Perspectives and Thoughts on Africa's Radiation Therapy Challenges: Nigeria as a Case Study

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Fig. 1.
Radiotherapy and Brachytherapy equipment per million population in Africa, Western Europe and North America.

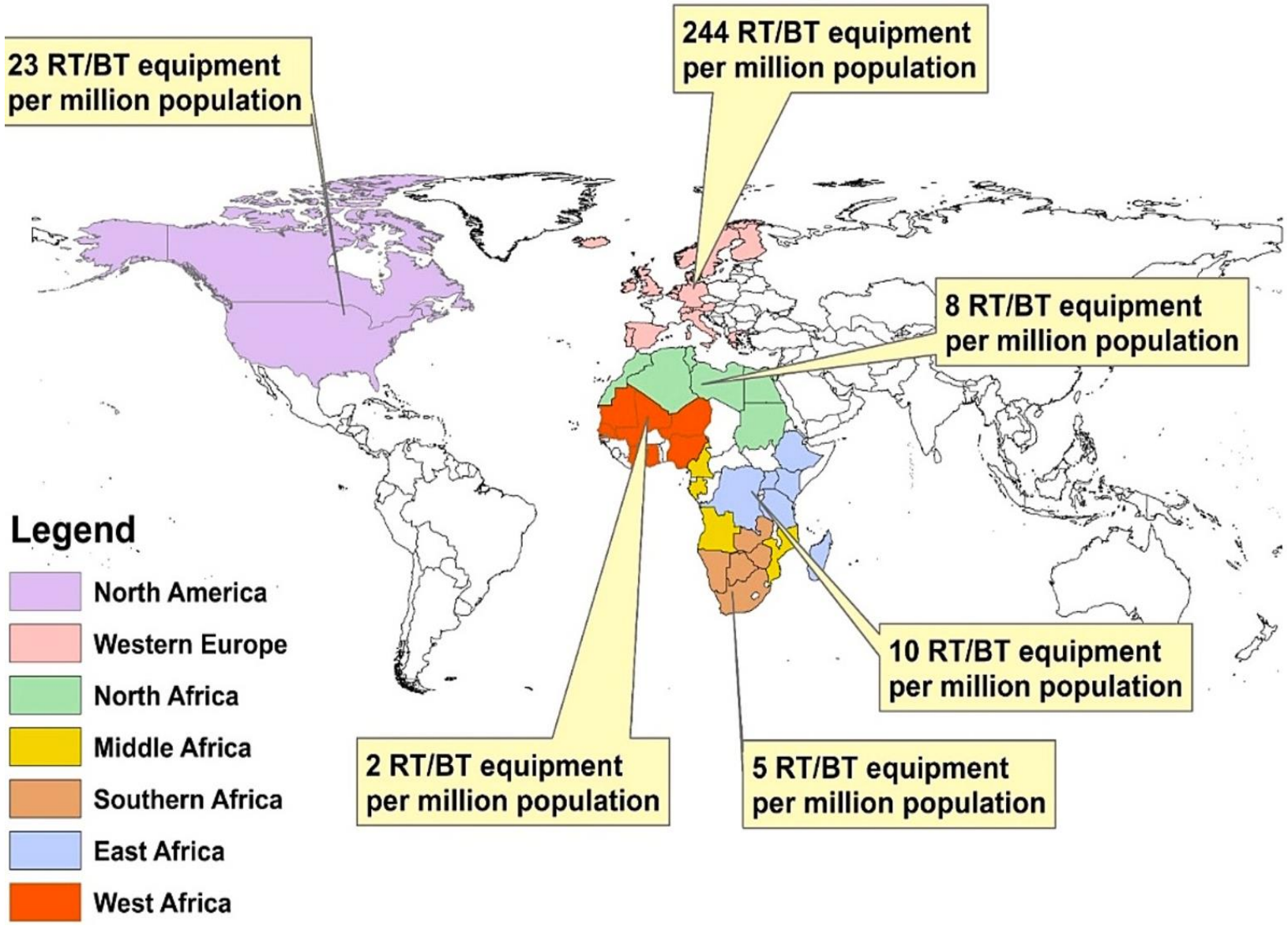


Table 2: Summary Chart of Major Challenges Radiotherapy faces in 33 African Countries.

