KOREA COMMUNICATIONS COMMISSION

International Telecommunication Union — **R.O.K.**

Telecommunication Development Bureau — **Korea Communications Commission**

Project Title:	Roadmap for Transition from Analogue to Digital Terrestrial Television Broadcasting and Mobile Television in Africa
Project Short Title:	Roadmap to DTTB & MTV in Africa
Project partner	Korea Communications Commission (KCC, R.O.K.)
Start Date:	November 2008
Estimated End Date:	October 2009
Government Cooperation Agency:	Ministries of Communications, Regulatory bodies, African Broadcasters
Implementing Agency:	ITU
Beneficiary Country:	African Countries
ITU Project Manager:	Jo, G.J. in cooperation with African regional office

Budget

1. KCC : US$ 345'655, ITU ICT-DF : US$ 200'000
(Project Number: 7RAF08071)

Description	US$
Project Personnel	228'700
Equipment	270'000
Misc.	8'886
ITU AOS(7.5%)	38'069
Total:	**545'655**

2. ITU Regional Initiatives Fund
(Action Number: 10219)

Description	CHF
BDT travel	35'340
Ext Expert (Customization & Evaluation)	65'892
Misc.	1'368
Total:	**102'600**

Brief Description: As part of BDT activities on the implementation of Regional Initiatives projects approved by WTDC-06 (Res. 17 WTDC-06), within the framework of this project, BDT intends to assist the African countries to smoothly shift from Analogue to Digital broadcasting. The output of this project include:

- Development of guidelines on transition from analogue to digital terrestrial broadcasting and Mobile TV, covering the regulatory, legislation, technology, network planning and customer awareness issues;
- Customization of developed guidelines in selected countries;
- Establishment of pilot DTTB and MTV broadcasting systems in selected countries;

Preparation of impact assessment report to be submitted to stake holders to promote investment in digital and mobile TV broadcasting to narrow the digital divide in the region.

	Signature	Date	Name/Title
For ITU:		19/11/08	S. AL BASHEER Director, BDT
For KCC:		26/11/08	CHANGHYUN KIM Director, Int'l Cooperation Office

1. Background and Contents

1.1 Introduction

Digitisation has lead to accelerating the convergence of broadcasting, telecommunications and information technologies. Radio and television programming is now available via a multiple of telecommunication networks, interfaces and display devices, with broadcasting networks able to provide telecommunications and information services as well as high definition TV at a reasonable cost to end users.

Over the last 10 years, broadcasting has also been experiencing a revolution through the influence of digitisation. Digital broadcasting not only increases the efficiency in channel performance and offers a great range and diversity of new services such as digital mobile broadcasting, but also allows countries to take advantage of the digital dividend which can create new budget for government.

Many developed countries across the world are now in the final stages of converting to digital broadcasting through terrestrial, satellite or cable. However, the transition process is not progressing evenly amongst all countries with most developing countries still only at the stage of considering how the process of transition should be initiated.

It is essential for them to make a project plan (roadmap) of the transition, as the process is a long term project that requires considerable financial resources, and it will have influence on their society, economy and industries.

This project, funded jointly by ITU and Korea Communications Commission (KCC), Republic of Korea (R.O.K.), is to assist African countries in making their roadmap for transferring to digital broadcasting through providing guidelines and customization and the opportunity to experience digital broadcasting through pilot systems.

The strength of this project in assisting digital broadcasting transition is its full set of assistance for making a roadmap ranging from guidelines to a pilot system. The output and experience from this project will be widely used in other regions.

1.2 Background

The World Summit on the Information Society (WSIS) was held to address the issues of the digital divide and established agreement to connect all the world's villages, libraries and schools to ICT by 2015. It designated the ITU as the primary facilitator for information and communication infrastructure development (WSIS Action Line C2).

The ITU World Telecommunication Development Conference (WTDC-06) adopted the Doha Action Plan (DAP) that aligns the work of the ITU Telecommunication Development Sector (ITU-D) with the objectives and action lines agreed by WSIS, so as to assist developing countries in achieving universal access.

