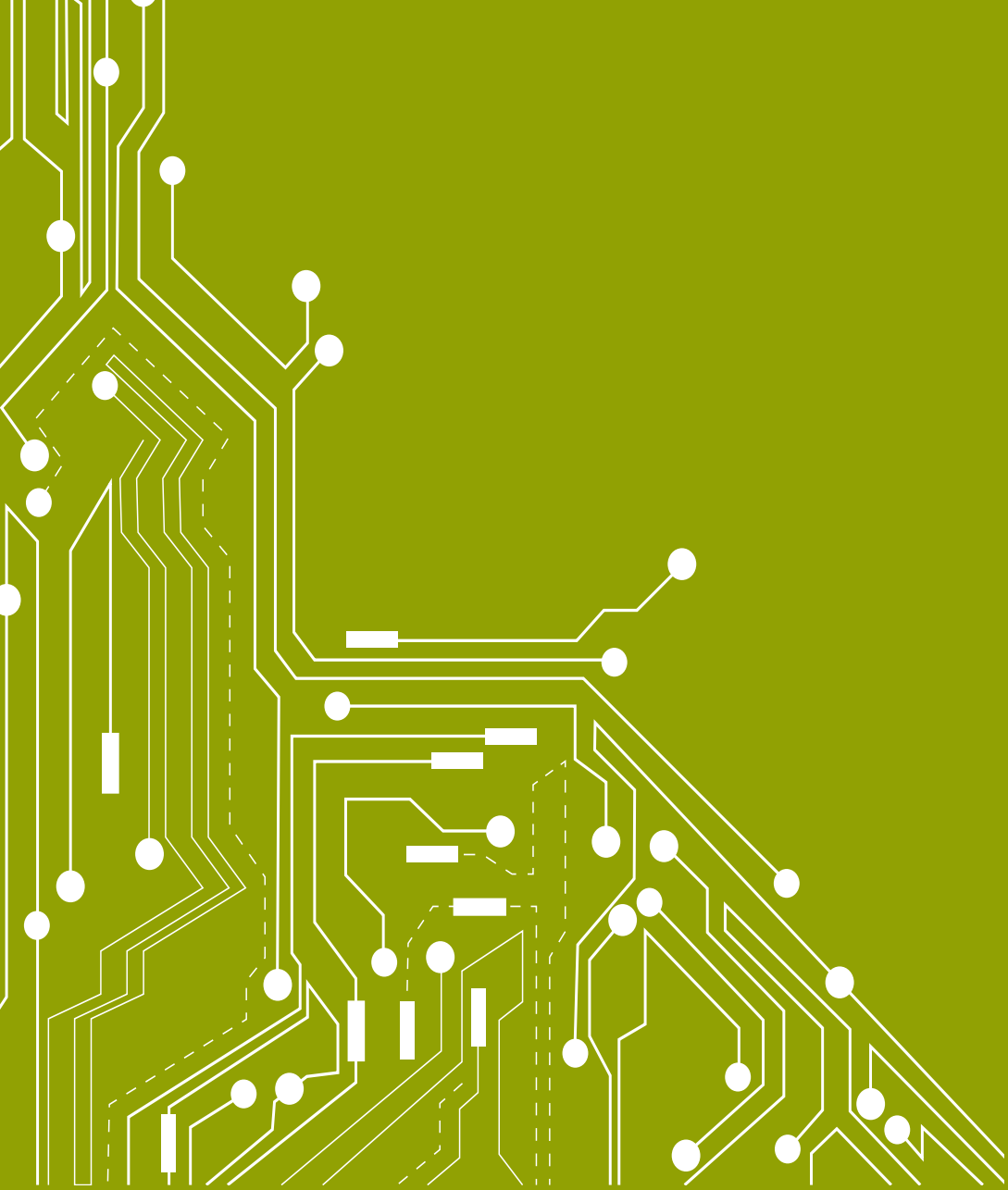


# THE SMART SUSTAINABLE DEVELOPMENT MODEL INITIATIVE



TELECOMMUNICATION DEVELOPMENT BUREAU





# FOREWORD

The number of natural disasters are on the rise. Information and communication technology for disaster management — ICT4DM — can help respond to and recover from the hardship and damage caused to millions of people.

