, Acting Head  
 Hasan ÇOBAN, Expert  
 Other disaster risk experts

Istanbul Governorship:  
 Mr. Ahmet ÖNAL, Deputy Governor

AFAD:  
 Derya Polat, Department Head, Risk Reduction  
 Mr. İbrahim TARI, Provincial Director, Istanbul Directorate  
 Mr. Tezcan BUCAN, Branch Manager, Istanbul Directorate

National Ministry of Education:  
 Ozcan Duman, Department of Construction  
 Mr. Harun TÜYSÜZ, Deputy Manager, Istanbul Provincial Directorate

Ministry of Health:  
 Suayip Birinci, Deputy Undersecretary, Ministry of Health  
 Mr. Kemal MEMİŞOĞLU, Provincial Director, Istanbul Directorate

ISMEP PCU:  
 Mr. Kazım Gökhan ELGİN, Director  
 Mr. Yalçın KAYA, Deputy Director  
 Mr. Emin ATAK, Deputy Director  
 Mr. İlkey RODOPLU, Deputy Director

Mr. Levent GERDAN, Component A Coordinator  
Ms. Yelda REIS, Senior M&E Expert  
Mr. Yunus UÇAR, Senior Civil Engineer  
Mr. Nevzat YAŞAR, Procurement Expert  
Ms. Gizem ALTIPARMAK, Executive Assistant

İstanbul Directorate of Surveying and Monuments:  
Mr. Salman ÜNLÜGEDİK, Provincial Director

İstanbul Regional Directorate of Credit and Dormitories Agency:  
Mr. Cemil BAĞLAMA, Regional Director

Istanbul Greater Municipality:

Mr. Mahmut BAŞ, Director, Ground and Earthquake Analysis Directorate  
Mr. Gökhan YILMAZ, Chairman, Department of Earthquake Risk Management and Urban Improvement  
Other technical staff.  
Ms. Ayşe Gökbayrak, Deputy Director, Department of Earthquake Risk Management and Urban Improvement  
Ms. Betül ERGÜN KONUKCU, Urban Planner, Department of Earthquake Risk Management and Urban Improvement

Pendik Municipality:

Mr. Sami DİVLELİ, Deputy Mayor  
Mr. İzzet ÖZTOP, Deputy Mayor  
Mr. Vahap DOĞAN, Deputy Mayor  
Mr. Tarık KURU, Survey and Projects Manager  
Mr. Ömer Faruk KARADENİZ, Foreign Affairs Manager  
Mr. Üstün Murat YILDIZ, Director of Foreign Affairs  
Mr. Ahmet AKKOÇ, Deputy Director of Foreign Affairs

Bağcılar Municipality

Mr. Cüneyt YILMAZ, IT Manager  
Mr. M. Doğan ARASLAN, Zoning and Urbanism Director  
Mr. Burhan KARAMAN, IT Employee  
Mr. Selim GÜLER, IT Employee  
Mr. Güven SOLMAZ, Adviser  
Mr. Fatih DURSUN, Adviser

Beykoz Municipality:

Ms. Zeynep ATABEY BÖLÜKBAŞI, Urban Planning Director

**International financial institutions:**

European Investment Bank: Gulcin Gokcan, Radostina Raynova, Kadir Bahcecik, Stefan Wunderlich

Islamic Development Bank: Tolga Yakar

KfW: Jochen Reik, Manfred Molitor

**Civil society, Private sector, other stakeholders:**

Burcak Basbug Erkan, Middle East Technical University

Mr. Mustafa ERDİK, Professor of Earthquake Engineering Bogazici University, Kandilli Observatory and Earthquake Research Institute

Mr. Hüseyin KAYA, İstanbul Medeniyet University

Ms. Elif EROĞLU, PROTA Engineering Project and Consultancy Services, BD and Contracts Division Manager

Ms. Hasan NOKAY, Urban Planner

Mr. Ömer ÜLKER, ÜLKER Consulting Engineers

Ms. Nazan SATI, İstanbul Dialog 360 International Consultancy

Ozgur Pehlivan, Former Dep DG of Treasury

Mr. Cemal GOKCE, Chairman, Turkish Chamber of Civil Engineers

Mr. Nusret SUNA, Istanbul Office Head, Turkish Chamber of Civil Engineers

Mr. Rüstem VANLI, Istanbul Office Head, Association of Building Inspection Organisations

## Appendix G: Additional Data - Risk Reduction for Private Housing

IEG's mission interviewed stakeholders on the potential for engaging on disaster risk reduction in private housing, as part of assessing whether dropping a proposed component in ISMEP was a flaw in the design.

