

IEEE Foundation



IEEE Smart Village: Energy, Education, Empowerment
GHTC, 10 October 2015, Seattle

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About IEEE Smart Village



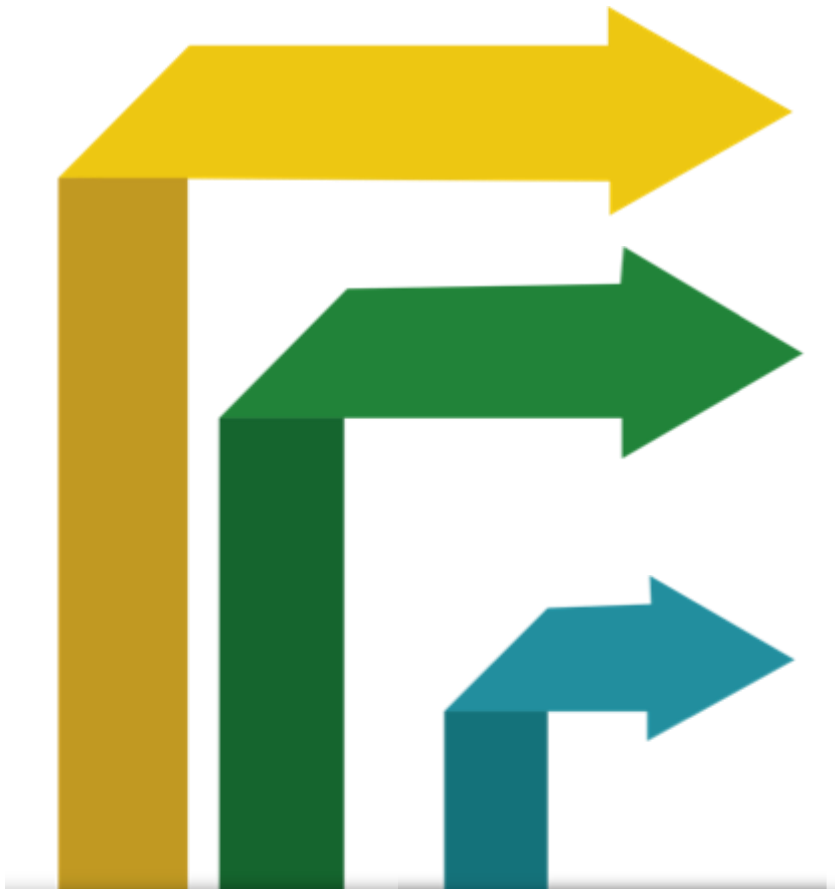
Our Mission

IEEE Smart Village empowers off-grid communities through education and the creation of sustainable, affordable, locally owned entrepreneurial energy businesses.

Our Vision

To bring basic electrical and educational services to more than 50 million people by 2025.

Our Approach



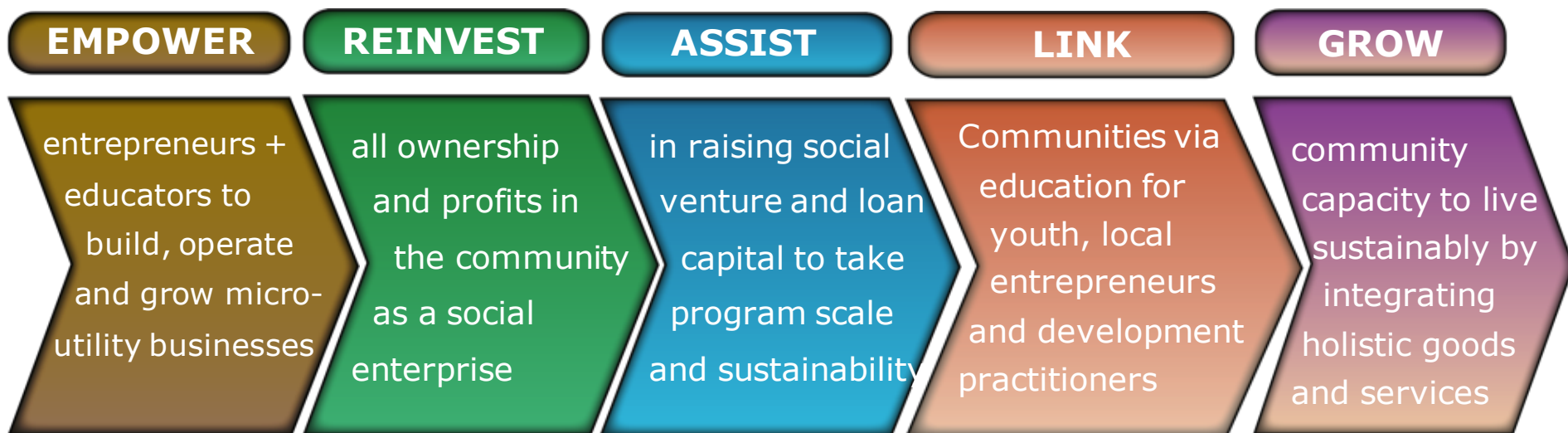
Problem: Billions of people live without reliable access to electricity – 1.4 billion have no access at all – yet others live in excess of the Earth’s carrying capacity

