



# **ITU Projects in ASP: *Spectrum Master-plans and Management of Cross border interference***

*ITU Workshop on cross border Radio Frequency Management in Arab States*

*26<sup>th</sup> January 2017*

*Dubai, United Arab Emirates*

*International Telecommunication Union*

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# Spectrum Master-plans



# SM Master Plan Project in ASP

- SM Master Plan Project in ASP (3 countries)
- ASP Regional Initiative 5: Policy and regulation
- Original Project
  - Bangladesh
  - Fiji
  - Brunei
- Project extension signing during PP-14
  - Additional Funding and modified targets of the project
  - Three more countries evaluated to be the beneficiary of the technical assistance (**Pakistan, Thailand and Samoa**)
  - 2 roadmaps prepared, commented, in editorial phase





# Objectives and Targets

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- At least for 6 beneficiary countries
    - **Assessment of the spectrum management scheme:**
      - *spectrum policy, spectrum use, authorization, spectrum sharing, spectrum monitoring...*
      - **Development of Master-plan**
        - *Provision of advices concerning each beneficiary country's development of relevant policies, legislations and regulations based on request and interest of the countries*
  - Human capacity building
    - [3 seminars, 60 participants in total]
  - Provision of guidance during implementation of the master plans, where requested by beneficiary country and agreed by ITU
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# Selection of Beneficiary Countries



## ➤ Selection Criteria (tentative)

- Reply to ITU Questionnaire: Yes
- Willingness to work with ITU: Yes
- Capacity to devote relevant and qualified internal resources to develop and implement SM Master Plan: 1(least) - 5(most)
- Legal framework readiness and spectrum usage: 1 – 5 (low usage, no legal framework: 1)
- Representativeness of the region

## ➤ Selection Procedure

- Sending Questionnaire:
  - ITU-Caribbean (March 2015)
  - ITU- ASP Jan 2014 and Dec 2014- Jan 2015
- Recommendation of 3 beneficiary countries by Regional office
- Selection of beneficiary countries:
  - ITU HQ and with consent from MSIP, republic of Korea

# Activities



- **Job Description and Experts recruitment:** ITU in consultation with beneficiary countries and CTU for Americas region
- **1<sup>st</sup> phase** focused on **assessment** of overall aspects: data gathering, 5 days mission (meeting with Government, interviews with stakeholders), preparation of a draft (**results of the CTU SM Task Force documents/reports will be taken into account in order to avoid duplication**)
- **2<sup>nd</sup> phase** focused on a **Master Plan** for specific recommendation reflecting request and interest of beneficiary countries: preparation of advices, 5 days mission (presentation and discussion), preparing final report
- **Comment and Approval:** review and comments by ITU **and beneficiary countries**, approval of governments for the release of final report
- **Seminars:** topics and materials will be decided in consultation with experts and beneficiary countries (**in cooperation with CTU for Americas region**)
- **Assistance:** to beneficiary countries for the preparation of implementation plans for Master plans; on request

# Roles and Responsibilities



## ➤ ITU

- Selection of beneficiary countries, recruitment of experts, provision of staff resources for overall project management, approval of the report
- Organizing the Seminars

## ➤ MSIP

- Cash contribution
- Collaborate with ITU in the selection of countries and experts

## ➤ CTU (for Americas region only)

- Recommend beneficiary countries and experts
- Comments on the scope of the reports, seminars and the contents of the reports

## ➤ Beneficiary Countries

- Designate a qualified counterpart work with ITU
- Provide access to the relevant information and materials
- Provide administrative support including staff, visa, premises for the interview and training, etc.

# Report Framework (1)



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## Executive summary

### 1. Introduction

- 1.1 The context and scope for the study
- 1.2 Report contents

### 2. Global trends in Radio Spectrum Management

- 2.1 Administrative processes
- 2.2 Existing and new licensing policies (including DSA, LSA, white space)
- 2.3 Fees
- 2.4 Market mechanisms
- 2.5 Policy in respect of non-commercial use

### 3. Current Spectrum Management Framework

- 3.1 Legislative framework
- 3.2 Process (including internal coordination with stake-holders)
- 3.3 Licensing
- 3.4 Spectrum fee