At the same time, ICT for development — ICT4D — remains a pressing challenge to enable people and communities to truly participate in the global digital world.

The ITU Telecommunication Development Bureau launched the Smart Sustainable Development Model (SSDM) Initiative to explore the best ways to address both demands, with a practical and optimal approach of ICT4DM and ICT4D. This Initiative seeks to bring a human face to ICT by recognizing their key role in sustainable development, as well as saving lives in times of natural disasters.

Creativity and cooperation are crucial elements of the SSDM Initiative.

Creativity will assist in discovering new ICT solutions to urgent problems related to emergency telecommunications, disaster management and sustainable development. Cooperation will help to achieve the SSDM Initiative objectives of identifying, harnessing and sharing the potential for ICT with the right amount of planning, co-ordination and investment.

The SSDM Initiative has already provided us with vital knowledge to share.

I urge you to become involved. We need you — individuals and organizations, who are ready to drive the SSDM Initiative — so that people around the world can benefit from it, especially in their most demanding hours.

*Brahima Sanou*  
*Director, Telecommunication Development Bureau*  
*International Telecommunication Union*

# 01

## A NEW SMART — AND SUSTAINABLE — ICT CONCEPT

We see natural disasters around the world on the increase, both in terms of frequency and impact. They bring suffering and economic damage, affecting millions of people.

The issues are more pressing than ever. We should expect a natural disaster to strike often, somewhere in the world. Studies show on average the economic costs of natural disaster are now touching USD 100 billion annually.

Anticipating, preparing for, responding to, and recovering from natural disasters, invariably need to have advanced ICT resources in the right place at the right time.

According to ITU figures released in 2016, 3.9 billion people still lack access to the Internet, which excludes them from participating in the global digital society and from the social and economic benefits of sustainable development.

BDT.....	Telecommunication Development Bureau
SSDM.....	Smart Sustainable Development Model
ICT4D.....	ICT used for development
ICT4M.....	ICT used for disaster management

Lack of access to ICT is at its most acute for the one billion living in Least Developed Countries (LDCs). Already vulnerable in economic terms, they are also extremely exposed when disasters strike. In many cases, the communities that suffer most from natural disasters are the most disadvantaged to begin with.

In a time of continuing global financial challenge, resources are scarce. In isolation, solutions look unaffordable.

But the technological options for support exist. What we need are new ways to think and plan.

The ITU Telecommunication Development Bureau (BDT) launched in 2012 the Smart Sustainable Development Model (SSDM) Initiative as a framework to answer both needs: supporting development through ICT, and managing disasters with ICT.

SSDM recognizes that, in ICT terms, the challenges may be two faces of the same matter, even if they are conceptualized and delivered in different ways.

# 02

THE SMART SUSTAINABLE  
DEVELOPMENT MODEL  
INITIATIVE LINKS ICT APPLIED TO  
DEVELOPMENT AND ICT APPLIED  
TO DISASTER MANAGEMENT.



This is the core concept of the SSDM Initiative and it is a compelling one.

When a natural disaster strikes a community, the effects are both immediate and longer term. Studies show that even when a disaster has been overcome, wider economic and social development may also be severely impacted, something that may not often be fully recognized.

## Rethinking ICT for a vulnerable world

ICT projects in different areas are no longer in isolation. Instead, the SSDM Initiative seeks to link ICT for development (ICT4D) and ICT for disaster management (ICT4DM) naturally and coherently. This could be truly empowering. Communities may be able to respond and regenerate more easily when disaster strikes.

links ICT applied to development and ICT applied to disaster management.