Countries	Less than one piece of RT equipment per million population	No AI radiotherapy education curriculum	Lack of human resources with sufficient training or expertise	Countries with inadequate/ unreliable funding sources	Insufficient data for training AI models/ lack of AI technology and resources
Algeria		+		+	+
Angola	+	+			+
Botswana	+	+	+		+
Burkina Faso	+	+		+	+
Cameroon	+	+	+	+	+
Cote D'Ivoire	+	+		+	+
D. R. Congo	+	+		+	+
Egypt		+	+	+	+
Ethiopia	+	+		+	+
Gabon	+	+		+	+
Ghana	+	+	+	+	+

Table 2:..CONTD. Summary Chart of Major Challenges Radiotherapy faces in 33 African Countries.

Countries	Less than one piece of RT equipment per million population	No AI radiotherapy education curriculum	Lack of human resources with sufficient training or expertise	Countries with inadequate/ unreliable funding sources	Insufficient data for training AI models/ lack of AI technology and resources
Kenya	+	+		+	+
Libya		+	+	+	+
Madagascar	+	+		+	+
Mali	+	+		+	+
Mauritania	+	+		+	+
Mauritius		+	+	+	+
Morocco		+		+	+
Mozambique	+	+		+	+
Namibia		+		+	+
Niger	+	+		+	+
Nigeria	+	+	+	+	+

Table 2:..CONTD. Summary Chart of Major Challenges Radiotherapy faces in 33 African Countries.

Countries	Less than one piece of RT equipment per million population	No AI radiotherapy education curriculum	Lack of human resources with sufficient training or expertise	Countries with inadequate/ unreliable funding sources	Insufficient data for training AI models/ lack of AI technology and resources
Reunion		+		+	+
Rwanda	+	+	+	+	+
Senegal	+	+	+	+	+
South Africa		+	+	+	+
Sudan	+	+	+	+	+
Tanzania	+	+	+	+	+
Togo	+	+		+	+
Tunisia		+		+	+
Uganda	+	+	+	+	+
Zambia	+	+		+	+
Zimbabwe	+	+		+	+

Table 3: IAEA Projects Coverage in Africa

Project Code	Project Title	Project Objective
RAF6051	Strengthening Education and Human Resources Development for Expansion and Sustainability of Nuclear Medicine Services in Africa	To strengthen and sustain nuclear medicine capabilities in Africa through academic education programmes
RAF6054	Strengthening and Improving Radiopharmacy Services	To improve good operating standards and pharmaceutical regulation of hospital preparation of radiopharmaceuticals in order to expand the range of safe and effective radiopharmaceuticals available in African Member States and improve patient safety in nuclear medicine practice
RAF6055	Improving the Quality of Radiotherapy in the Treatment of Frequently Occurring Cancers	To enhance the quality of the delivery of radiotherapy services in AFRA MS through harmonized clinical training schemes and sensitization of policy makers
RAF6056	Supporting Human Resources Development in Radiation Medicine	To strengthen the treatment of cancer through the training and education of radiation medicine professionals in AFRA States
RAF6057	Strengthening the Quality of Nuclear Medicine Services	To enhance the quality of the delivery of nuclear medicine in AFRA States through a well-established quality management system.
RAF6058	Strengthening the Capacities for Radiopharmacy and Medical Physics and Radiology for Expansion and Sustainability of Medical Imaging Services	To strengthen and sustain imaging services in Africa through academic education programmes (radiopharmacy) and training as well as effective diagnostic and interventional radiological practices

