



Understanding Modelling Tools for Sustainable Development

MODULE

MODELLING UNIVERSAL ACCESS TO ELECTRICITY: A LEARNING GUIDE

Open-Source Spatial Electrification Toolkit (ONSSET)

TABLE OF CONTENTS

Introduction	2
Module: Modelling Universal Access to Electricity.....	3
Learning Objectives.....	3
Workshop Schedule	4
References	4

INTRODUCTION

The 2030 Agenda for Sustainable Development endorsed by UN Member States in September 2015 calls for transformative and integrated policies leading towards a sustainable development path. Realizing the vision of the 2030 Agenda requires better informed policy decision-making in all three dimensions of sustainable development along with dedicated attention to their interlinkages. Policies need to support a complex balancing of global goals with national development aspirations while also balancing trade-offs across sectors, goals and targets. Science-informed policymaking will help unveil policy and investment opportunities in all three dimensions. It will also help to define interlinkages that will lead countries towards sustainable development.

This **outreach hands-on training course** aims to enhance understanding of how modelling tools can be used to unveil interlinkages across different policy areas, and how they can inform policy decision-making. The course is a practical guide on the principles of five modelling tools and the insights they can offer to policy decision-making. It is targeted to policy decision makers and development practitioners who want to gain understanding about a selected number of modelling tools available for evidence-based decision-making for sustainable development.

This module illustrates how spatial information can help identify low-cost strategies to provide access to electricity under different electricity cost and consumption scenarios. The module illustrates how local (geo-spatial) information can unveil feasible alternatives for tapping renewable energy sources, such as solar, wind and mini-hydro technologies, for providing access to electricity without having to wait for large investments in expanding the central electricity grid.

The module comprises a technical explanation on how geographic information systems (GIS) can be used to evaluate energy resources and to plan electrification networks based on the lowest possible cost. The hands-on session is built on [ONSSET, an electrification modelling tool](#).

MODULE: MODELLING UNIVERSAL ACCESS TO ELECTRICITY

LEARNING OBJECTIVES

- Review evidence underscoring the importance of access to electricity.
- Understand GIS as a tool to assess energy resources.
- Summarize the steps to analyse the electrification status of countries and regions using GIS.
- Understand an electrification toolkit.
- Recognize the main features of the online electrification interface to perform an electrification analysis.

WORKSHOP SCHEDULE

Key		Resources	Time
1	Assessing electrification paths and energy resources using GIS	Presentation	40 minutes
2	Electrification analysis using GIS	Presentation	30 minutes
3	The Open Source Spatial Electrification Online Tool	Presentation	20 minutes
Coffee break			15 minutes
4	Hands-on exercises with the geospatial electrification model 1	Work in groups	1 hour and 25 minutes
Lunch break			60 minutes
5	Reporting and discussing work in groups	Group discussion	30 minutes
6	Hands-on exercises with the geospatial electrification model 2	Work in groups	1 hour and 25 minutes
Coffee break			15 minutes
7	Reporting and discussing work in groups	Group discussion	30 minutes
Total time			7 hours and 35 minutes

REFERENCES

International Energy Agency (2015). *World Energy Outlook 2015*. Paris.

Pachauri, S., N. D. Rao, Y. Nagai and K. Riahi, 2012. "Access to Modern Energy: Assessment and Outlook for Developing and Emerging Regions." Luxemburg, Austria: International Institute for Applied Systems Analysis.

UN-Energy (2014). *Electricity and education: The benefits, barriers, and recommendations for achieving the electrification of primary and secondary schools.*

United Nations Development Programme (2016). “Goal 7: Affordable and clean energy.” Available at www.undp.org/content/undp/en/home/sdgoverview/post-2015-development-agenda/goal-7.html.

United Nations Industrial Development Organization (2011). *Access to Modern Energy: Assessment and Outlook for Developing and Emerging Regions.* World Bank (2015). *Beyond Connections: Energy Access Redefined.* Washington, DC: Energy Sector Management Assistance Program.

——— (2016). World Development Indicators: Electricity production, sources, and access. Available at <http://wdi.worldbank.org/table/3.7> and <http://data.worldbank.org/indicator/EG.ELC.ACCS.ZS>.