# Report Framework (2)



3.5 Monitoring, type approval and enforcement

3.6 Cross-border frequency coordination

3.7 Spectrum policy, management issues and strategy (if exists)

## **4. Current spectrum demand and issues - by sector/service**

4.1 Data sources used in analysis

4.2 NTFA (National Table of Frequency Allocation)

4.3 Analysis of current spectrum use

4.4 Issues identified by Stakeholders in relation to frequency use

4.5 Conclusions, issues to deal with during the assistance

## **5. Future demands for spectrum**

5.1 Spectrum Demand Trends by Sector/Service

## **6. Recommendations and Key issues**

6.1 Allocation Policy

6.1.1 Improving information on spectrum allocations and policy

6.1.2 Making allocation decisions

# Report Framework (3)



- 6.1.2.1 Role of ITU and other international and regional organizations
- 6.1.2.2 Role of local investors and spectrum users
- 6.1.2.3 Unique needs of the country
- 6.1.2.4 Cross-border frequency coordination agreements
- 6.1.3 Consultation arrangements
- 6.1.4 Balance between government and commercial allocations
- 6.2 Assignment , licensing, monitoring and enforcement
  - 6.2.1 Policy principles
  - 6.2.2 Licensing policy and fees
  - 6.2.3 Planning and licensing processes
  - 6.2.4 Monitoring, type approval and enforcement processes
- 6.3 Spectrum management strategy
- 6.4 Capacity building

**Annexes**

**Abbreviations**

# Report Example



## Industry consultation by NBTC – Thailand

<https://ic.nbtct.go.th/wps/wcm/connect/NBTC/4a77f14a-9f7b-4b52-8ef5-d82e229f4081/Spectrum+Master+Plan+Thailand+by+ITU+16062559.pdf?MOD=AJPERES&CACHEID=4a77f14a-9f7b-4b52-8ef5-d82e229f4081>

Spectrum Band	Current Usage	Plan	Demand	Difficulty	Timeline
1710 - 1785 MHz / 1805 - 1880 MHz	This band is currently allocated for mobile services, mainly for GSM networks. 90 MHz x 7 of the band was auctioned in AIS and Telecom auctions in December 2015.	40 MHz x 2 is held by CAT under the concession that will expire in 2018. NBTC will auction the remaining spectrum after the concession expiry date.	Low	Low	2018 - 2020
1880 - 1920 MHz	This band is currently allocated for fixed services.	The 1880 - 1920 MHz has been identified for IMT globally for 4G. However, there is limited interest to implement IMT in these bands and NBTC does not expect to receive changes in the near future.	High	High	2018 - 2020
2025 - 2110 MHz / 2200 - 2250MHz	Fixed link assigned to a private company	NBTC will return these bands and introduce a new channeling plan for Fixed Services and Broadcasting auxiliary (Programme Making and special events: PMSE).	Medium	Low	2018 - 2020
2900 - 3400 MHz	This band is currently assigned to CAT and other government users.	NBTC will determine the rollout obligation for CAT to ensure that the spectrum is not underutilised.	Medium	High	2016 - 2017
2500 - 2600 MHz	Fully assigned to Military, Private Company, MCOT and The Government Public Relations Department	This is a potential band for IMT and NBTC plans to return the band and award the spectrum via auction.	High	High	2018 - 2020
3400 - 3600 MHz	Fixed Service assigned to government military and a private company	NBTC is considering allocating this band for fixed satellite and/or IMT services. A technical showing study will be conducted.	High	High	2020 and beyond
4.4 - 5.0 GHz	Fixed Service assigned to government, military and a private company	NBTC plans to allocate the band for PPP0.	Medium	Medium	2018 - 2020



# Cross Border RF Interference Management



# Selection of Beneficiary

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## ➤ Ideally: ASP region wide framework

