The Rise of Geospatial Planning in Developing Countries

ESMAP
Energy Sector Management Assistance Program

WORLD BANK GROUP

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ESMAP Knowledge Exchange Forum

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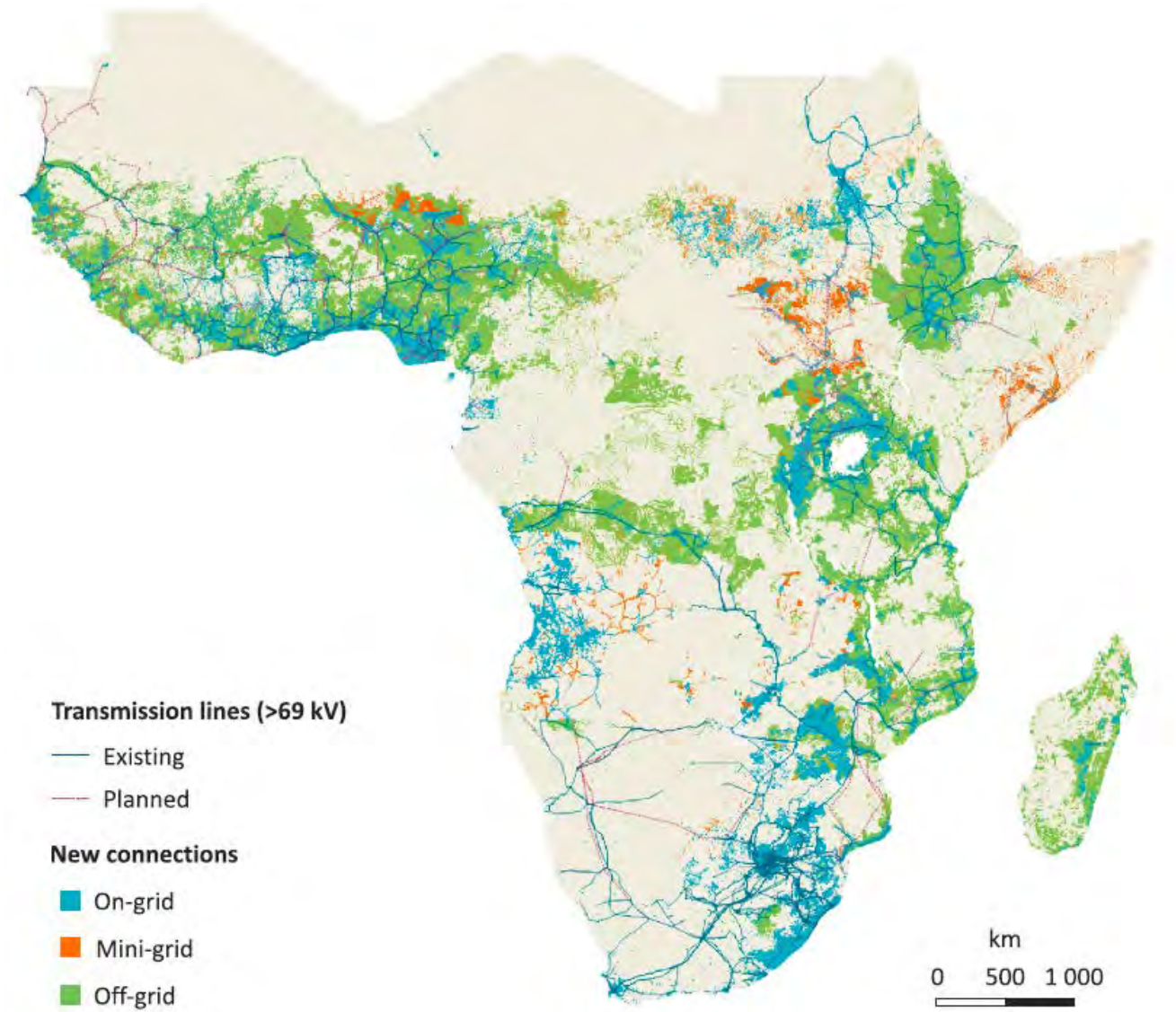