Solution: Bring electricity and cultivate education in communities with our scalable self-sustaining entrepreneur model

Goal: Seed \$2 million per year; 10 country startups per year; each with a goal to reach 1 million people, positively affecting at least 50 million in 10 years

Our Method

Managed and supported by volunteers and through the fundraising efforts of the IEEE Foundation, IEEE Smart Village. Creating self-sustaining social enterprises:



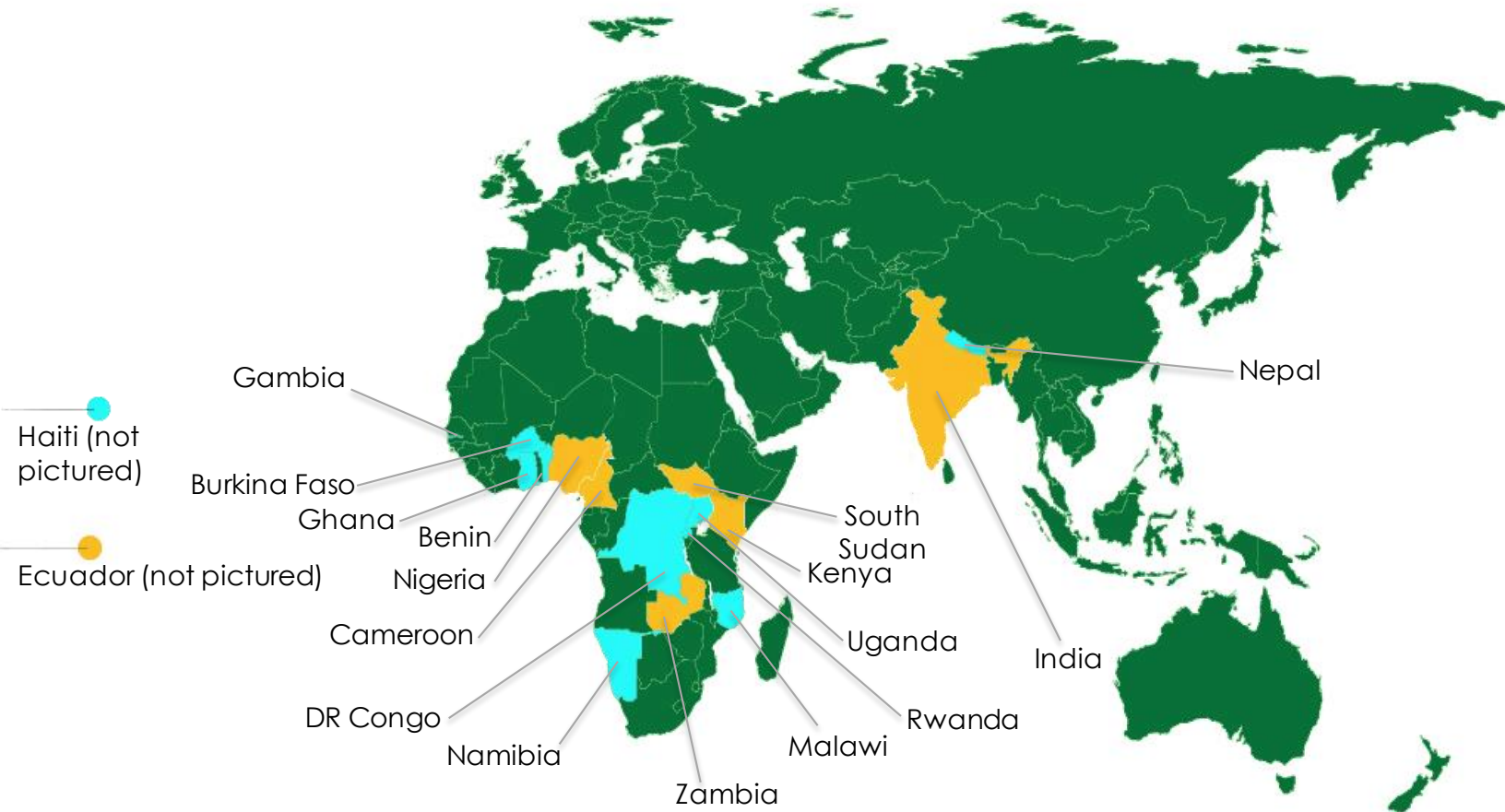
A Proven Model

Currently serving more than 50,000 people in 34 villages via pilots in Cameroon, Haiti, India, Kenya, Nigeria and South Sudan

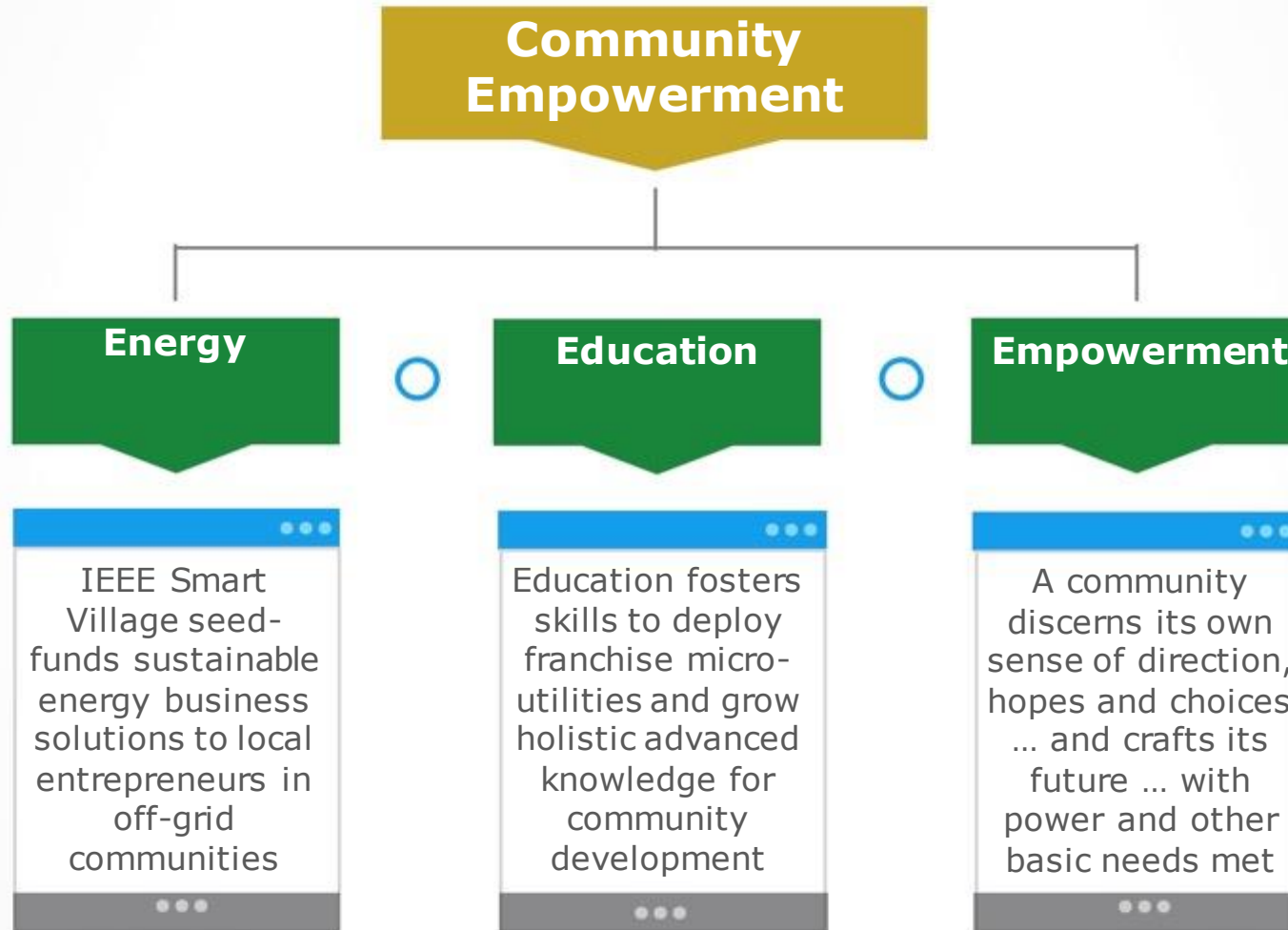
Our Outreach

LEGEND

- Current Communities
- Prospective Communities



Our Ultimate Aim ...



