Today's Challenge: E&S Risks in Mini-Grid Development

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Introduction and Context

- Huge potentials exits for Mini Grid development in Nigeria
- Mini Grid developments are associated with potentially significant Environmental and Social (E&S) risks
- Environmental Accord Limited (EnvAccord) is currently supporting some Mini Grid projects (especially solar PV and gas plants) in Nigeria with E&S risk management services
- This presentation leverages our current experience on Mini Grid developments in Nigeria. It is believed that a lot of the E&S issues in Nigeria are similar to what obtains in most other African countries.

E&S Risks: *Social:* Land Use Conversion

Potential Consequences to Project Affected Persons (PAPs)

1. Loss of livelihoods
2. Impoverishments
3. Loss/disruption of ecosystem services
4. Human right infringements

E&S Risks: *Social:* Project-Induced In-Migration (Influx of Workers)

- Most pronounced during project construction and possible decommissioning phases

- Number of required workers during construction phase for individual Mini Grid projects may be relatively small, but cumulative/sector-wide impacts are potentially very significant

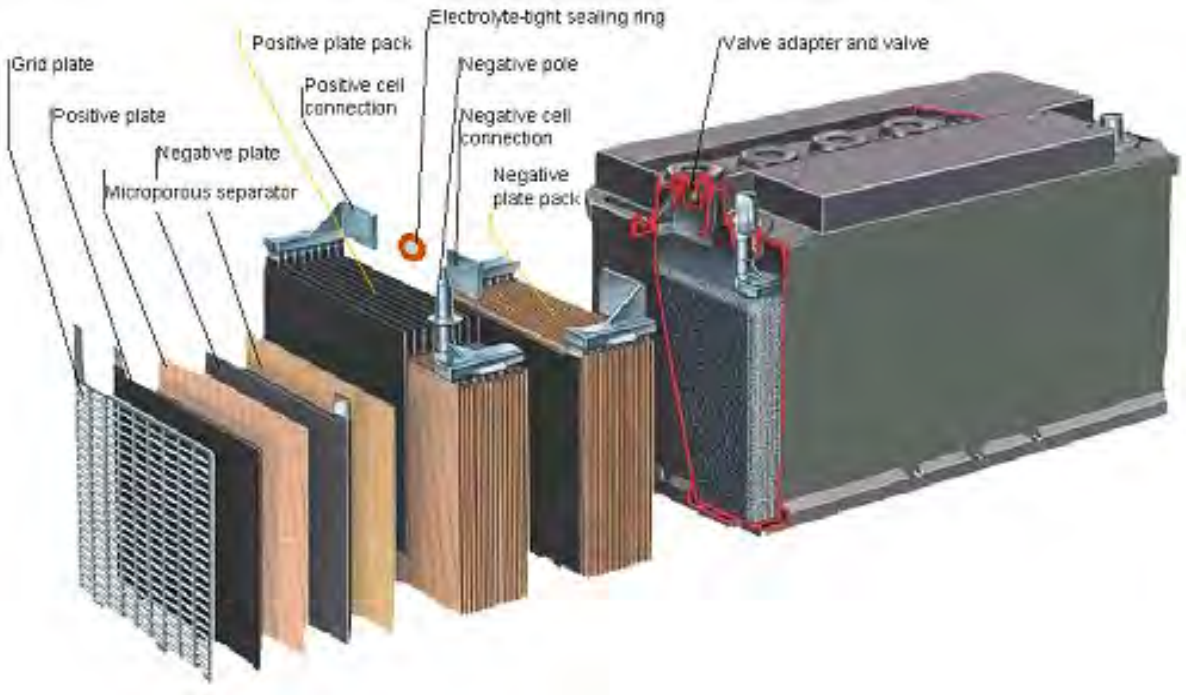
Potential Consequences

- Boom/Bust cycles
- Increase in levels of crime
- Drug and alcohol abuse
- Increase in incidence of casual sexual relations resulting in increase in sexually transmitted disease (such as HIV/AIDS infections) and unwanted pregnancies.
- Additional pressure on existing social infrastructure