In Africa, broadcasting is one of the most important media for news, education and entertainment because of its ability to reach the majority of citizens in a country, as the press has limited distribution and access is dependent on literacy. The African region put a high priority in DAP on the digital broadcasting transition and included some regional activities for digital broadcasting transition, although the overall progress for the transition is relatively late.

The African region joined the ITU Regional Radiocommunication Conference (RRC-06), held in Geneva in June 2006. The conference reached agreement on a plan for introducing digital

broadcasting services in the frequency bands 174-230MHz and 470-862MHz and decided on the transition period from analogue to digital broadcasting, which began on 17 June 2006 and ends on 17 June 2015, although some countries are allowed an additional five-year extension for the VHF band. The end of the transition to digital terrestrial broadcasting in the year 2015 is intended to coincide with the targets set by Millennium Development Goals.

The African region decided the introduction of new digital broadcasting technologies was one of the important Regional Initiatives, for which WTDC-06 called upon ITU-D to implement at national, regional, interregional and global levels, making utmost use of its available resources. For these reasons this project is a priority for the African countries' digital broadcasting transition.

This is also why the roadmap project for assisting developing countries in transiting to digital broadcasting with the contribution of ITU and ROK is starting with Africa: i.e. the essential role of broadcasting in everyday life, from news to education and entertainment; the regional plan for digital broadcasting frequencies and their higher priority in Regional Initiatives.

The roadmap project consists of two phases. The first phase of the project, supported by the Republic of Korea and titled "Feasibility Study on Digital Broadcasting Roadmap in Africa", developed a questionnaire and surveyed the situation of digital broadcasting transition in Africa. Through a survey, as shown in Annex 3, it identified potential pilot countries that could be a reference in the digital broadcasting transition in Africa and developed the scope, budget and time schedule for the second phase of the roadmap project. Two experts on terrestrial and mobile broadcasting were recruited for this work and 22 countries responded to the questionnaire.

In its second phase this project will develop the guidelines for making a roadmap, customise the guidelines to the specific requirements of the country and deploy pilot systems in selected countries.

1.3 The description of the project

1.3.1 Development of the guidelines

The guidelines are a fundamental framework for the transition to digital broadcasting which covers the whole aspects of DTTV and MTV including all the areas related, regulatory, legislation, spectrum, technologies, network planning, customer awareness, and business plan. More detailed information on the content of guidelines can be found in Annex 4.

In this connection preparatory works have already been carried out through the Feasibility Study. However there is a need for further investigations within some of the African countries. The guidelines can be used to make a roadmap for all countries which are in the process of transition to digital broadcasting.

1.3.2 Customization of the guidelines for the pilot countries

Customisation of the roadmap is intended to modify the guidelines to the specific requirements of the pilot countries, aligning the guidelines with the specific infrastructure, environmental issues and timescales of the pilot countries.

Although the main point of customisation is that the output is tailored to the specific requirements of the country, elements of the work on customisation would be helpful to other countries. ITU could take this opportunity, based on feedback from the pilot countries, to enhance those areas of assistance common to many countries, with the aim of making it available to other countries.

1.3.3 Deployment of pilot system(DTTB and MTV broadcasting system)

Pilot systems for digital terrestrial television broadcasting and digital mobile TV will be deployed in selected countries. The number and identification of the beneficiary countries for the pilot system

are subject to in cash and/or in kind contribution of the potential pilot countries and the cost of the equipment.

2. Project Objective

The objective of the project is to assist the African countries in making their own roadmap to shift smoothly from analogue to digital terrestrial TV and on the use of mobile TV.

3. Expected Outputs

The expected outputs of this project are:

- Guidelines developed on transition from analogue to digital broadcasting and mobile TV;
- Roadmaps customized for selected countries based on developed guidelines;
- The pilot DTTB and MTV broadcasting systems established in selected countries;
- Impact assessment report prepared to be submitted to African broadcasters to promote investment in digital and mobile TV broadcasting to narrow the digital divide in the region.

