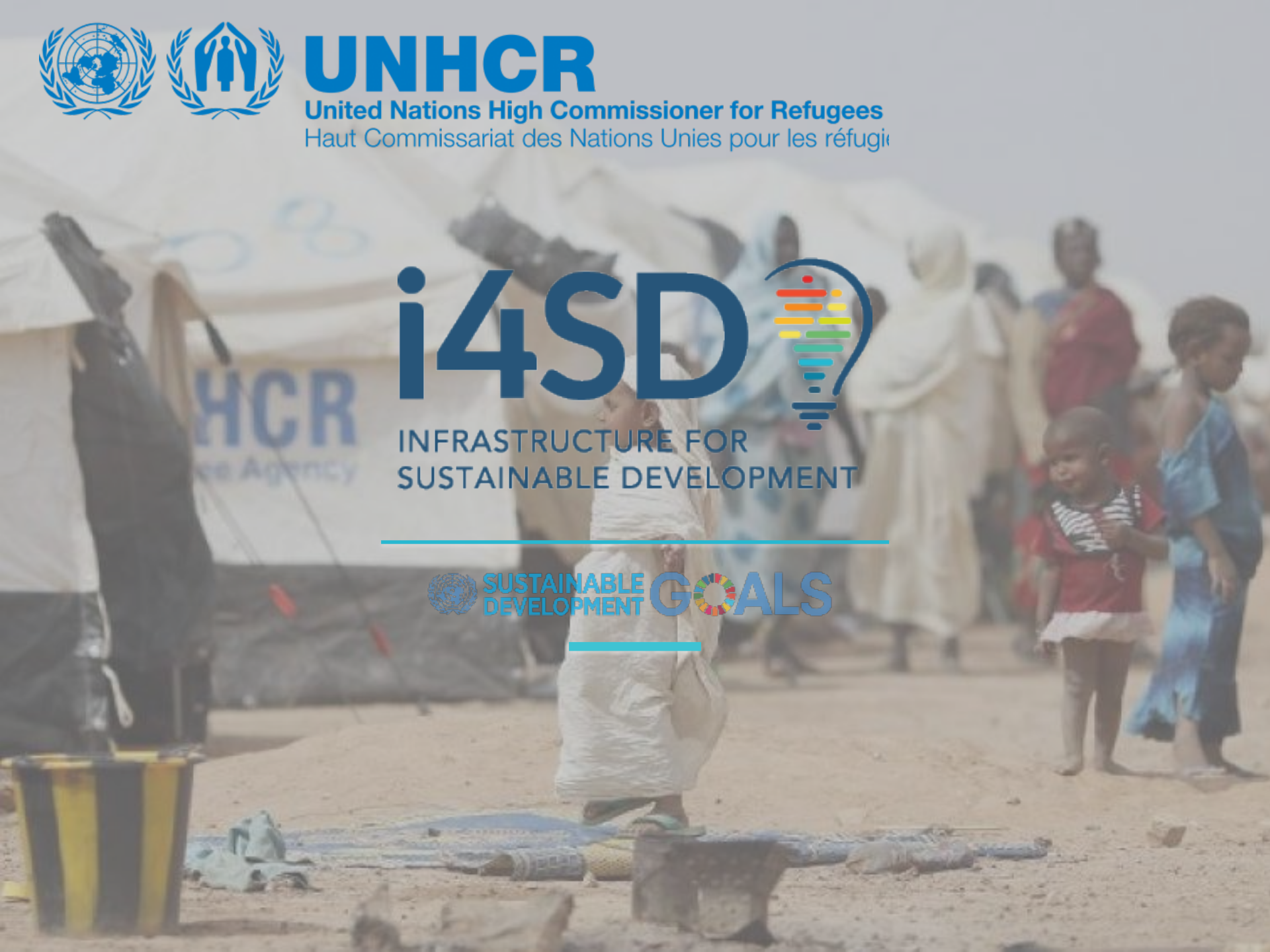

UNHCR
United Nations High Commissioner for Refugees
Haut Commissariat des Nations Unies pour les réfugi
i4SD
INFRASTRUCTURE FOR
SUSTAINABLE DEVELOPMENT
SUSTAINABLE DEVELOPMENT GOALS