Recent efforts in Turkey to address disaster risk in private housing have largely been covered under a policy approach described as “urban transformation” or “urban renewal”. The topic is the subject of much discussion and debate in Turkey. Urban transformation is regulated under two laws; one on project development areas, and one on authority for transformation of areas under disaster risk. These rules allow for urban transformation projects to be conducted in areas that have been designated as high-risk areas, including demolition of existing structure and replacement by new structures. The broad idea is for this to be done in a way that is financed by the private sector, and that benefits existing landowners, because the overall housing area is increased through higher density development – and that disaster resilience will be increased by building under modern building standards.

Few urban transformation projects have been implemented, and some have been unsuccessful. Projects face a number of challenges including:

- Overlapping responsibilities and unclear authority amongst relevant government agencies
- Lack of a clear entity responsible for implementation among these agencies
- Complications arising from informal settlements and lack of clear title
- Difficulty in establishing a workable financing model
- Needs for area-based models that address infrastructure, amenities, social factors
- Needs to adapt models to local cultural and market preferences
- Needs for providing mixed use models, which are difficult to support under models
- A lack of awareness and confidence in the public that urban transformation will be successful or reliable.

Urban planning experts interviewed by IEG generally argued that in practice the focus has not been on the most disaster-prone areas (but rather on areas where there is interest in development), and that the main motivation for applying urban transformation is based on a desire for development, increased land space, and functional and aesthetic urban improvements (including amenities, green spaces, etc.). Most also argued that there has not yet been a clearly successful model around which scale-up could occur, though many more models are being tested.

The role for the World Bank is not clear. Some argue that the Bank should stay out of private sector real estate or have a very high threshold for engaging, given that housing is a

private good. Any financing from the Bank or IFIs is never going to be large relative to the scale of investments needed for private housing retrofits. It is difficult for the Bank to engage on the policy side without a strong domestic champion. The topic is difficult to work on given powerful and well connected economic interests in the construction sector. The social risks of engaging are significant – some raise concerns that urban transformation will be used largely to support development in rundown areas, and redevelopment and increased property prices might displace existing residents, especially renters. Others note that proposed models are working hard to address these risks.

## Appendix H: Borrower Comments

Istanbul Seismic Risk Mitigation and Emergency Preparedness Project (ISMEP), implemented since 2006, initiated with the World Bank Loan signed by Undersecretariat of Treasury of Turkey and received parallel financing from other international financing institutions (European Investment Bank, Council of European Development Bank, Islamic Development Bank, KfW) through the implementation. The project has been reached to €2,018 million total budget to improve Istanbul's preparedness against earthquakes, through enhancing institutional and technical capacity for disaster management and emergency response, strengthening critical public facilities (schools, hospitals, dormitories, social service and administrative buildings) and supporting building code enforcement.

ISMEP is implemented and coordinated by Istanbul Governorship, Istanbul Project Coordination Unit (IPCU), included highly capable, professional team and benefited through World Bank's international experience and as well as other IFI's. ISMEP is one of the best experiences in the World due to its structural modelling and achievements for risk mitigation and preparedness as a proactive approach.

We would like to thank IEG team and all stakeholders' contribution for preparing this valuable report, which gathered huge amount of implementation data and presented as a summarized and reported very efficient way, shows project's effectiveness and would be a guide for practitioners through lessons learned given in the report.

We, ISMEP team, always believe in the role of learning organization as a key to success in project management, knowledge and experience sharing as a first step to be a learning organization as well. Regarding this principle, we are ready to share our knowledge and experience on disaster risk management through interested parties or institutions who desire to implement similar projects aiming risk reduction and mitigation all over the World.

Yours sincerely,



Kazım Gökhan ELGİN  
Director