Energy: System Products

- IEEE Open Source Standard products made available to partners
- Initial products based in SunBlazer 1.5kW 6-PV panel mobile generator; supports up to 80 Portable Light kits with 2 -4W LED bulbs
- Deployed in 15 villages in Haiti 2011-12
- 2014 SunBlazer II 1.5kW developed based on need for higher mobility in off-road areas; assembled at site in 3-4 hours
- 2015 SunBlazer Lite developed for smaller communities; 0.5-1kW, 35-50 homes with 17Ah or 12Ah batteries
- Expanded with 240V Inverter to serve micro-grid lighting; AC or DC
- *Microgrid Options:* Power from Station batteries; distribute batteries in homes; add solar panels to homes if micro-grid; portable battery kits not practical

Sustainable Technology

IEEE Smart Village Flagship Products:

- Modular, easy-to-install PV solar-based community charging stations

SunBlazer II

- 1.5kW base station, including 80-100 rechargeable battery packs for modest home lighting, with an auxiliary outlet for other AC & DC powered devices

SunBlazer LITE

- 500W to 1,050W base station, including 40 rechargeable battery packs & light kits

The Benefits

- Immediate deployment with no infrastructure required at the village site
- Self-sustainable management model w/ 3-year payback
- Meet the socio-economic conditions and needs of the village community