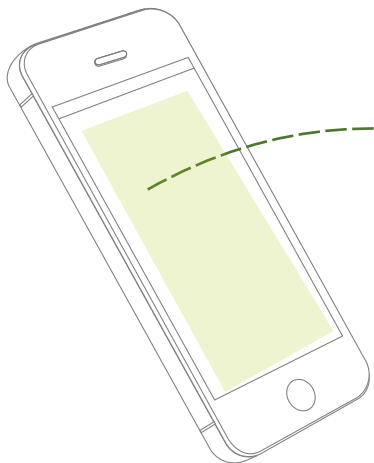
# 03 OBJECTIVES

The SSDM Initiative has created a framework which embodies best practices and approaches to bring ICT4D and ICT4DM effectively together.

The SSDM approach will support to optimize investment, make best use of scarce resources and find and share the best practices from both areas. By identifying and addressing core issues and teaming compatible practices of ICT4D and ICT4DM, this Initiative is both smart because it unifies and leverages resources and components and sustainable because it addresses present needs without ignoring future ones.

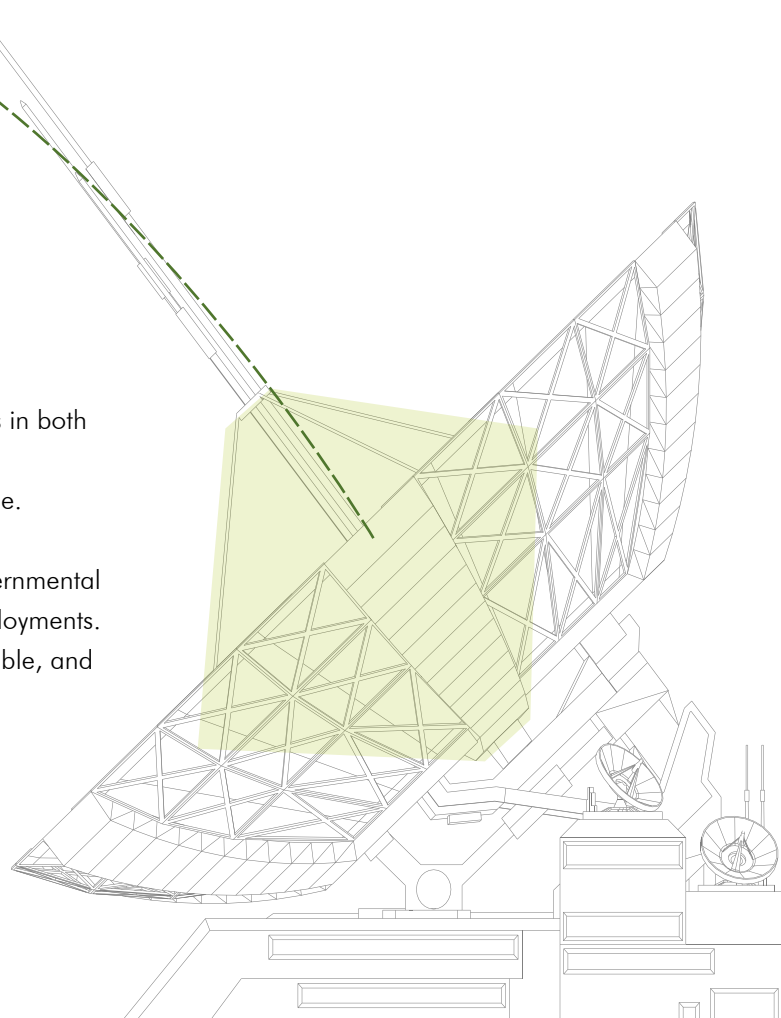
Correctly combining the two approaches makes for cost-effectiveness, efficiencies, and is timely in the utilization of resources. Most importantly, where ICT resources can rapidly be switched into ICT4DM modes in the first few hours after a disaster strikes, many lives may well be saved.