2030 universal access in Africa by technology*

69% Grid

20% SHS

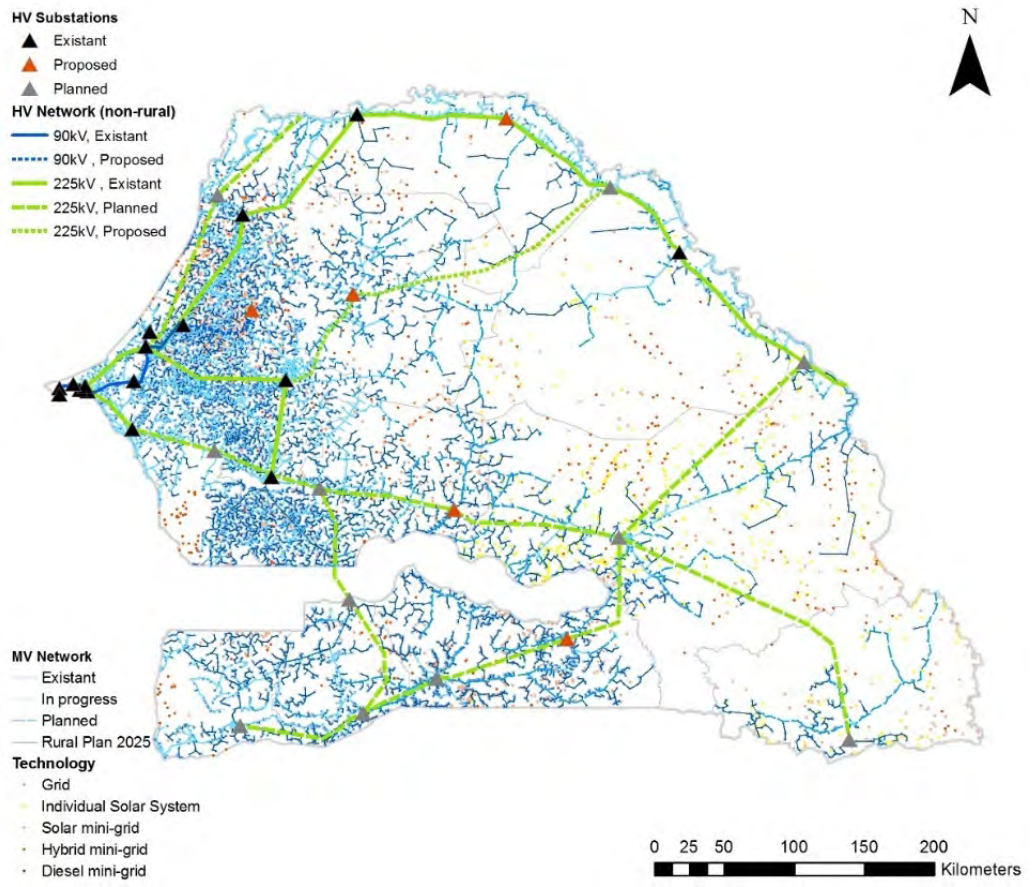
11% MG

* % of total population - Source: IEA, 2017

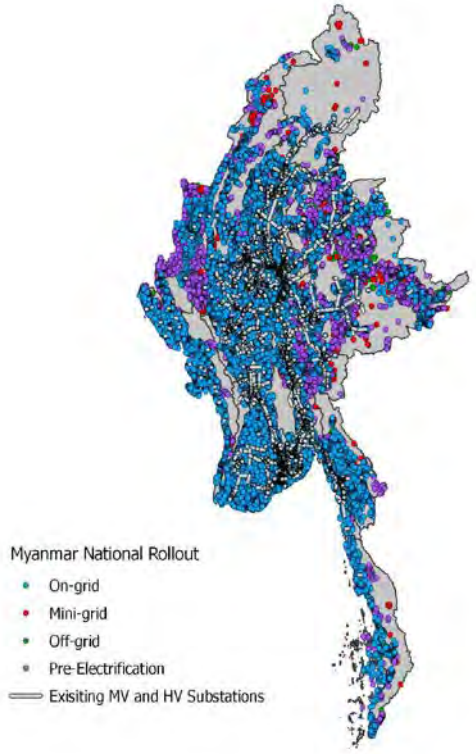
A changing electrification paradigm

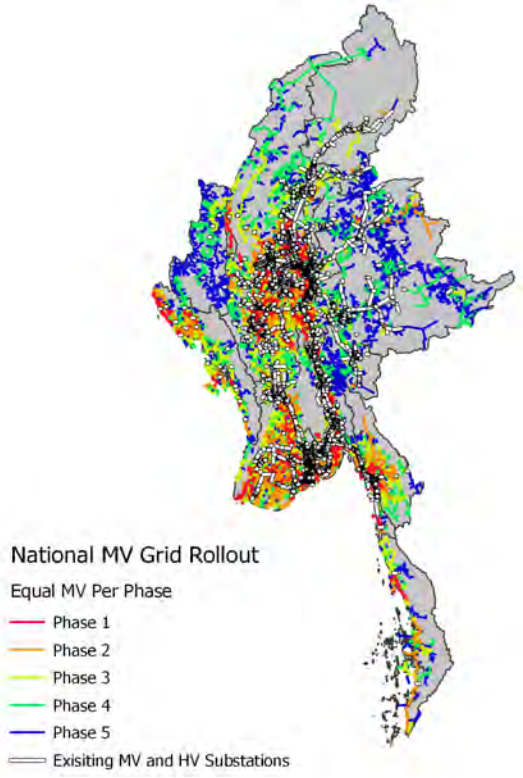
How does geospatial electrification help?

- ✓ Inclusive of both grid and off-grid solutions
- ✓ Bottom-up approach to planning based on electricity demand
- ✓ Dynamic with ability to adjust parameters and sequencing of roll-outs
- ✓ Informing access policies and investments with increased precision
- ✓ Foster transparency and rationality in Government planning
- ✓ Allows for donors' coordination and investments syndication
- ✓ Reduce risks for off-grid private investments through predictability and data availability



From planning to investments





	In US$ Million				
Type of investment	2015	2016	2017	2018	2019
Grid Investment	$72.5	$80.6	$79.8	$139.9	$232.2
Mini-grid Investment	$0.6	$0.6	$0.6	$0.6	$0.6
Pre-electrification Investment	$2	$3	$4.5	$6.5	$8.5
Off-grid Investment	$2.2	$2.2	$2.2	$3.2	$3.2
Annual Investment	$77.3	$86.4	$87.1	$150.2	$244.5
Technical Assistance	$10.3	$6.8	$2.2	$3.1	$1.4

1 UNIVERSAL ACCESS STRATEGY

2 ROLL-OUT PLAN

3 INVESTMENTS SYNDICATION

ESMAP SE4All TA Phase I [2013-2017]

- ✓ 11 countries supported
- ✓ Focus on electricity and cooking
- ✓ Sector wide programs and investment prospectus as primary objectives
- ✓ Pioneered geospatial electrification planning
- ✓ Emerging outcomes includes: coordinated approach, increased domestic and international funding, improved cost-effectiveness of programs, reduced risk for off-rid investments

Learnings from phase I

Lessons

- Geospatial plans get outdated quickly
- Scenarios and visualizations are most useful for informing strategies and policies
- Need for refining off-grid services as well as including productive and social uses
- Appropriate selection of resolution is key
- In-country capacity development requires long-term sustained support
- High costs of data collection and limited data publishing