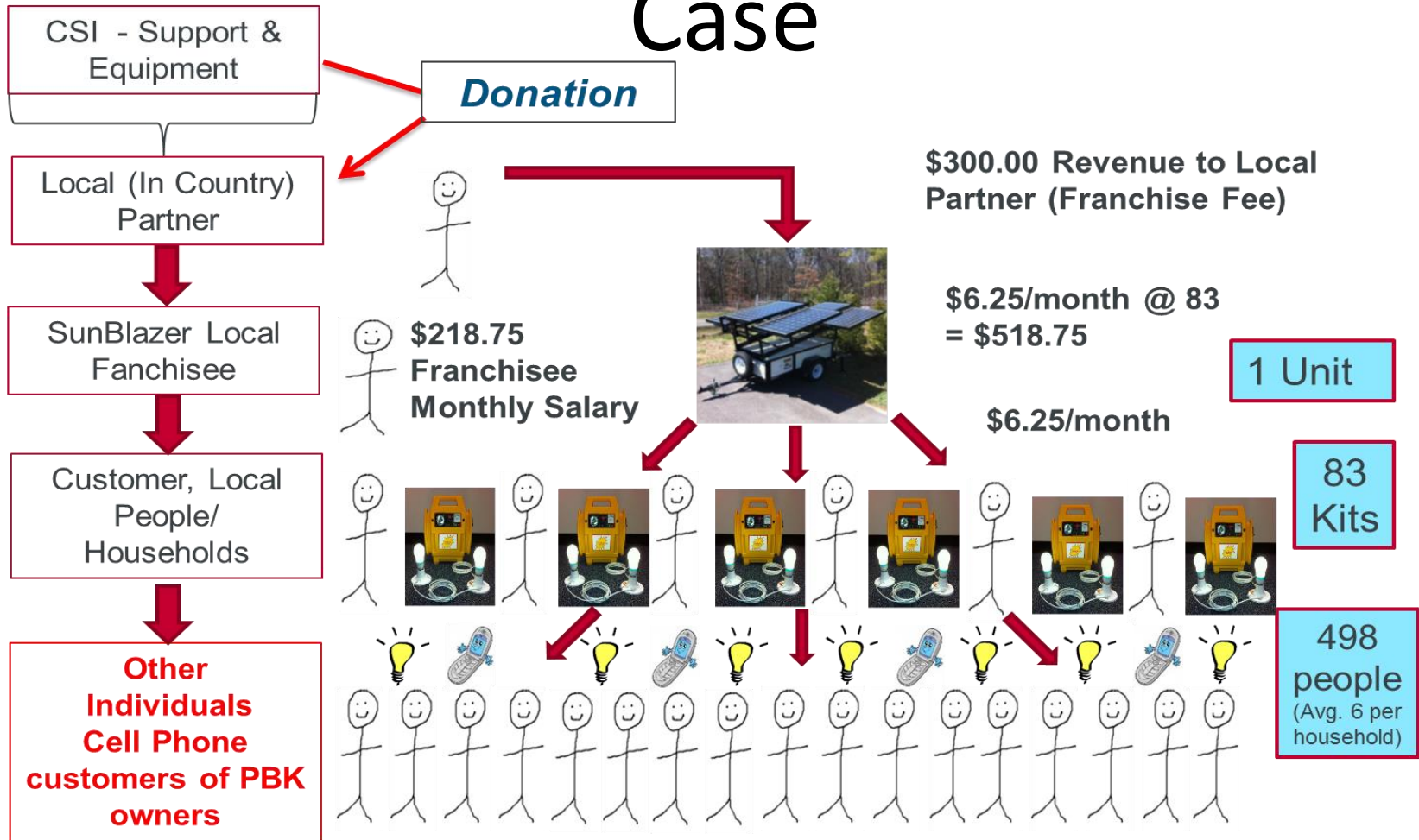
Energy: Franchise Business Model

- IEEE Smart Village (SV) establishes relationship with Community Company
- Target: Reach 1M people in 5 years, including Anchor customers
- Company explores market with prospective village homeowners, business customers.
- Villagers help lead surveys to determine business feasibility including identifying manager, technical support, village franchise operators
- Company submits 5-year sustainable business plan with matching infrastructure component, growth plan, ROI for growth capital
- Plan must include opportunity for community ownership, essential to equipment security
- Upon Executive Committee approval IEEE SV donates up to \$200K of product to Partner Company over 2 years (typical)
- SV, IEEE volunteers, support through startup phase, help identify growth fund sources