A SSDM approach to ICT4D and ICT4DM will:

- Better harness the potential for ICT and its likely future roadmaps in both development and disaster management.
- Identify, share and transfer best practices in each sector worldwide.
- Optimize the use of scarce resources.
- Encourage planning and co-ordination at national and intergovernmental levels for ICT4D and ICT4DM that take account of dual-use deployments.
- Encourage stakeholders to work together for sustainable, affordable, and scalable development and to avoid waste and duplication.



# 04 PROCESS AND STRUCTURE

The ITU Telecommunication Development Bureau has been working on the SSDM Initiative, with the support and advice of a high level Advisory Board, composed of senior experts in the communications, development and relief sectors. In creating the SSDM Initiative, key concepts and important underlying development and disaster management functionalities have been brought together.

The Advisory Board, under the direction of a Chairman and Vice Chairman, identified key areas within the SSDM Initiative and organized Working Groups devoted to:

- Policy, Regulation and Advocacy;
- Infrastructure and Technologies;
- Financing, Partnerships and Business Models;
- Resource Mobilization;
- Innovation.

The ITU has already published the two major contributions of the Initiative, the Smart Sustainable Development Model Reports 2015 and 2016. These reports incorporated the outputs from the Board and the first three Working Groups. It also included a Catalogue of new technologies in terms of analysis, current challenges and recommendations for action.

Additionally, efforts in advocacy, innovation and resource mobilization are underway.



This report can be found at  
[http://www.itu.int/en/ITU-D/Documents/SSDM\\_2016\\_report.pdf](http://www.itu.int/en/ITU-D/Documents/SSDM_2016_report.pdf)



# 05 OUTCOMES

SMART SUSTAINABLE DEVELOPMENT MODEL REPORT 2015

# CURRENT SSDM THINKING AND RESOURCES AVAILABLE FOCUS ON THE FOLLOWING AREAS:

## 1. POLICY, REGULATION AND ADVOCACY

Making effective policies and regulation is key to making the SSDM approach work properly. In both ICT4D and ICT4DM, national governments, ministries, and regulators naturally shape the policy landscape of their countries, setting goals, plans and priorities.

But this policy eco-system may be complicated, potentially involving many other agencies, inside and outside government as well. Stakeholders could include intergovernmental groups, academics, civil society organizations and NGOs, as well as the private sector, each with their specific expertise. So, policy making is a multi-stakeholder issue and needs to be framed with this in mind.

### THE ROAD AHEAD

Policy making should facilitate the understanding of what is required to deploy ICT4D and ICT4DM, as a coordinated effort. For example, prevailing regulation may restrict trade in particular technologies or subject them to necessary type approvals or duties. This may in turn hinder or delay deployment of critical equipment at times of natural disasters.

In some cases, these policies may be legitimately eased or simplified, and made more transparent and non-discriminatory. The SSDM Initiative proposes policymakers examine testing and type approvals, spectrum authorization, interference considerations, landing rights, and trans-border equipment shipment procedures, as well as prevailing duty and taxation policies that exist for ICT.

The SSDM Initiative also emphasizes the relevance of clearly aligning policy with existing international treaties, and in particular the Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations.

The SSDM Initiative outcomes emphasize the role of global advocacy efforts to build up the effectiveness of the Initiative. Advocacy can take many forms from awareness raising to empowerment, but it should be designed to influence high level leaders, key decision-makers, and other stakeholders, such as media, to share the importance and impact of this Initiative. All advocacy actions should be based on knowledge and evidence. Advocacy is also linked functionally within the SSDM Initiative by utilizing lessons learned from the field and with a broader outreach in education.

## 2. INFRASTRUCTURE AND TECHNOLOGIES

The SSDM Initiative promotes best practices in the adoption of infrastructure and technology. There is a wide range of technology options now available, but the principals involved in making the right selection are universal.

ICT4D provides ICT networks and builds up related resources in education, healthcare, government services and commerce. This deployment is a challenge in itself. The result is a digital divide where rural and remote populations are effectively excluded from participation in the digital economy because of the lack of access and connectivity. Equally, communities may lack relevant skillsets or awareness of facilities to maximize benefits even if ICT access is available.