Opportunities

- Exponential availability of data, including new and underused collection methods
- Advances in [cloud] computational power
- [Open source] algorithms and software capabilities
- Fast country level uptake allowing for regional approaches to capacity building
- Maturation of private sector offering and interest from large IT and data players

SE4All TA Phase II: 3 Pillars towards Mainstreaming

1

GLOBAL GEOSPATIAL PLANNING PLATFORM + PUBLICATION

GLOBAL PUBLIC GOOD

- All countries with less than 90% access provided with 'strategy level' updatable electrification plan
- Inform World Bank/donors policy dialogue and support
- Foster comparability and transparency of planning results
- Partnership driven

2

COUNTRY SUPPORT + HARMONIZATION

COUNTRY UPTAKE

- Support to at least 7 new countries with detailed 'investment grade' geospatial planning
- Costs and time savings through streamline procurement for customized 'investments planning'
- Data standards and open data by default

3

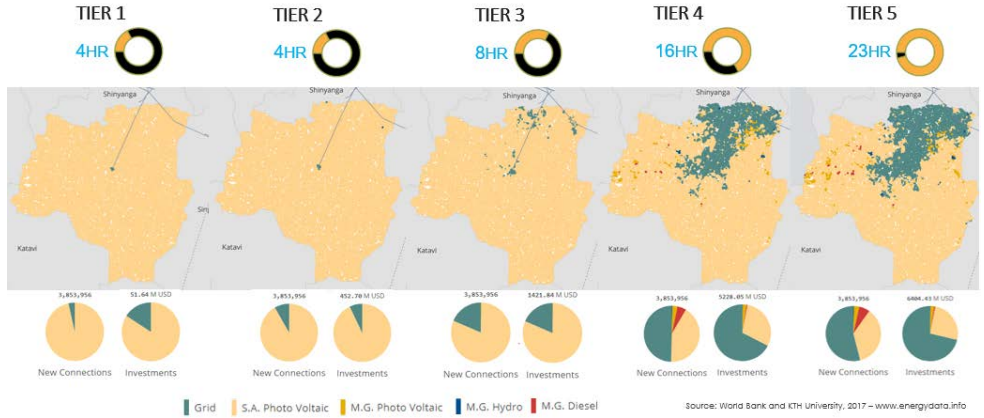
COUNTRY AND GLOBAL LEVEL CAPACITY BUILDING

KNOWLEGDE AND LEARNING

- Complement country-level efforts with longer-term regional and global activities
- Open knowledge: training material and e-learning
- Leverage partnerships with DFIs and academia

Global GIS model and planning platform overview

1 Based on 2017 pilot successfully deployed for 3 countries



2 Best-in-class development, research and IT partners

WORLD BANK GROUP
THE WORLD BANK IBRD • IDA
IFC International Finance Corporation
Google
developmentSEED
UNIVERSITY OF CAMBRIDGE
KTH VETENSKAP OCH KONST
WORLD RESOURCES INSTITUTE

3 Enhanced functionalities

- ✓ Expansion to cover all countries below 90% access rate
- ✓ Scenario based on multitier framework
- ✓ Ability for users to customize time, cost and demand parameters
- ✓ Addition of private sector focus
- ✓ Evolutive platform with ability to upload new data over time
- ✓ Data standards allowing to visualize results of additional and/or external planning exercises
- ✓ Link with open e-learning materials
- ✓ 100% open source
- ✓ Available summer 2018

Concluding remarks

Geospatial electrification planning has become a key to help designing electrification strategies inclusive of both grid and off-grid solutions

