

# **Technical Assistance under Connect2Recover to Haiti: Impact on the Ground**

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**Gregory DOMOND**

# HAITI – COUNTRY PRESENTATION

Caribbean country

Pop: 11,9 inhabitants (last estimate)

Area :27,750 km<sup>2</sup>

Official languages : French and Creole

Pop density: 411 people per km<sup>2</sup>

GDP: 2, 925 USD (2020)

% Pop exposed to natural disaster: 96%



## HAITI AND NATURAL DISASTERS

**Frequent disasters:** Cyclones, tropical storms, and hurricanes

**Occasional disasters:** Droughts, torrential rains, floods, landslides, earthquakes

### **3 major natural disasters in 11 years**

- **12 January 2010** earthquake
- **4 October 2016** hurricane
- **14 August 2021** earthquake

Economic damage of 2021 earthquake : 1.11 billion USD ( 7.8% of Haiti's 2019 GDP)

# Natural Disasters and Telecom Networks and infrastructures in Haiti

## Recurring consequences

- ❑ Physical damage and destruction of network components and infrastructures (Cables, base stations, backbone, etc.)
- ❑ Disruption in the supporting network infrastructure (power and cooling systems, transportation, buildings, transmission sites)
- ❑ Network congestion (overload by connection attempts, intensive use by service providers)

## **Telecoms services in the aftermath of the earthquake (August 2021)**

Mobilization of operators to restore services in affected areas

Coordination of emergency telecoms services by ETC (Emergency Telecommunications Cluster of WFP)

Participation: Telecoms sans frontiers, Ericsson Response, and Information Technology Disaster Resource Centre (ITDRC), WVI, OCHA

Establishment of VHF networks in Sud and Grand'Anse by ETC and its partners

Deployment of VSAT by ETC and its partners

Deployment by ITU of satellite phones and BGAN

Regular situation update meetings of ETC and partners (ITU was represented by Gregory DOMOND)

# Damages and Resilience Assessment

**Need:** Reinforcement of Networks resilience

**Rationale:** Transversal and strategic infrastructure for the provision of all services

Recruitment by ITU of an Expert – Gregory DOMOND

## Tasks of the Expert

- ✓ Damages assessment
- ✓ Recovery plan Assessment
- ✓ Resilience Assessment
- ✓ Formulation of recommendations for all stakeholders

# Damages Assessment

Damages assessment conducted by the regulator – CONATEL (1<sup>st</sup> source)  
Damages data collected from the operators through questionnaires submitted by the Expert recruited by ITU – Gregory DOMOND

## **Key Results:**

Damages to telecom and power infrastructures (BTS, Cables, Generators, studios, destruction of sites and Buildings)

Infrastructure affected: 1.33% – 12.15%

Infrastructure destroyed: 0.13%

Loss : 1 M – 10.5 M USD (from Operators)

# Restoration plan Assessment

Restoration plan: Quick response to disaster, Immediate action to reduce damages and Quick resumption of activities

**Requirements for Network recovery (Defined by ITU –T Focus Group Disaster Relief Systems, Network Resilience and Recovery):**

- ✓ Substitute Networks
- ✓ Repair

## Restoration plan Assessment Process

Data collected through questionnaires (technical requirements)

Interviews with stakeholders (Operations)

### Key results

Network Restoration duration : 1 – 5 days (MNOs and ISP)

Effectiveness of Restoration plan: 60% - 75% (for MNOs and ISP)

Effectiveness of Restoration plan: 10% (for Broadcasters)

Recommendations formulated for All Stakeholders



# Levels of telecoms networks and infrastructure resilience

Resilience: Ability for a network to continue providing service at an acceptable level, while suffering disruption caused by damage

Importance of resilience : Response to disruptions, positive adaptation to challenging conditions, leveraging opportunities, sustainable performance improvement

## **3 levels of telecommunications resilience**

Passive resilience : Ability of an organization to return to its original state after being subjected to a shock to reduce losses

*Base: Availability of equipment and a well-designed architecture*

Active resilience: Ability to take proactive activities to undertake to adapt to adversity and turbulence

Capacity of reaction : capacity to adapt system before and during disruptions

Organisational resilience: Ability to anticipate, prepare for, respond and adapt to incremental change and sudden disruptions in order to survive and prosper

Response to disturbance : Pre-positioning of equipment and teams to react in time and provide temporary solutions

# Resilience Assessment

## Resilience Assessment levels:

- ✓ Operators (MNOs, ISPs and Broadcasters) resilience
- ✓ Country level resilience (Infrastructure, Performance, Security and market readiness)
- **Requirements for Resilience (Defined by ITU –T Focus Group Disaster Relief Systems, Network Resilience and Recovery)**
  - ✓ Redundancy
  - ✓ Congestion control

## Resilience Assessment Process

Data collected through questionnaires (technical requirements)  
Interviews with stakeholders (Operations)

## Key results

Overall Resilience: 60% - 80% (for MNOs and ISP)  
Overall resilience : 5% (for Broadcasters)  
Recommendations formulated for All Stakeholders