ICT4DM, includes many different aspects including preparedness, alert/early warning, mitigation and risk reduction, response and recovery. The technologies adopted should be appropriate to the needs of each stage. The technologies involved range from satellite sensors and tsunami monitors in early warning, broadcast and alert technologies to inform populations at risk, to fast set-up ICT facilities in the recovery phase, right after a natural disaster has struck.

## THE ROAD AHEAD

A positive approach means to analyse capability and how to leverage it. The SSDM Initiative demonstrates that there is technology that has already been designed for the dual usage of ICT4D and ICT4DM:

- Cellular technology can be used for area broadcast messaging, augmenting TV and radio and also for early warning and disaster response circumstances.
- Submarine fibre cable systems may be configured for standard communication traffic and to detect seismic conditions on the ocean floor.
- Satellite communications may be rapidly reconfigured to support emergency uses.
- Wi-Fi — used daily by millions — can be used in stand-alone applications and to extend the range of other networks.

Plans at national levels for development and disaster management should take into account the resiliency and the possibility of new ICT technologies.

A key activity of the SSDM Initiative has been the compilation of a catalogue with information on available technologies worldwide. The Initiative strongly advocates that national level agencies review technologies, in order to find the balance that fits their requirements for ICT4D and ICT4DM.

### 3. FINANCING, PARTNERSHIPS AND BUSINESS MODELS

The SSDM Initiative is inherently multi-stakeholder. Many entities have legitimate interests in linking ICT4D and ICT4DM, but getting the SSDM approach right means ensuring these interests partner together so that investment is optimized.

Sometimes partnership has already proven itself. ITU, for example, has been heavily involved in several partnership operations and some of these may act as future models.

The SSDM Initiative has also evaluated real-life partnerships and particularly what critical elements and motivating factors are involved in making them work successfully. Key requirements such as trust clarity, enthusiastic leadership, sustainability, demand-led activities, inclusive initiatives and ethical conduct.

#### THE ROAD AHEAD

Successful partnerships involve many different participants such as national governments, aid donors, intergovernmental organizations and the private sector, particularly including the mobile communications and satellite services community. The SSDM Initiative has examined in detail potential funding mechanisms to support future partnerships and has already made concrete recommendations to create new satellite service partnerships.







# 06 CATALOGUE OF NEW TECHNOLOGIES\*

The SSDM Initiative has compiled a comprehensive catalogue of new technologies yet available. The technologies included are highly-innovative, practical implementations of what may be applicable in both ICT4D and ICT4DM spheres, such as the following:

- Amateur radio
- Broadcast
- Fibre and submarine cable access
- Public protection and disaster relief (PPDR)
- Satellite
- Terrestrial mobile/mobile broadband
- Wi-Fi
- Broadband

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\* Smart Sustainable Development Model Report 2015, Annex 9.



The technologies catalogued have been sourced widely. Projects and initiatives from governments, research institutes, private sector companies as well as universities are included. The catalogue is far more than a simple list. The materials are fully referenced by:

- Infrastructure type
- Name, service applications
- Disaster applications
- Primary user group
- Deployment considerations, and
- Case study examples

This level of detail is important because the SSDM Initiative establishes that individual technologies have specific advantages and disadvantages. For example, e-mail and mobile text applications may be interactive and portable but require fundamental users to be literate. Broadcast technologies may cover a wide population but offer little or no interactivity. Satellite technologies can cover very large footprints in geographical terms and remain outside any disaster area, but may be less effective indoors and require substantial service setup costs.

# 07

## GOING FORWARD

The first SSDM Advisory Board achieved many outcomes. It concluded its work at the end of 2015.

The Director of the Telecommunication Development Bureau welcomes the new Advisory Board and looks forward to their work which will build on the achievements of the first Advisory Board. The work of the new Advisory Board will contribute to the successful implementation of the United Nations adopted Sustainable Development Goals (SDGs) under the 2030 Sustainable Development Agenda.



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