Standard Business Model-Haiti

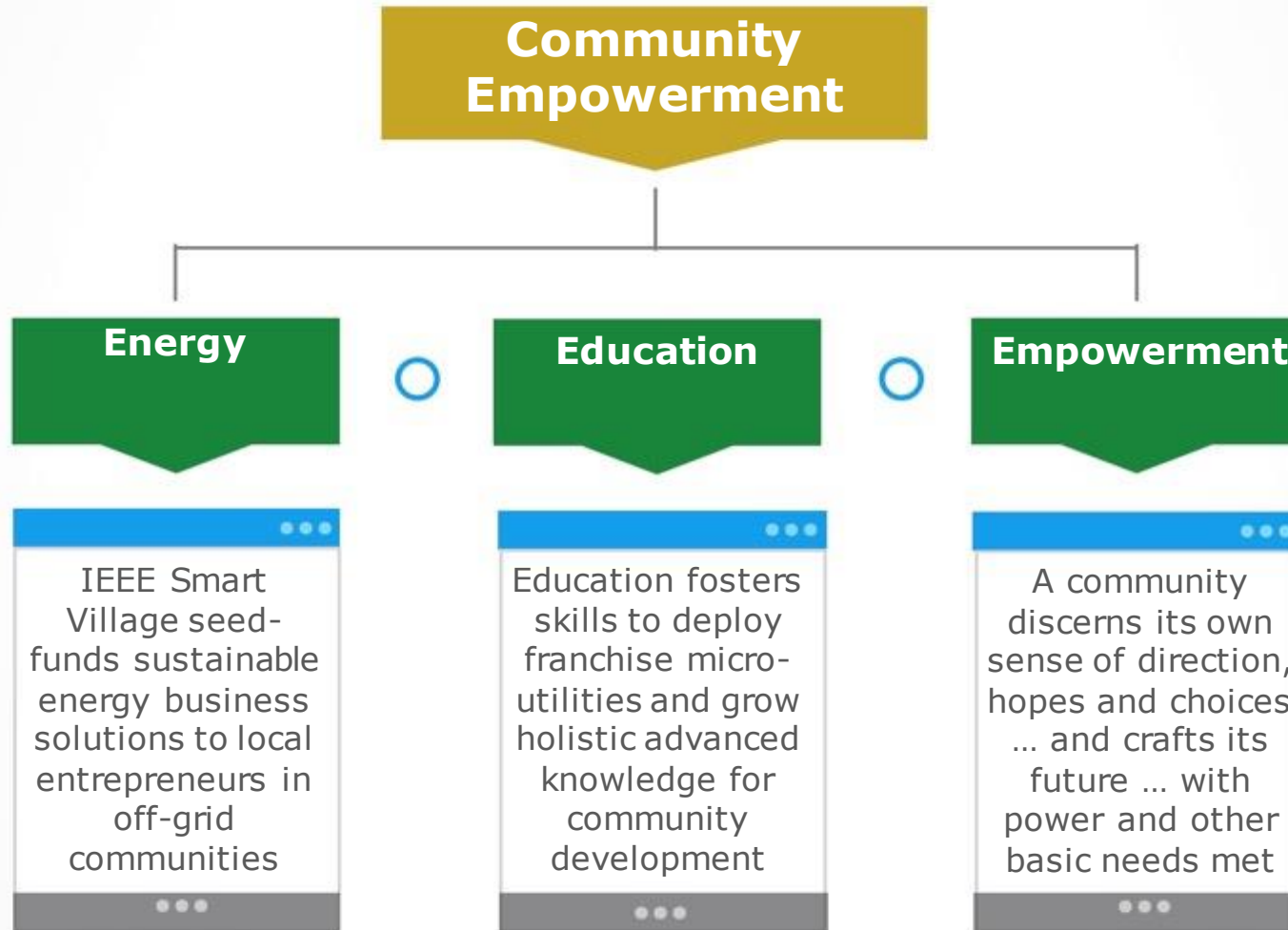
Business plan financials-haiti

Case



Model sustainability demonstrated

Our Ultimate Aim ...



Community-linked educators

In partnership with [Regis University](#) and the [Posner Center for International Development](#) in Denver, Colorado, IEEE Smart Village offers:

- **Development Practice** graduate courses lead to a Master in Development Practice, equipping community leaders and development practitioners with an integrated approach to just and sustainable development and facilitating vocations of humanitarian engineering. Scholars and practitioners from several countries work alongside Learning Communities (IEEE SV) that are committed to just and resilient solutions.
- **Community Entrepreneurship** vocational training provided in-country and local entrepreneurs with knowledge to deploy and operate a life-changing franchises of IEEE Smart Village seed-funded micro-utilities. Ambassadors offer youth hands-on lessons in sustainable development.
- **Both Learning Opportunities** link *at-risk* and *in-excess* communities for collaborative learning that helps us all imagine and realize a better world.

Development courses are broadcast on the Blue Jeans Network from the IEEE Global Classroom at the Posner Center



Community-based learning

- IEEE Smart Village **entrepreneurs** (basic services launched + sustained)
- IEEE Smart Village **ambassadors** (renewable energy classes for youth)
- IEEE SV/Posner/Regis **students** (integrated development education)
 - Four core courses + Practicum
 - Four core courses + four-course Track
 - 3- to 6-month Immersion of applied knowledge