ENERGY POVERTY CREATES COMPOUNDING NEGATIVE IMPACT IN THE CAMPS

- ENERGY POVERTY LIMITS LOCAL ECONOMY AND UNDERMINES INTEGRATION
- CHARCOAL COOKING AND DIESEL ENERGY DAMAGES LOCAL ENVIRONMENT

- ENERGY POVERTY LIMITS OPPORTUNITIES FOR CAMP ENTREPRENEURSHIP
- LACK OF STREETLIGHTING AND POWER AFFECTS QUALITY OF LIFE IN THE CAMP

- NO LIGHT INCREASES GENDER-BASED VIOLENCE & STOPS MOBILITY AFTER DARK
- INEFFICIENT ENERGY & RELIANCE ON CHARCOAL INCREASES DOMESTIC BURDEN

OUR MODEL

INFRASTRUCTURE FOR SUSTAINABLE DEVELOPMENT

OUR PROPOSED SOLUTION

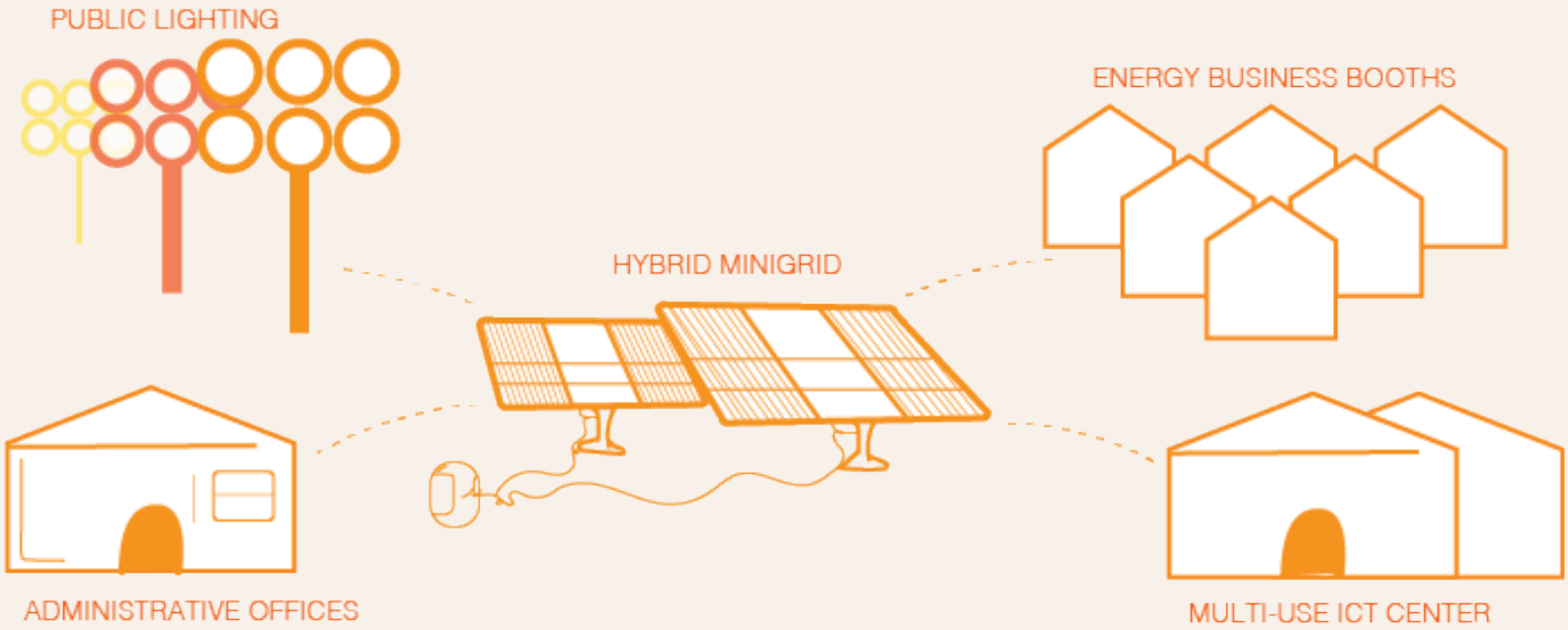
SCOPE OF THE GRANT

HYBRID MINI-GRID GENERATION (5-10 Kw SOLAR WITH STORAGEP)
ENERGY FOR COMMUNITY NEEDS (ICT CENTER/CYBER CAFE/COMMUNITY CENTER)
ENERGY FOR HOUSEHOLD NEEDS (IMPROVED ENERGY SERVICES AND HH APPLIANCES THROUGH METERED CHARGING CENTERS)

PHASE II

ENERGY FOR INSTITUTIONAL NEEDS (ELECTRICITY FOR OFFICES) IMPROVED