4. Activities

4.1 For Development of the guidelines

In order to deliver the expected result, the following main activities will be carried out:

- Recruit experts;
- Complete the collection of information on the status of African digital broadcasting transition through resending the questionnaire which has already been developed through the Feasibility Study;
- Analyse the collected information;
- Develop the Guidelines.

4.2 For Customization of the guidelines for pilot countries

- Recruit experts;
- Identify the final pilot countries;
- Clarify the requirement of the pilot countries;
- Customize the guidelines according to each pilot country's requirement and situation.

4.3 For Deployment of Pilot system (DTTB and MTV broadcasting stations)

- Identify the beneficiary countries for pilot system;
- Locate the sites for the pilot systems in the selected countries;
- Prepare technical specification for the systems;
- Process Bidding and select equipment supplier;
- Install the pilot systems;
- Commission.

4.4 For Assessment of impact

- Recruit an external expert for carrying out impact assessment mission;

- Submit the report to stake holders to promote investment in digital and mobile TV broadcasting to narrow the digital divide in the region.

5. Inputs

5.1 Korea Communications Commission (KCC)

KCC will provide three hundred twenty five thousand and six hundred fifty five US dollars (US$ 325'655) for the smooth development and implementation of the project as outlined in project budget. KCC further agrees that the remains of the previous contribution it made to the project budget number 9RAF07069, amount of twenty thousand dollars (US$ 20'000) will also be used for this project.

5.2 ITU

ITU will provide two hundred thousand dollars (US$ 200'000) from ICT-DF and one hundred two thousand and six hundred CHF (102'600CHF) from Regional Initiatives Fund for the smooth development and implementation of the project as outlined in project budget.

5.3 Beneficiary country selected for pilot system

The selected beneficiary country for the pilot system will provide in cash and/or in kind contribution for the following:

- Building and facilities for the pilot project;
- Tower;
- Antenna;
- Power supply (main and back-up);
- User DTV receivers, etc..

6. Risk assessment

The primary risks and their solutions in the project are:

- The potential lack of cooperation by governments and broadcasters in providing information, as well as complementary work activities
  - ➢ This risk can be resolved through providing them with information on the merits of digital broadcasting and encouragement by regional office to engage more actively in the project.;
- Insufficient budget to procure the required pilot due to general economic conditions and unforeseen changes in the prices of the equipment
  - ➢ This risk can be resolved either through asking partner to contribute more or allocating more budget from ITU internal funds such as Regional Initiative Fund;
- African countries' financial difficulties of transition to digital broadcasting
  - ➢ This risk can be resolved through promoting partnership agreements with private sector and developing policies to increase budget such as frequency auction for saved frequency bands resulted from digital broadcasting transition.

7. Management

7.1 Roles and Responsibilities

7.1.1 ITU

- The ITU will act as the implementing agency and provide staff resources for overall project supervision and coordination; and
- Provide neutral and objective advice on technological strategies for the transition to digital broadcasting;
- Recruit required experts;
- Prepare technical specification for equipment;
- Carry out bidding process;
- Supervise the equipment installation and commissioning;
- Carry out performance test after installation;
- Develop the impact assessment report.

7.1.2 Beneficiary countries

National involvement from all beneficiary countries will be important for the success of the project.

Beneficiary countries will provide:

- Information required for carrying out project activities;
- Qualified counterparts to the project;
- All permissions required to carry out project activities;
- Exemption from custom duties of imported items that may be required under the project;
- Meeting and working facilities;
- Administrative and Other assistance to the project that may be required by the ITU.

7.2 Project Governance

The project will be governed by the Steering Committee and Project Manager/Project Coordinator.

The Steering Committee (SC) will consist of:

- Representative(s) from the ROK;
- Head of ITU Regional Office in Africa;
- Head of Projects and Initiatives Department of BDT;
- ICT-DF representative.