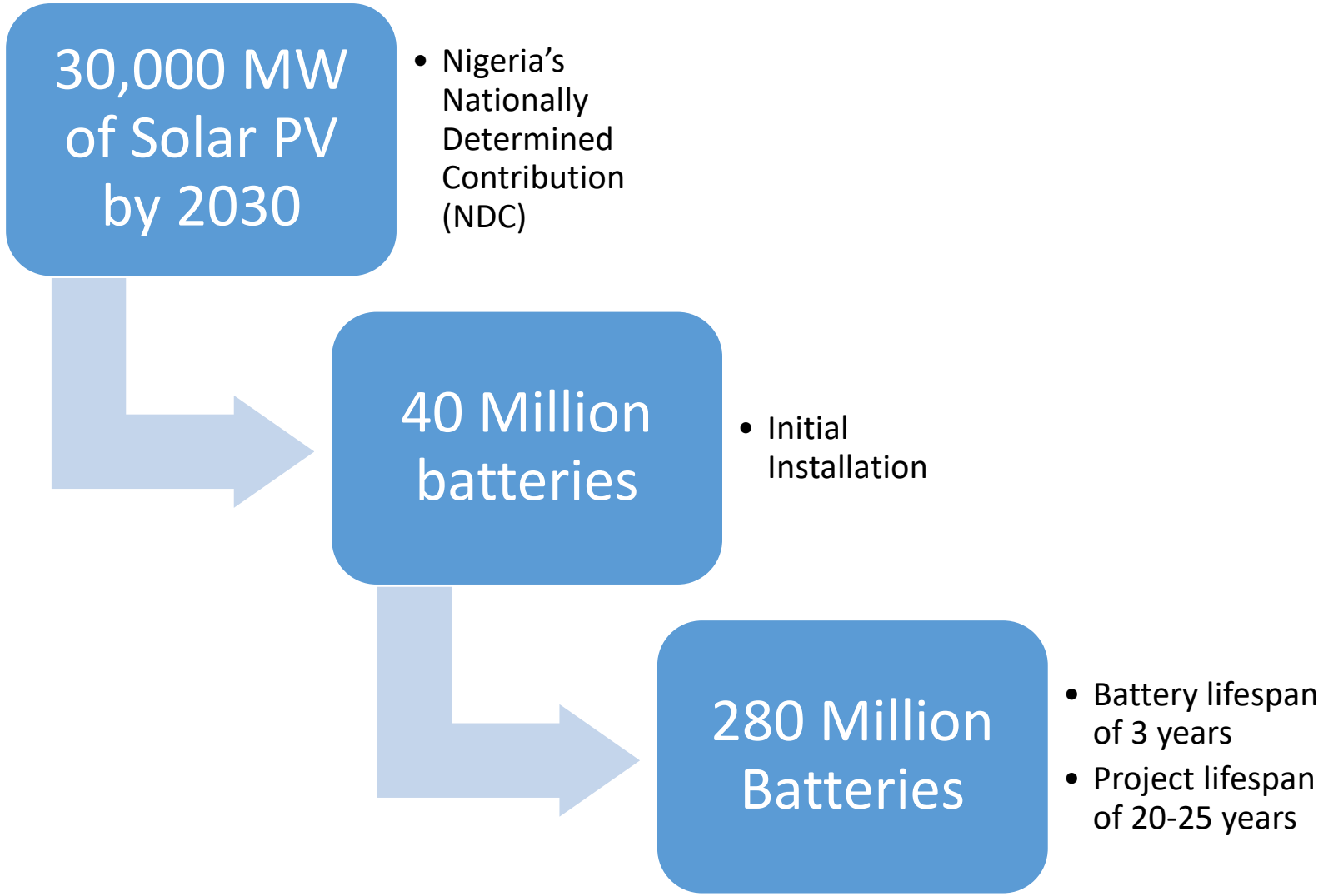
E&S Risks: Environmental: Waste Management

- The most important waste streams from Mini Grid projects are batteries, solar panels and other hazardous wastes (e.g. lube oil in gas plants)

- For Mini Grids in Nigeria (and most places in Africa), management of spent batteries will be a significant risk



Spent Battery Management: The Numbers



Adapted from: http://www.ids.ac.uk/opinion/will-solar-pv-create-a-wave-of-toxic-battery-waste-in-rural-africa Accessed on December 1, 2017

E&S Risks: Waste Management: *Spent Batteries Disposal Issues*

- In Nigeria, there are lead-acid recycling plants
- But most of these operate under conditions which are hazardous to human health and the environment.
- Once the used lead-acid batteries are broken open, acids are drained into the soil and the lead plates are removed,
- Some of the lead are recycled (melted into other forms) while others are shipped abroad

E&S Risks: Waste Management: *Disposal Issues*

E&S Risks: Environmental: Waste Management

Potential Consequences

- Wide-scale lead pollution/poisoning
- Soil and fresh water contamination
- Lead entry into the food chain resulting in diseases and fatalities