NIGERIA AS A CASE STUDY

FIG. 1. Map Showing the Location of Existing Cancer Centres in Nigeria

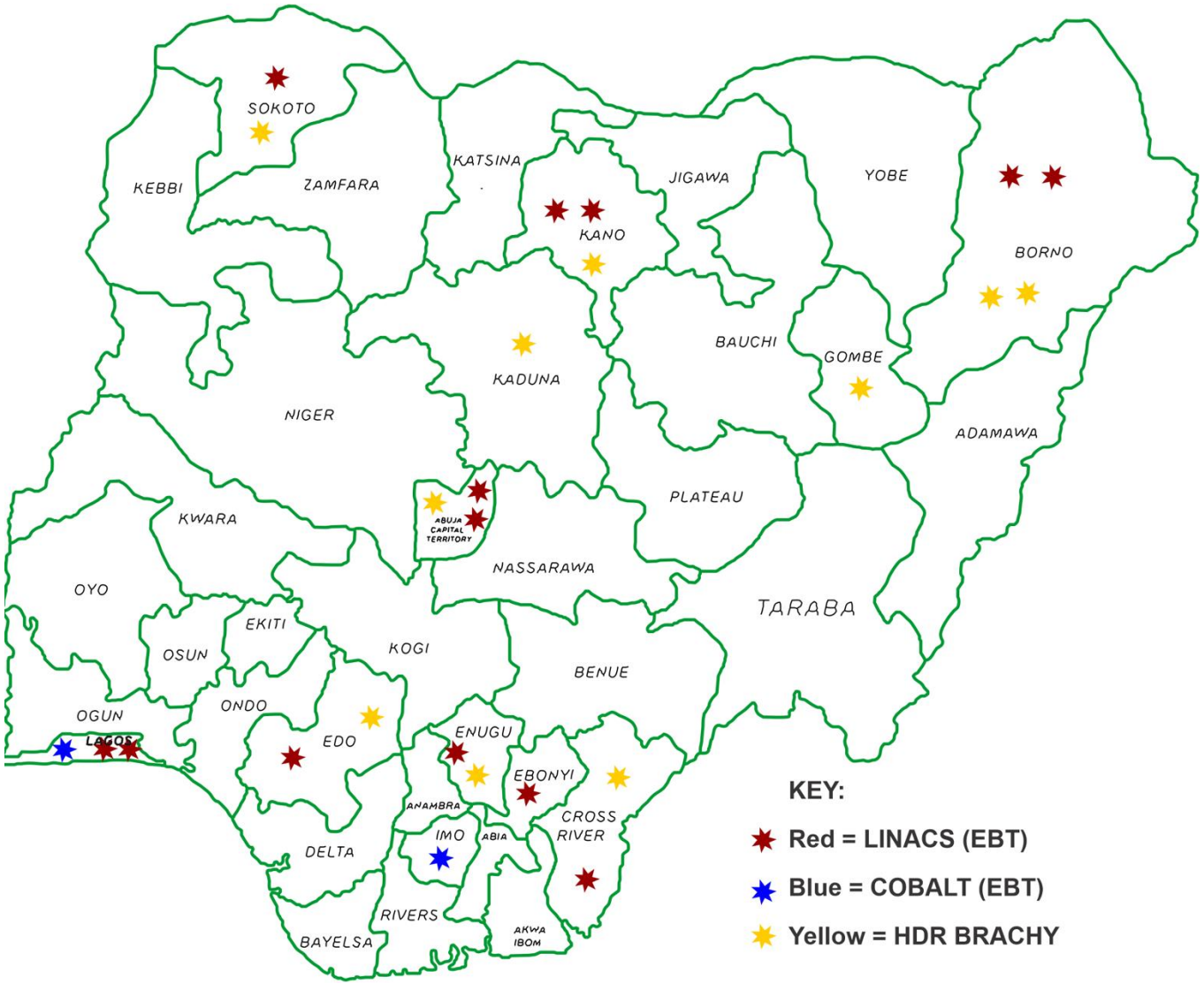