The role of the SC will include but will not be limited to the following:

- Approve the annual action plan as proposed by the Project Manager/Project Coordinator;
- Approve all substantial changes to the annual action plan;
- Evaluate and approve periodic progress and Project closing reports;
- Provide advice and directives concerning the progress of the Project.

The SC will meet at least once a year at ITU HQ or/and by conference and all decisions of the Steering Committee will be taken by consensus. The Steering Committee will oversee the Project, implementation process, and the Project will be managed by appointed Project Manager and Project Coordinator by the ITU.

The Project Manager/Project Coordinator will:

- Manage the Project;
- Coordinate with Project partners;
- Provide direct assistance to Project Network Building team;
- Monitor the Project activities on a daily basis;
- Prepare the annual action plan and periodic progress reports, and submit them to the SC for approval.

8. Monitoring and Evaluation

8.1 Evaluation, validation and reporting

Both the work on the guidelines and the work on customisation will be divided into a number of stages and on completion of each stage, the project manager, in consultation with the ITU experts, will be responsible for evaluating the results.

A project review meeting shall be convened at the request of any of the stakeholders contributing to the project or at the request of the project manager.

8.2 Project closure

On conclusion of the work on the guidelines and the work for each pilot country, the project manager will be responsible for preparation of the project closure report and submitting the final document and project closure report to the stakeholders.

9. Budget Breakdown

The estimated budget is shown at Annex 1.

10. Work Plan

The work plan of the project is shown at Annex 2. The work plan for the project will be reviewed at the kick off meeting of the project and reviewed during project implementation, as required.

Annex 1: Project Budget

A. KCC and ICT-DF(Project Number: 7RAF08071)

	BUDGET LINE			US $ TOTAL BUDGET	US$ BUDGET ITU(ICT-DF)	US$ BUDGET ROK
10	PERSONNEL COSTS					
11	*International Personnel*	M/m				
11.01	4 Expert- Guidelines	m		128'700		128'700
11.02	3 Expert- Customization(2 countries)	m				
11.90	Int. Personnel Non-Distributed					
	Total International Personnel		**11.99**	**128'700**		**128'700**
15	***Evaluation***					
15.01	Evaluation					
	Total Evaluation Costs		15.99			
16	***Missions***					
16.01	Missions(2 countries)			100'000		100'000
16.90	Non-Distributed					
	Total Mission Costs		**16.99**	**100'000**		**100'000**
	TOTAL PERSONNEL COSTS		**19**	**228'700**		**228'700**
40	EQUIPMENT					
45						
45.01	Equipment			270'000	180'000	90'000
45.70	Equipment Insurance					
45.80	Equipment Transportation					
	TOTAL EQUIPMENT		**49**	**270'000**	**180'000**	**90'000**
30	TRAINING					
50	MISCELLANEOUS COSTS					
52	***Reporting Costs***					
52.01	Reports and communications					
	Total Reporting Costs		**52.99**			
53	***Sundries***					
53.01	translation					
53.90	Non-Distributed			8'886	6'047	2'840
	Total Sundry Costs		**53.99**	**8'886**	**6'047**	**2'840**
	TOTAL MISCELLANEOUS		**59**	**8'886**	**6'047**	**2'840**
	SUB-TOTAL PROJECT			**507'586**	**186'047**	**321'540**
90	OTHER ADMIN & SUPPORT COSTS					
	ITU Admin Support Costs	7.5%	**98**	**38'069**	**13'953**	**24'115**
	TOTAL BUDGET		**99**	**545'655**	**200'000**	**345'655**

B. Regional Initiatives Fund (Action Number: 10219)

BUDGET LINE	CHF BUDGET
Ext Expert (Customization & Evaluation)	65'892
BDT Travel (2 countries)	35'340
MISC	1'368
TOTAL BUDGET	**102'600**

