



Building e-Resilience in Mongolia
**Enhancing the Role of Information and Communications
Technology for Disaster Risk Management**

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Building e-Resilience in Mongolia: Enhancing the Role of Information and Communications Technology for Disaster Risk Management

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Abbreviations and Acronyms

ADSL	Asymmetric Digital Subscriber Line
CC	Control Centre
CDMA	Code Division Multiple Access
CRC	Communications Regulatory Commission
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DSL	Digital Subscriber Line
EBT	Emergency Broadcasting Terminal
EDGE	Enhanced Data Rates for GSM Evolution
EDWS	Earthquake Disaster Warning System
ESCAP	Economic and Social Commission for Asia and the Pacific (United Nations)
EVDO	Evolution Data Optimized
FttH	Fibre to the Home
FttP	Fibre to the Premise
GIS	Geographic Information System
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communications
HDSL	High-Bit-Rate Digital Subscriber Line
HFA	Hyogo Framework for Action
ICT	Information and Communications Technology
IDD	Information and Communications Technology and Disaster Risk Reduction Division (ESCAP)
IP	Internet Protocol
IPTV	Internet Protocol Television
ISP	Internet Service Provider
ITPTA	Information Technology, Post and Telecommunications Authority
LTE	Long-Term Evolution
MCC	Mobile Control Centre
MPSL	Multi-Protocol Label Switching
NAMEM	National Agency for Meteorology and Environment Monitoring
NEMA	National Emergency Management Agency
PC	Personal Computer
RST	Remote Siren Terminal
SDG	Sustainable Development Goal
SFDRR	Sendai Framework for Disaster Risk Reduction
SMS	Short Message Service
VDSL	Very-High-Bit-Rate Digital Subscriber Line
VoIP	Voice over Internet Protocol
VSAT	Very Small Aperture Terminal
WiMAX	Worldwide Interoperability for Microwave Access

1. Background

The Information and Communications Technology and Disaster Risk Reduction Division (IDD) of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) has conducted a series of research on building e-resilience that examines the use of information and communications technology (ICT) for disaster risk reduction (DRR) in selected Asia-Pacific countries. The research has been carried out as part of the project—“Strengthening information and communications technology capacities for disaster risk reduction and development: Addressing information, knowledge and policy gaps in Asia.” This study is a part of the research series, and focuses on how Mongolia, a landlocked country, makes use of ICTs to manage and reduce disaster risks for social and economic development.

This series of research on e-resilience is in line with ESCAP Resolution 69/10: “Promoting regional information and communications technology connectivity and building knowledge-networked societies in Asia and the Pacific,” adopted by the 69th session of the ESCAP Commission. This resolution calls for member States’ support for regional cooperation towards bridging the digital divide, and developing and implementing comprehensive ICT policies that will build knowledge-networked societies. To achieve this, the analysis of the development of ICTs in correlation with DRR policies throughout landlocked countries in the ESCAP region is vital.

The research series has been developed in light of the adoption of the Sendai Framework for Disaster Risk Reduction 2015-2030 in March 2015, and the adoption of the Sustainable Development Goals (SDGs) in September 2015, particularly SDG 9: Build resilient infrastructure, promote sustainable industrialization and foster innovation.

2. Objective and Scope

The objective of this research is to review the use of ICTs for integrating DRR into development planning in Mongolia, with the overall aim of facilitating the improved capacity of policymakers.

This study examines the readiness, quality and resilience of the ICT infrastructure in Mongolia in terms of providing early warnings, withstanding disaster events and helping in recovery. The study looks at the current condition of fibre optic connectivity networks and broadband, which are critical infrastructure for disaster risk management (DRM), and discusses the importance of universal and affordable access to the Internet for Mongolians by highlighting the ‘digital divide’.

In terms of application, the study features several practices that use ICTs to enhance DRM, including government and private sector initiatives, and those offering opportunities for public-private partnerships in Mongolia. Initiatives include the use of ICTs for early warning, awareness raising, and organizing individuals and communities in the preparation for and response to disasters. The initiatives include those that have used ICTs to improve old techniques, as well as those that have used advanced ICTs for DRM. This is followed by a summary of the key lessons learned from the initiatives, and recommendations for building e-resilience in Mongolia.

3. Introduction

Natural disasters can occur at any place irrespective of the countries' level of development. In Asia and the Pacific, hundreds of thousands of people have lost their lives, and millions have lost their livelihoods due to natural disasters. The human misery and huge economic losses resulting from disasters could be minimized through DRM initiatives.

After the 2005 Kobe Earthquake in Hyogo, Japan, governments around the world committed to take action to reduce disaster risks and adopted the Hyogo Framework for Action 2005-2015 (HFA). The HFA detailed the work that was required from all different sectors and actors to become more resilient to, and better cope with, hazards that threaten development gains. The HFA resulted in some important successes, including the reduction in the number of people directly affected by natural disasters in Asia, a region with the world's highest number of disasters. Yet in the past decade, disasters continued to cause harmful effects, killing more than 700,000 people and displacing another 144 million. Overall, more than 1.5 billion people were affected by disasters in various ways during 2005-2015.

As the HFA expired in 2015, the world community met in Sendai, Japan from 14-18 March 2015 to adopt its successor framework—the Sendai Framework for Disaster Risk Reduction 2015-2030 (SFDRR). The new framework will guide national strategies and international cooperation on disaster preparedness, response, recovery, and the integration of DRR in development measures. The SFDRR targets to reduce damage to infrastructure and disruption to basic services (including health and education facilities), and increase access to early warning systems and information for the public. It also highlights the importance of engaging local authorities and communities affected by disasters.

ICTs can be used to minimize the impacts of disasters in many ways. Disasters come in all shapes and sizes, but one thing they all have in common is that they encompass a geographic location that needs to be prepared for disasters. Individuals and organizations responsible for emergency management before, during and after disasters need an instrument they can use to integrate, organize and analyse challenges and difficulties arising from disasters. They use different instruments to save lives, reduce human suffering, and preserve economic assets before, during and after a catastrophic event. The advancement in ICTs in the forms of the Internet, geographic information systems (GIS), remote sensing, satellite communications, etc. can provide that sort of support, and ease the process of tackling such challenges. GIS, for instance, has the power to improve the quality and undertake in-depth analysis of natural hazards assessments, guide development activities, and assist emergency management in the selection of measures and implementation of emergency preparedness and response.

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