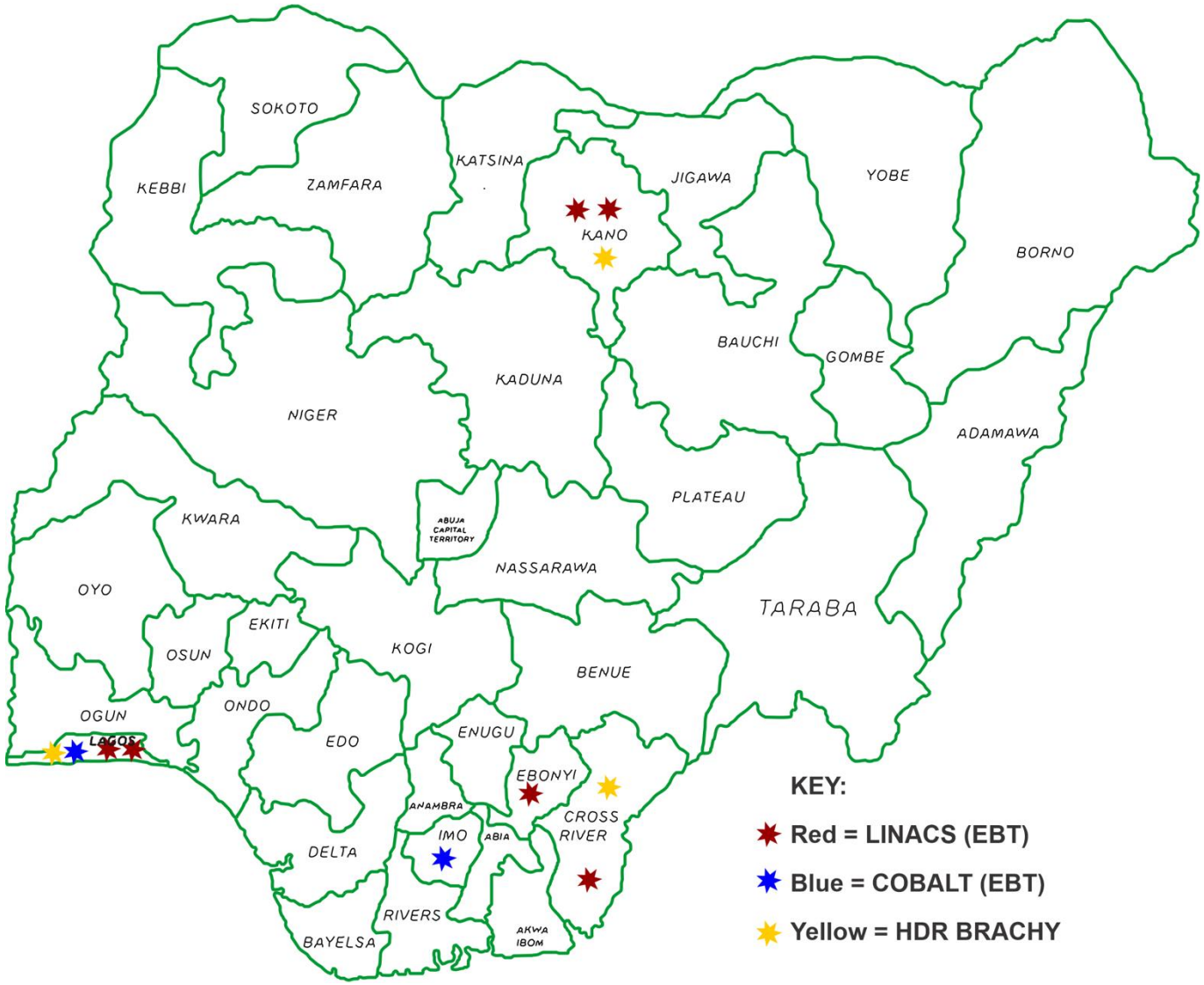
Table 4: STATUS AND LIST OF EXISTING AND PROPOSED CANCER CENTRES IN NIGERIA.