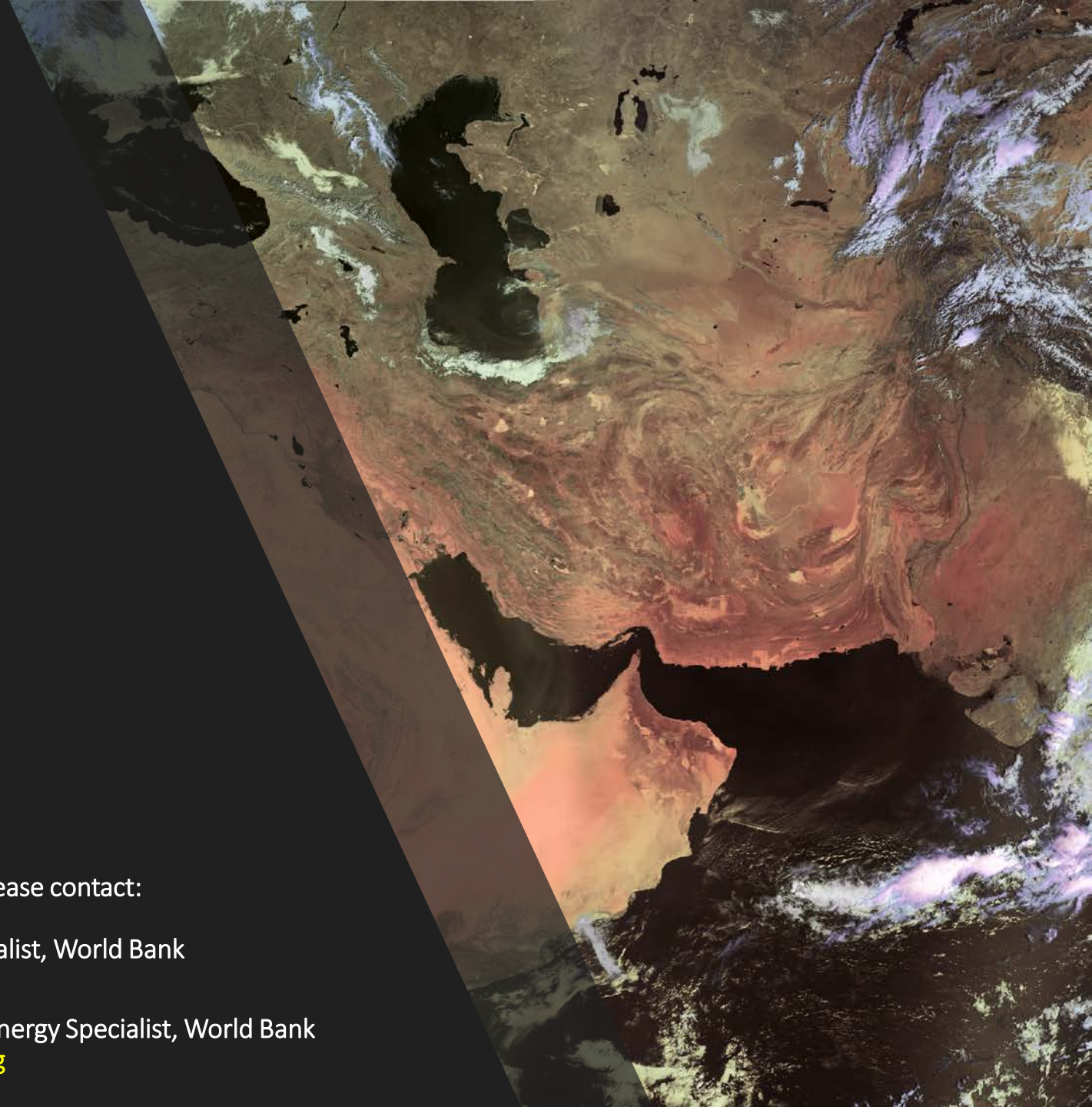
Data innovations and economies of scale will help mainstream in forthcoming years while models will continue improving

Focus on building countries' capacity to develop and update plans is critical

Private sector can highly benefit through focusing on transparency and open data

Partnerships and coordination can speed up results and are at the core of ESMAP modus operandi

Thank you.



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