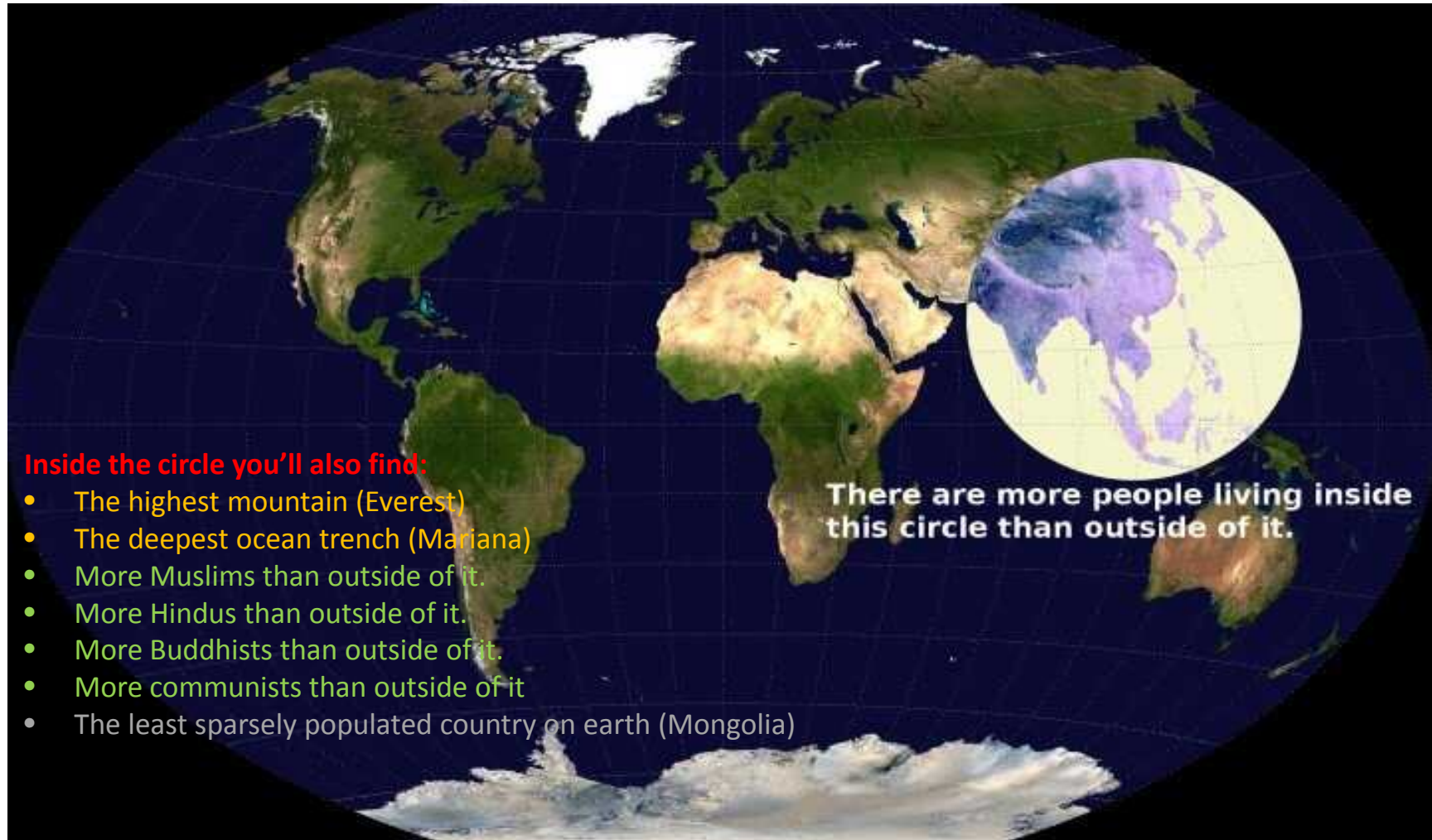
- **Not a practical first step as :**

- *Region is big and diverse with some countries having cross border interference lower on their priority due to geographic location*
- *No exiting example of such framework in the region*
- **Solution**
- *Selection of sub-regional group of countries in close proximity ideally under an existing regional cooperation e.g. ASEAN, SAARC etc.*

## ➤ **Selecting countries based on:**

- Level of national Spectrum Management development
  - Number of assistances in the past
  - Willingness to work with ITU on the project
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# ASP- Region



## Inside the circle you'll also find:

- The highest mountain (Everest)
- The deepest ocean trench (Mariana)
- More Muslims than outside of it.
- More Hindus than outside of it.
- More Buddhists than outside of it.
- More communists than outside of it
- The least sparsely populated country on earth (Mongolia)

There are more people living inside this circle than outside of it.