E&S Risks: Environmental: Water Use and Supply

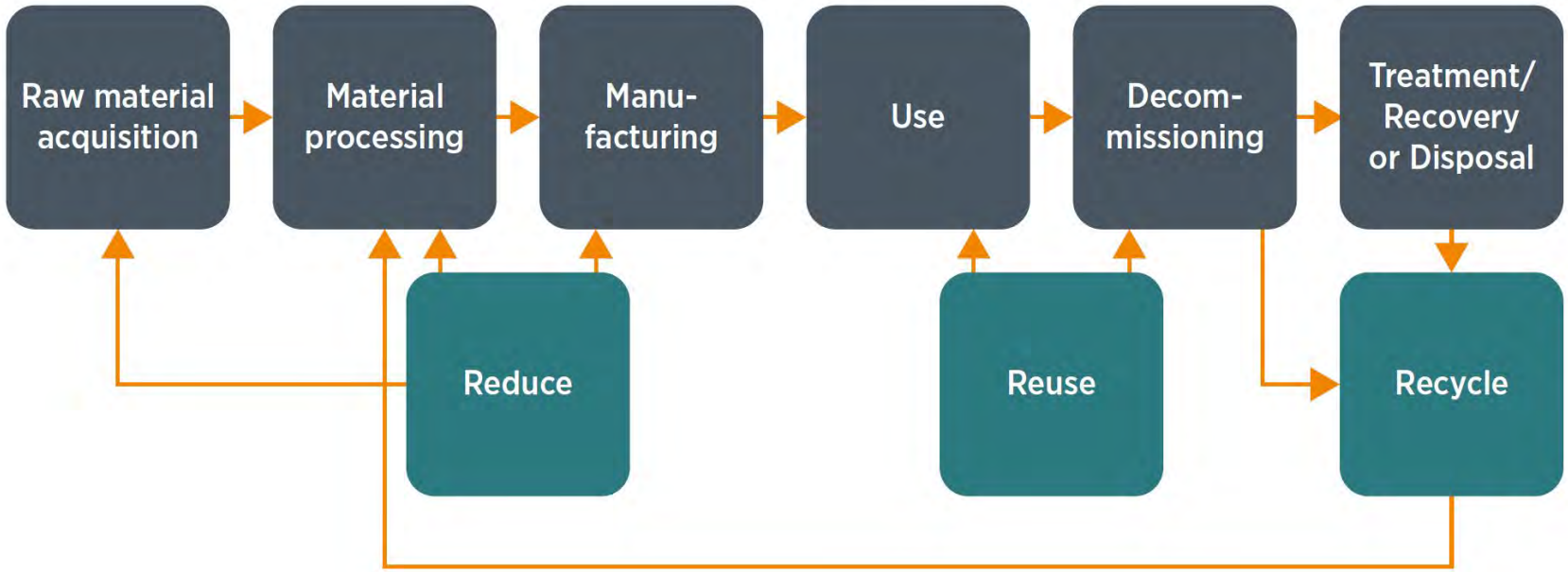
- Minis Grid projects require water during construction phase and for key maintenance activities (e.g. cooling of gas plants and washing of solar panels)
- The most common practice of water supply is to dig boreholes
- Issue may become significant in water-constrained areas (e.g. northern Nigeria where the highest solar radiation also exists)

Potential Consequences

- Depletion of water resources beyond self-sustaining thresholds
- Conflict with other stakeholders and PAPs who also depend on same sources of water supply

Clinic 7 | Taking Mini Grids to Scale Sustainably

Bringing the the circular economy into the low-carbon economy/solar PV industry



Used lead-acid batteries, Abuja dumpsite

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Session: Taking mini-grids to scale sustainably

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Applicable REPP Environmental and Social Management Standards (**ESMS**) : IFC Environmental & Social Performance standards and EIB Environmental & Social standards (No3 and No.10) for setting up an ESMF

1) **IFC PS 1: Assessment And Management Of Environmental And Social Risks And Impacts**
2) **IFC PS 2: Labor And Working Conditions**
3) **IFC PS3: Resource Efficiency And Pollution Prevention**
4) **IFC PS4: Community Health, Safety And Security**
5) **IFC PS 5: Land Acquisition And Involuntary Resettlement / EIB PS 10: Stakeholder engagement**
6) **IFC PS 6: Biodiversity Conservation And Sustainable Management Of Living Natural Resources / EIB PS 3: Standards on biodiversity and ecosystems**
7) **IFC PS 7: Indigenous People And Cultural Heritage**

ESMS in the development and implementation of mini grids: **Practical Lessons from the United Republic of Tanzania**

In Tanzania, the national electricity access rate in 2014 was estimated at 36% with only 11% in rural areas.

Case Study based on a developer that is installing solar hybrid mini grids > 30 rural off grid villages

- Set up a company wide internal environmental management system (EMS) that acts as a good foundation for designing and implementing an applicable and scalable Environmental & Social Management Framework (ESMF) through out multiple sites

Benefits of ESMS in scaling projects:

- Guard against unforeseen risks & impacts
- Social license to operate
- Improve financial/operational performance
- Gaining an international stamp of approval