Annex 2

Work Plan

Annex 2-1

Project Work Plan For Guidelines of Roadmap

Tasks/Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Recruitment of experts																										
Project review																										
Analysis of questionnaire																										
Development of guidelines																										
- Basic digital broadcasting issues, e.g.:																										
- Legislative environment, e.g.:																										
- Regulatory environment, e.g.:																										
- Spectrum environment, e.g.:																										
- Business planning, e.g.:																										
- Technology, e.g.:																										
- Network planning, e.g.:																										
- Viewers, e.g.:																										
Integration of individual roadmap sections																										
Develop user manual/entity relationship model																										
Project final review and distribution of the guideline																										
Expert 1 (Terrestrial technology)	**Work at home 112 days**																									
Expert 2 (Mobile technology)	**Work at home 112 days**																									
Expert 3 (Regulatory and Policy)	**Work at home 112 days**																									
Expert 4 (specialist of Reg./ Policy)	**Work at home 60 days**																									

Annex 2-2

Project Work Plan for Customization of Roadmap (2 pilot countries) and Deployment of Pilot System

Task/Weeks	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
<Customization>																									
Recruitment of experts																									
Identification of pilot countries																									
Project review and preparation of an additional questionnaire																									
Distribution and collection of questionnaires																									
Meeting with key members of each country (Mission 1, 3experts)																									
Draft of Customisation																									
- Actions to assist terrestrial broadcasting requirement																									
- Actions to assist mobile broadcasting requirement																									
- Actions to provide policy and regulatory assistance																									
- Integration of individual sections and preparation Mission 2																									
Customisation in the pilot countries(Mission 2, 2experts)																									
Consolidation of experts' reports																									
Producing project report and distribution of customised roadmap																									
<Deployment of pilot system>																									
Identification of beneficiary countries and systems																									
Specification																									
Identification of location																									
Tender process																									
Transportation																									
Installation																									
Commission																									
Expert 1 (Terrestrial technology)	**40 working days at home +10days in mission**																								
Expert 2 (Mobile Technology)	**40 working days at home +10days in mission**																								
Expert 3 (Regulatory & policy)	**40 working days at home + 5days in Mission 1**																								
Expert 4 (Technology specialist)	**20 working days at home**																								

Annex 3

The List of Potential Pilot Countries (recommended in the Report of the Feasibility Study on Digital Broadcasting Roadmap in Africa)

The following countries have been recommended, as the pilot countries for customization in the report of Feasibility Study on the Digital Broadcasting Transition Roadmap in Africa. Where indicated, high priority areas are shown in *italics*.

Egypt: the assistance requested is ensuring national legislation is ready for the transition to digital broadcasting, identifying potential sources of financing and budget preparation, collection of technical information, *development of customer awareness, provision of receivers, technical or regulatory expertise* and adapting the roadmap to the requirements of their country.

Ghana: the assistance requested is ensuring national legislation is ready for the transition to digital broadcasting, identifying potential sources of financing and budget preparation, collection of technical information, development of customer awareness, provision of receivers, technical or regulatory expertise and adapting the roadmap to the requirements of their country.

South Africa: the assistance requested is on *technical and regulatory areas,* and the collection of technical information, as well as adapting the roadmap to the requirements of the country.

Tunisia: the assistance requested is ensuring national legislation is ready for the transition to digital broadcasting, collection of technical information, development of customer awareness, *provision of receivers, technical or regulatory expertise* and adapting the roadmap to the requirements of their country.

Annex 4

The Scope of Guidelines

1. **Regulatory assistance** on frequency related issues - e.g., assistance with, or training on, the application of the regulatory procedures in the GE06 Regional Agreement for the introduction of digital broadcasting services.

