



# FUTURE<sup>2</sup>

First "Umeme" Training  
Undertaking for Rural Electrification  
and Renewable Electricity

## CIGRE Capacity Building for Africa program launch

28 July – 2 August

# 2023

University of Dar es Salaam (UDSM)  
College of Engineering and Technology (CoET)

Join us via Zoom Meeting ID: 875 3202 5336, Passcode: fqh7id



Co-funded by  
the European Union



### PROGRAM

- Day 1 and 2: Sustainable Energy for All: Rural Electrification
- Day 3, 4 & 5: Renewable Electricity: Utility Scale Solar Photovoltaic Power Plants

UMEME

new education system for electric access  
development in Tanzania



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Co-funded by Cigre Academy  
Capacity Building for Africa

## Day 1 Friday, 28 July 2023

CIGRE Academy - Rural Electrification, Technical Brochure 835		
08.00 – 08.30	Registration	
08.30 – 08.45	Welcome and event presentation	B. Mwinywiwa*, S. Kihwele - UDSM
08.45 – 09.00	Presentation of “UMEME” Project	S. Kihwele, F. Santi, K. Cipri - UMEME
09.00 – 09.05	Message from CIGRE Central Office	P. Adam – CIGRE Secretary General
09.05 – 09.35	Presentation of CIGRE, CIGRE East African Committee, CIGRE Academy, Program for Young Members	A. Iliceto - CIGRE C1 Chair
09.35 – 10.30	Introduction to Rural Electrification	K. Dedekind – CIGRE C6 Chair
10.30 – 10.50	Coffee/Tea Break	
10.50 – 11.40	Defining the challenges pertaining to Rural Electrification	M. Ross* - CIGRE C6 expert
11.40 – 13.00	Planning and designing for Rural Electrification	K. Dedekind, N. Booyens* - CIGRE C6 experts
13.00 – 14.00	Lunch	
14.00 – 15.20	Technology options available for Rural Electrification	S. Steinberg* - CIGRE C6 experts
15.20 – 15.40	Coffee/Tea Break	
15.40 – 17.00	Building Blocks for Rural Electrification	K. Dedekind, S. Fani* CIGRE C6 experts
17.00 – 17.30	Some Case Studies and examples	K. Dedekind, S. Fani*, S. Steinberg*

## Day 2 Saturday, 29 July 2023

CIGRE Academy - Focus on ISWS; Research and Applications ongoing in Tanzania		
09.00 – 09.30	Introduction to Iliceto Shield Wire System (ISWS)	A. Iliceto, S. Kihwele, F. Santi *
	Introduction of co-operation and funding grants between “Charity Association F. Iliceto” and UDSM	A. Iliceto – Chair of Charity Association
09.30 – 10.00	Application of ISWS in Tanzania: the pilot project of Chalinze-Hale-Tanga HV transmission line	H. Munisi - UDSM
10.00 – 10.30	Bidirectional use of ISWS for Rural Electrification in Tanzanian Villages with Integration of Renewable Energy Sources (RES). An application to the pilot project Chalinze-Hale-Tanga	P. Chambela - UDSM
10.30 – 11.00	Coffee/Tea Break	
11.00 – 11.20	Investigation of the cause of lightning strike on the wooden poles: case study Katavi Region	L. Thomas - UDSM
11.20 – 11.40	Development of a hybrid renewable based system for grid integration. Case study High voltage laboratory at the college of Engineering and Technology	E. Bitesigirwe - UDSM

11.40 – 12.00	Design and simulation of renewable energy systems using concentrated solar power (CSP). A case study of Stami Gold	S. Kigodi - UDSM
12.00 – 12.20	Development of a model of silica sand for thermal energy storage system	E. Shange - UDSM
12.20 – 12.30	Conclusions of CIGRE Academy & activities in UDSM	B. Mwinywiwa, S. Kihwele, CIGRE representatives
12.30 – 14.00	<i>Lunch</i>	
14.00 – 16.30	<i>Visit to University facilities and technical laboratories</i>	
17.30 – 20.00	<i>Cocktail</i>	

*\* to be confirmed*

## Renewable Electricity: Utility Scale Solar Photovoltaic Power Plants

### Day 3: Introduction | Engineering Design Criteria | Short course on PV yield calculation

Monday 31 July 2023	Introduction to utility scale PV power plants and design criteria	
09.00 – 10.30	Potential benefits of utility scale solar farms in Tanzania. Pathways towards a development plan	F. Santi
10.30 – 11.00	<i>Coffee/Tea Break</i>	
11.00 – 12.30	Utility scale PV power plant design criteria, methodologies and case studies	Francesco Castellani - University of Rome
12.30 – 14.00	<i>Lunch</i>	
14.00 – 15.30	PV plant energy production calculation with PV-GIS, PVsyst, PVcase-Yield	Francesco Castellani
15.30 – 16.00	<i>Coffee/Tea Break</i>	
16.00 – 17.30	<u>PV-GIS/PVsyst/PVcase-Yield Classroom Exercise</u>	Francesco Castellani

### Day 4: Short course on large scale PV plants engineering design and PVcase software tool

Tuesday 1 August 2023	PV power plant engineering design – Short course in PVcase	
09.00 – 10.30	Introduction to PVcase as a tool to design utility scale PV power plants	Fiorenzo Castellani, C. Servi - University of Rome
10.30 – 11.00	<i>Coffee/Tea Break</i>	
11.00 – 12.30	Engineering design of large-scale PV plants with PVcase: case studies	Fiorenzo Castellani, C. Servi
12.30 – 14.00	<i>Lunch</i>	
14.00 – 15.30	AutoCAD Basic Short Course (PVCase oriented). <u>AutoCAD Classroom Exercise</u>	Fiorenzo Castellani, C. Servi
15.30 – 16.00	<i>Coffee/Tea Break</i>	
16.00 – 17.30	<u>PVCase Classroom Exercise</u>	Fiorenzo Castellani, C. Servi

### Day 5: Large Scale PV Plant Business Planning - Designing Together a Real-Case in Tanzania

Wednesday 2 August 2023	PV power plant business planning and engineering design tools	
09.00 – 10.30	Utility Scale PV Plants Cost Analysis. Principles of PPA. Revenues and Cash-Flows. Investment Evaluation	F. Santi - University of Rome
10.30 – 11.00	<i>Coffee/Tea Break</i>	
11.00 – 12.30	<u>Business case classroom exercise</u>	F. Santi
12.30 – 14.00	<i>Lunch</i>	
14.00 – 15.30	<u>PVCase Classroom Training</u> <i>Designing together a real-case in Tanzania</i>	Francesco Castellani, Fiorenzo Castellani, Cecilia Servi
15.30 – 16.00	<i>Coffee/Tea Break</i>	
16.00 – 17.00	<u>PVCase Classroom Training</u> <i>Designing together a real-case in Tanzania</i>	Francesco Castellani, Fiorenzo Castellani, Cecilia Servi
17.00 – 17.30	Conclusions	S. Kihwele, F. Santi *