TYPE OF FACILITY	NAME OF FACILITY	NO OF EQUIPMENT
FEDERAL GOVERNMENT	National Hospital Abuja	2 Linacs and 1 Co-60 HDR Brachytherapy
	University of Maiduguri Teaching Hospital (UMTH), Maiduguri	2 Linacs and 2 HDRs (Co-60 and Ir-192)
	Usmanu Danfodiyo University Teaching Hospital (UDUTH), Sokoto	1 Linac and 1 Co-60 HDR
	University of Nigeria Teaching Hospital (UNTH) Enugu	1 Linac and 1 HDR
	University of Benin Teaching Hospital (UBTH) Benin City	1 Linac and 1 HDR - to be commissioned in May 2025
	Ahmadu Bello University Teaching Hospital (ABUTH), Zaria	No functional EBRT, 1 HDR
	University College Hospital (UCH), Ibadan	No functional EBRT, 2 HDRs
	Federal Teaching Hospital (FTH) Gombe	1 Ir-192 HDR, No EBRT
STATE GOVERNMENT	Prof. Hafsat Ganduje Cancer Centre, Kano	1 Vitabeam, 1 Halcyon and 1 HDR Brachy
PPP	NSIA - LUTH Cancer Centre (NLCC)	2 Vita beam, 1 Halcyon and 1 HDR Brachy
	David Umahi Teaching Hospital - OncoClinics Cancer Centre, Ebonyi	1 Linac

Table 4..CONTD.: STATUS AND LIST OF EXISTING AND PROPOSED CANCER CENTRES IN NIGERIA.

TYPE OF FACILITY	NAME OF FACILITY	NO OF EQUIPMENT
PRIVATE	Marcelle Ruth Cancer Centre and Specialist Hospital (MRCCSH), Lagos	1 Linac - Truebeam
	Asi-Ukpo Comprehensive Cancer Centre (AUCC), Calabar.	1 Linac and 1 HDR
	American Cancer Hospital, Ikeduru-Owerri, Imo-State	1 Telecobalt unit
	EKO Hospital, Lagos	1 Telecobalt unit
PROPOSED SITES	Federal Teaching Hospital (FTH) Katsina - FGN	Awaiting Installation of Equipment. Set to be commissioned May 2025.
	Jos Uuniversity Teaching Hospital (JUTH) Jos. - FGN	"Greenfield"
	Benue State University Teaching Hospital (BSUTH) Makurdi- BENUE STATE	Construction work started in January 2025.
	AMCE ABUJA - AFREXIM BANK - PPP	Awaiting Installation of Equipment. Construction completed.
	HMSH (NIA) ABUJA - FGN	RT Construction set to start anytime from now (DR and NM completed).
	FMC ABEOKUTA - FGN	Construction set to start anytime from now.
	FMC EBUTE-METTA - FGN	Bunkers (2 Linacs and 1 HDR completed)
	KWODC ILORIN - STATE	Bunker Construction set to start very soon.
	LAUTECH OSHOGBO - STATE.	Bunkers completed about 2 years ago. Awaiting installation of equipment.
	AMSH ADO-EKITI - PRIVATE.	Proposed.

FIG. 2. Map Showing the Location of the Private/PPP Radiotherapy Centres – located in the 3 Geopolitical zones in the South (SE, SS and SW) and NC of NIGERIA. 2 Cobalt EBT, External Beam Therapy and 8 Linacs EBT. 5 INT – Intracavitary Brachytherapy for Gynae Cancers situated in the 4 Linac Centres.



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THANK YOU