   This module would include:

   - application of Articles 4 and 5 of the Agreement (Article 4 - Procedure for modifications to the Plans and procedure for coordination of other primary terrestrial services, Article5 - Notification of frequency assignment; conversion of allotment to assignment);
   - submission to the ITU of:
     - coordination data under Annex 3 of the Agreement (Basic characteristics to be submitted in application of the Agreement), or
     - notification data under Appendix 4 of the Radio Regulations;
   - identification of affected administrations under Section I of Annex 4 of the Agreement (Limits and methodology for determining when agreement with another administration is required);
   - conformity with the Plan under Section II of Annex 4 of the Agreement (Examination of conformity with the digital plan entry); and
   - operation under the mask of a digital entry in the Plan.

2. **Legislative matters** - e.g., ensuring national legislation is ready for introduction of digital broadcasting.

   The purpose of this module is to inform on the development of policy on issues that may require the Government to modify existing legislation or develop new legislation in order to introduce digital broadcasting, this includes:

   - requirements for digital switchover and the switch-off of analogue broadcasting; simulcasting;
   - carriage of programme services by multiplex operators;
   - competition policy;
   - licensing of broadcasters, network operators and multiplex operators;
   - consumer licensing and consumer issues; and
   - setting of the necessary framework for adoption and control of equipment standardisation.

3. **Technology** - e.g., information on the different types of technology available for providing digital broadcasting.

   This module may be used to inform government policy and decision making regarding the available standards, frequency allocation, consumer requirements and costs. The module will also assist Government, network operators and broadcasters to identify the costs associated with development of the required broadcast facilities e.g., network infrastructure, compression options (e.g., MPEG2, MPEG4), transmission standards (DVB-T, DVB-T2), upgrading studio facilities. It should be noted that cost calculations on network infrastructure are linked to coverage predictions regarding options on network type (SFN or MFN), the modulation scheme (QPSK or 16QAM or 64QAM), data rates (determining multiplex capacity) and the technology (e.g., DVB-H, T-DMB).

4. **Equipment availability** - e.g., information and assistance in ensuring the necessary equipment is available when required.

   The purpose of this module is to inform on the development of policy on the creation of the necessary organisational structures for ensuring the smooth roll out of digital services e.g., provision of simulcasting, availability of digital consumer equipment, training and availability of antenna installers. The module is linked to the logistics of rolling out a digital network and provision of digital services.

5. **Technical assistance on terrestrial broadcasting** - e.g., technical assistance on various aspects of terrestrial broadcasting including network planning.

   This module would be used to assist network or broadcast planners with the development of a digital terrestrial broadcasting network covering both network infrastructure and studio requirements. For network infrastructure the module would take into consideration government policy on simulcasting, digital switchover and replication of analogue coverage. Therefore it will include issues like coverage predictions, extension of coverage or capacity from the GE06 Plan entitlements (the GE06 Plan only contains transmitters between 24dBW and 53dBW and does not include any relays below 24dBW necessary to replicate or extend existing analogue coverage). It will also address the implications of implementing SFN or MFN infrastructures e.g., SFNs are more spectrally efficient, but require longer guard intervals which restrict data rates and therefore the quantity of information that can be carried within the data stream; for existing networks, SFN costs are affected by the network infrastructure and regional broadcast requirements.

6. **Technical assistance on mobile broadcasting** - e.g., technical assistance on various aspects of mobile broadcasting including network planning.

   This module would be used to assist network or broadcast planners with the development of a digital mobile broadcasting network covering both network infrastructure and studio requirements. Including coverage predictions associated with mobile coverage and the implications of implementing SFN or MFN infrastructures.

7. **Customer awareness** - e.g., programme availability, reception issues including antenna replacement, set-top boxes, problems with video recorders, quality of service.

   This module is intended to inform on policy development on the organisational processes that that need to be put in place by the government, including any related legislation, and the coordination of resources and services, to ensure:

   - the public are prepared for the introduction of digital services; and,
   - know what needs to be done to receive digital broadcasting services.
   - Subsidising set-top boxes

   Where a short switchover period is planned, the module could also cover the planning and assistance necessary to help the public prepare for the switch-off of analogue services.