Source: <http://brilliantmaps.com/population-circle/>



# Objectives of the Project

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- **Develop a harmonized institutional framework for coordination of Frequencies used by **major** services.**
  - **The framework can be used to agree to a set of administrative and technical rules that predicts possible interferences among different services and provide proper protection for existing networks, stations or links and for future services.**
- **Important for:**
    - RF Users and other stakeholders
    - Governments planners and Policy Makers
    - Future investors
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# Scope of Activities of the Project

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## **1. Assessment**

*Review of existing bilateral and multilateral cross-border frequency coordination agreements / procedures / practices / frameworks in ASEAN countries.*

## **2. Development of procedures:**

*Based on the deliverables of assessment phase and international best practices, recommend a administrative set of procedures and the relevant technical thresholds*

## **3. Workshop for skills development**

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# Outcomes of the project

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- Separate assessment reports for each beneficiary countries.
  - Separate **BUT** harmonized as much as possible RF Mitigation framework rules with recommendations and future implementation.
  - Preparing and Delivering Presentation on the outcomes of the project through workshops
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# Assessment and Priority Determination

## Cambodia



	Thailand	Lao P.D.R	Vietnam	Coast Line
<b>Geographic Border topography (Plain, Mountainous, Water, Forest)</b>	803 Km Mixed (Mostly Mountains and forest with main gateway to Thailand through Poipet city being plain)	541 Km Mixed (Forest and Plain)	1,228 Km Mixed (Mostly plain but few forests in between)	443 Km
<b>Population Density around border areas</b>	High density at border near Poipet rest low.	Low	High	High
<b>Cambodia Coordination Priorities</b>	<b>A F G I H K M E</b>	<b>I H</b>	<b>A F G I H K M E</b>	

### Key for Frequency Bands requiring coordination

<b>A</b>	VHF BS Sound Band	<b>H</b>	MS 1710-1785	<b>Color Coding for the required priority</b> ) Highest: <b>RED</b> ) Medium: <b>BLUE</b> ) Lowest: <b>GREEN</b>
<b>B</b>	MS bands within 137-174 MHz	<b>I</b>	MS 1805-1880 MHz	
<b>C</b>	FS 140.5-141 MHz	<b>J</b>	MS 1885-2025MHz	
<b>D</b>	VHF TV band	<b>K</b>	MS 2110-2200 MHz	
<b>E</b>	MS bands within 401-470 MHz	<b>L</b>	MS 2300-2400 MHz	
<b>F</b>	UHF TV band	<b>M</b>	MS 2500-2690 MHz	
<b>G</b>	MS 790-960 MHz(790-862/862-962 MHz)	<b>N</b>	MS 3400-3600 MHz	

# Assessment and Priority Determination



## Lao

	Thailand	Cambodia	Myanmar	China	Vietnam
<b>Geographic Border topography (Plain, Mountainous, Water, Forest)</b>	1754 Km Mostly Fresh Water (Mekong River) but also plain land in in Northern and southern parts	541 Km Plain	235 Km Fresh Water (Mekong River)	423 Km Mountai nous	2130 km Mountaino us
<b>Population Density around border areas</b>	High	Low	Low	Low to medium	Medium
<b>Lao P.D.R Coordination Priorities</b>	<b>H G I J K L A F P</b>			<b>H</b>	<b>P</b>

### Key for Frequency Bands requiring coordination

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<b>F</b>	UHF TV band	<b>N</b>	MS 2500-2690 MHz
<b>G</b>	MS 703- 748//758-803 MHz	<b>O</b>	MS 3400-3600 MHz
<b>H</b>	MS 790-960 MHz(790-862/862-962 MHz)	<b>P</b>	VHF Sound BC to Aeronautical

**Color Coding for the required priority**

) Highest: **RED**  
 ) Medium: **BLUE**  
 ) Lowest: **GREEN**



**I T**hank **U**

**“Committed to  
connecting the  
WORLD”**

## **Major ITU SM Events in 2017**

**ITU COE online training on Spectrum Management** (Legal and wireless innovation Issues)  
13 - 24 February 2017

**ITU COE training on Spectrum Engineering and Cross border Coordination**  
Xian, China, May 2017

**ITU-Forum Global regional workshop on Spectrum Management**  
Bangkok-Thailand, Q2/3 2017

**ITU Study Group Meetings**  
ITU-D (Res. 9) and ITU-R SG1

**Your active participation in and contribution to these events is most welcome!**