# Country-level Internet Resilience

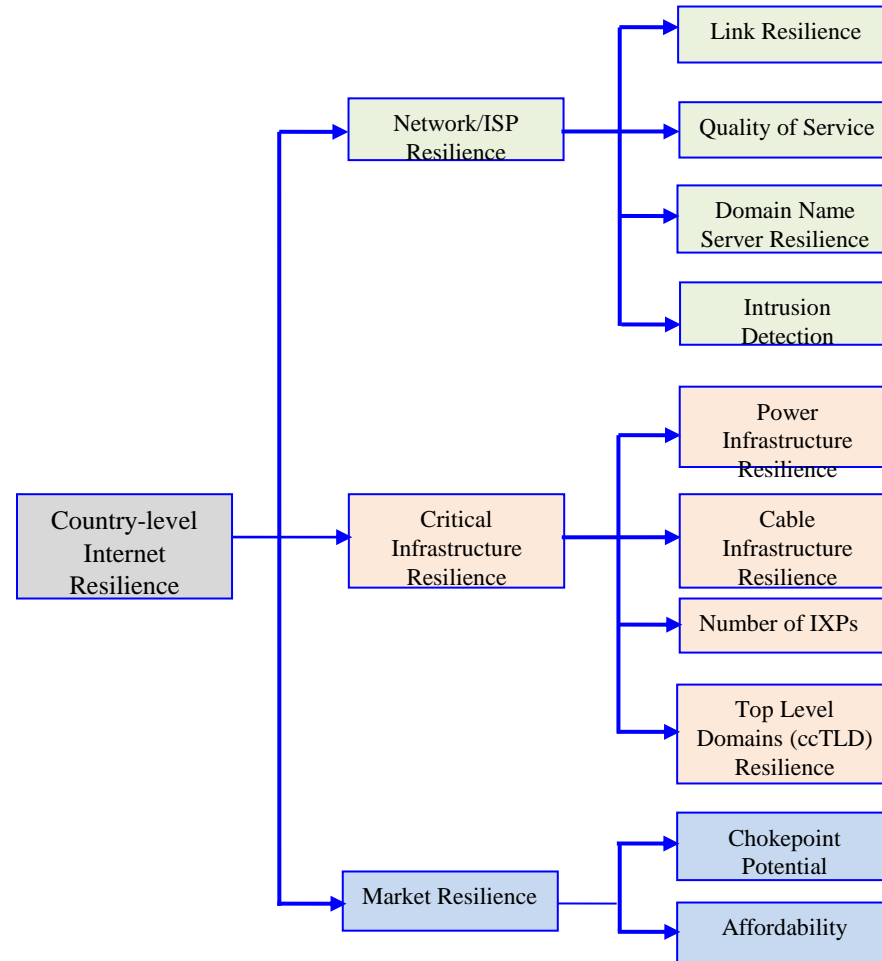
Defined by CONNECT2RECOVER (C2R) Methodology developed by ITU, and based on 3 pillars:

1. **Network/ISP Resilience**
2. **Critical Infrastructure Resilience**
3. **Market Resilience**

## 3 pillars subdivided in 4 sub-groups

1. **Infrastructure** : Exit points, fibre 10km reach, network coverage, spectrum allocation, data centers, number of IXPs, power availability.
2. **Performance** : Fixed download, fixed upload, fixed latency, mobile download, mobile upload, and mobile latency
3. **Security** : Secure web traffic, IPv6 Adoption, DNSSEC adoption, DNSSEC validation, Mutually Agreed Norms for Routing Security (MANRS), DDoS protection, global cybersecurity, secure Internet servers, and security against spam
4. **Market readiness**: Affordability, upstream provider diversity, market diversity, domain count, E-Government Development Index (EGDI), and peering efficiency

## Country-level Internet Resilience



# Emergency Telecommunications in Haiti

- ✓ Absence of policy on emergency telecommunications
- ✓ Availability of VHF Radio network within DPC (Directorate of Civil protection) for management of disasters
- ✓ Availability of Sat Phones within CONATEL for management of disasters
- ✓ Availability of emergency telecoms mechanisms between government entities (Ministry of ICT, Regulator, Meteorological services, disaster management services, Customs)
- ✓ Early Warning System (for hurricanes, nascent system for Tsunami, and limited for flooding)
- ✓ International cooperation (ITU, ETC, GSMA, IFRC, WFP, ITDRC, MSB, TSF, WVI, OCHA, GVF) mobilized in relief operations
- ✓ Tampere Convention status in Haiti (signed, but not ratified yet)
- ✓ Sectoral committee on Emergency Telecommunications Project (pending project)
- ✓ Assessment of level of implementation of initiatives to increase availability, adoption and resilience (defined by C2R Methodology)
- ✓ Assessment of level of implementation of Emergency Telecommunications Preparedness Checklist (defined by ITU-D and ETC)

## Lessons learned

- ✓ Importance of Assessment of resilience: Operators Level resilience + Country- level resilience (Public & Private)
- ✓ Effectiveness of C2R Methodology for Country-level resilience
- ✓ Importance of DCM (Disaster Connectivity Map, developed by ITU and ETC, and supported by GSMA - Mapping platform for the determination of the status of telecommunications network infrastructure, coverage, and performance before and after a disaster
- ✓ Recommendations formulated: Regulator, Policy –Maker, MNOs, ISP, Broadcasters and Managers of Internet ecosystem components
- ✓ Recovery plans of the mobile operators and the ISPS are incomplete
- ✓ All the mobile operators and the leading ISP are partially resilient
- ✓ Less than 10% of the radio and TV stations can recover after a disaster
- ✓ The level of resilience of radio and TV stations is very low
- ✓ Rural connectivity is low, and faces multiple challenges
- ✓ Emergency telecommunications preparedness and response needs to be strengthened