**DEVELOPMENT PRACTICE
MODELS**

DEVELOPMENT ENTRY POINTS

GOING TO SCALE

SKILLS FOR FIELD

**EACH COURSE IS BUILT ON
DEVELOPMENT CASE STUDIES:
RWANDA, HAITI, TANZANIA,
AND NIGERIA + VIETNAM**

CLIMATE | ENERGY | ECOLOGY

GENDER | IDENTITY | CULTURE

MAPPING | METRICS | MONEY

RIGHTS | DUTIES | DIGNITY

**CASE STUDIES CONTINUE TO
EMERGE FROM EACH COHORT'S
COLLABORATIVE WORK**

**HUMANITARIAN | INFORMATION
ENGINEERING**

**MANAGING ORGANIZATIONS |
PROJECTS**

INNOVATION | ART | CREATIVITY

**COMMUNAL-GLOBAL |
ENVIRONMENTAL HEALTH**

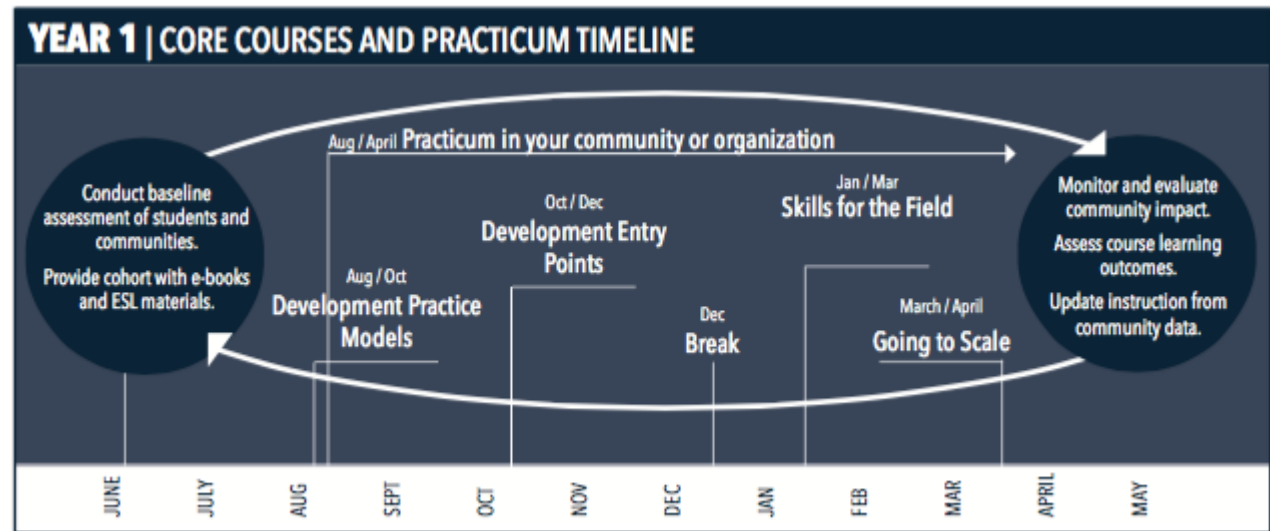
FINANCE | TRADE | LABOR

CULTURAL LINGUISTIC COMPETENCE

Emerging cases + integrated goals

COLLABORATIVE >
TOP DOWN

AT-RISK AND IN-
EXCESS LESSONS
LEARNED > \$45 T





**UNITED NATIONS
SUSTAINABLE
DEVELOPMENT
SUMMIT 2015**
25 - 27 SEPTEMBER

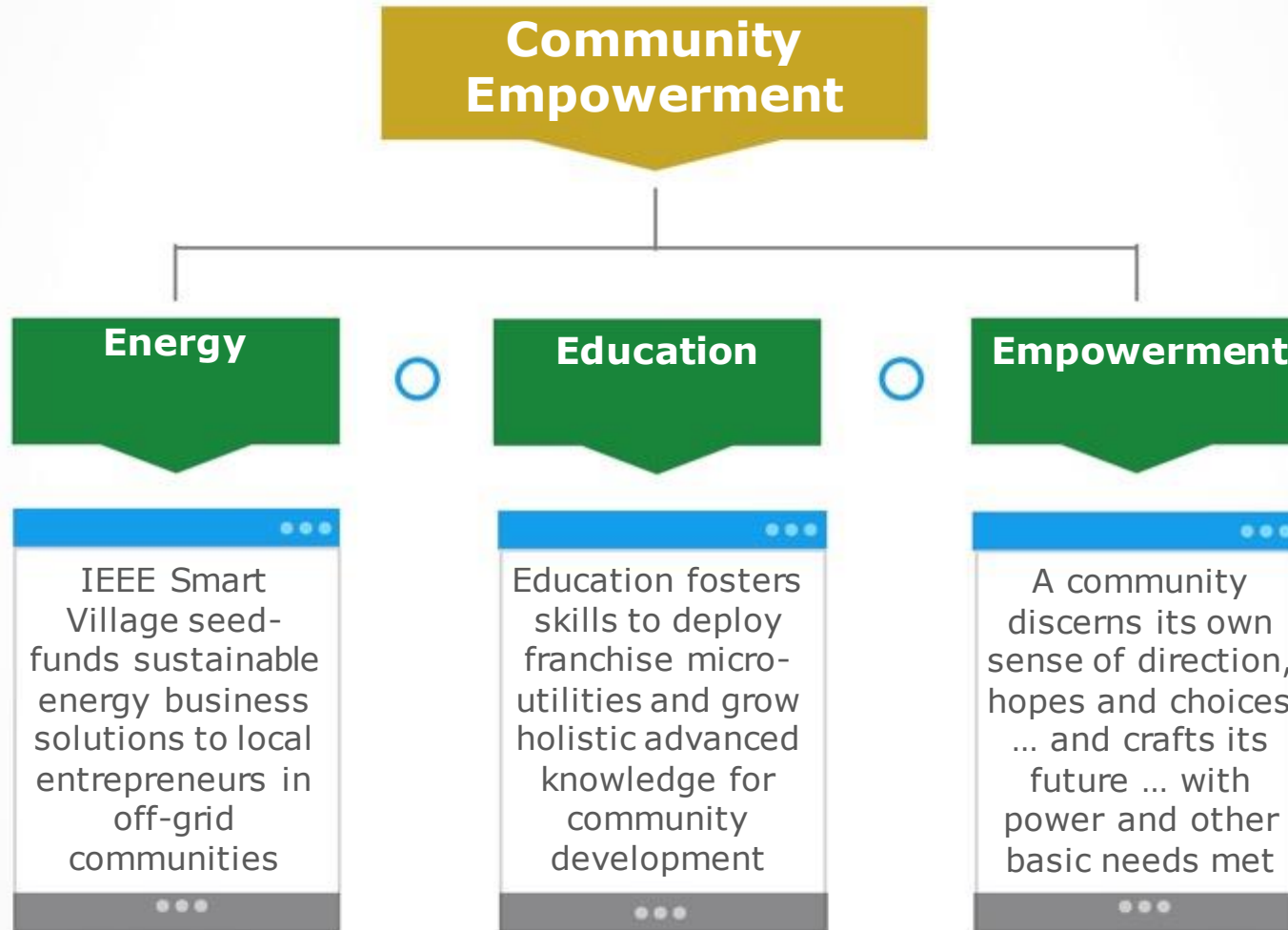
The United Nations Sustainable Development Summit for the adoption of the post-2015 development agenda and the **Sustainable Development Goals** will be held from 25 to 27 September 2015 in New York and convened as a high-level plenary meeting of the General Assembly.

SUSTAINABLE DEVELOPMENT GOALS	
1 NO POVERTY 	2 ZERO HUNGER 
3 GOOD HEALTH AND WELL-BEING 	4 QUALITY EDUCATION 
5 GENDER EQUALITY 	6 CLEAN WATER AND SANITATION 
7 AFFORDABLE AND CLEAN ENERGY 	8 DECENT WORK AND ECONOMIC GROWTH 
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE 	10 REDUCED INEQUALITIES 
11 SUSTAINABLE CITIES AND COMMUNITIES 	12 RESPONSIBLE CONSUMPTION AND PRODUCTION 
13 CLIMATE ACTION 	14 LIFE BELOW WATER 
15 LIFE ON LAND 	16 PEACE, JUSTICE AND STRONG INSTITUTIONS 
17 PARTNERSHIPS FOR THE GOALS 	

Learning beyond the light bulb ...

- Not just IEEE Smart Village provision of SunBlazer electricity but **empowerment from learning** what it means to own and operate a local enterprise that meets a basic human right for one's community
- Not just Ambassadors providing lessons to youth on sustainability but **empowerment from maturing** alongside a growing federation of IEEE Smart Villages
- Not just Master in Development Practice graduate-level learning but **empowerment from networking** with development practitioners, scholars, community leaders and colleagues in a radically affordable, community-focused, reciprocal and integrated approach to just and sustainable development
- Not just a light bulb but **empowerment from linking** at-risk and in-excess communities needing each other to realize smart villages, smart cities and a smart planet

Our Ultimate Aim ...



Join Our Mission

VOLUNTEERS

- Help with program organization, implementation, fundraising and expansion of the program by participating in committees, working groups and mentoring implementation in the field

AMBASSADORS

- Students and young professionals gain experience working in the field to assist village micro-utility deployment programs
- Corporate sponsorship opportunities to fund an ambassador for an in-country deployment or provide a loaned executive volunteer

PARTNERS

- Community advocates and leaders, nonprofits, government ministries and community-centered for-profits are invited to explore partnering opportunities

NONPROFIT PROGRAMS

- In-country nonprofits and other organizations with village-level humanitarian outreach sustain a growing network of micro-utilities and education initiatives

DONATE

- To accomplish our mission, IEEE Smart Village depends on the financial generosity of foundations, corporations and individual donors

Contact Us

Visit our website: www.ieee-smart-village.org

Make a donation: www.ieeefoundation.org/smart-village



[@IEEESmrtVillage](https://twitter.com/IEEESmrtVillage)



www.facebook.com/ieeesmartvillage



smartvillagestaff@ieee.org



<https://youtu.be/H2VpQIitkao>

IEEE Foundation

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Donate

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"It's impossible to convey in words just how important IEEE Smart Village is. It is a very exciting initiative that is changing a lot of lives. In South Sudan electricity is a new phenomenon and having access to it is quite transforming."

Mou Riiny, IEEE Smart Village Project Manager and Electrical Engineer