ENERGY FOR COMMUNITY NEEDS (PUBLIC LIGHTING, SPORTS FIELD)
HOUSEHOLD AND INSTITUTIONAL COOKING (LPG PAYG/IMPROVED COOKSTOVES)
REPLACEMENT OF DIESEL GENERATORS BY EXPANDED HIBRID MINI-GRID
EXPAND ENERGY SERVICES TO NEARBY COMMUNITIES

OVERVIEW OF PROJECT SCOPE



IMPACT

EDUCATION | EMPLOYMENT | GENDER | HEALTH | ENVIRONMENT

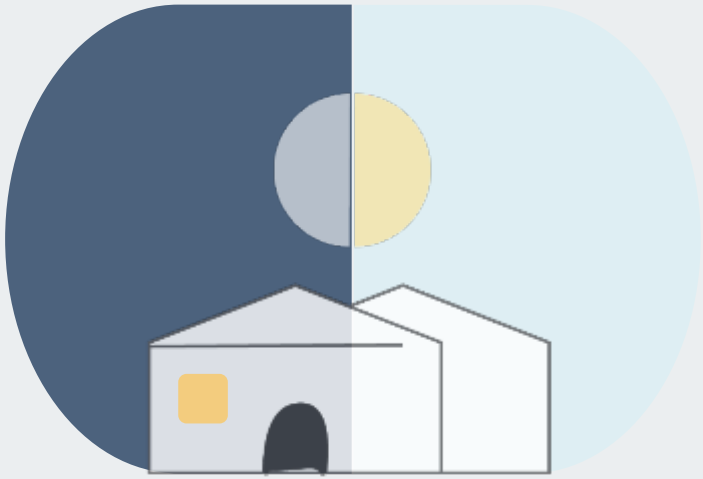
MULTI-USE ICT CENTER

SITUATION:

CAMP COMMUNITY LACKS ENTERTAINMENT, JOBS & EDUCATION

NIGHT

- CYBER CAFE
- ENTERTAINMENT CENTER



DAY

- ICT EDUCATION CENTER
- VOCATIONAL TRAINING

IMPACT

EDUCATION | EMPLOYMENT | GENDER | HEALTH | ENVIRONMENT

ENERGY BUSINESS CENTER

SITUATION

- LIMITED ACCESS TO RELIABLE AND QUALITY ENERGY AT HH LEVEL
- LACK OF AFFORDABLE ENERGY ALTERNATIVES

SOLUTION

- SMART-METER MONITORED ENERGY CENTERS
- IMPROVED ENERGY PROVISION THROUGH POWER BOXES AND EFFICIENT APPLIANCES

IMPACT

EDUCATION | EMPLOYMENT | GENDER | HEALTH | ENVIRONMENT

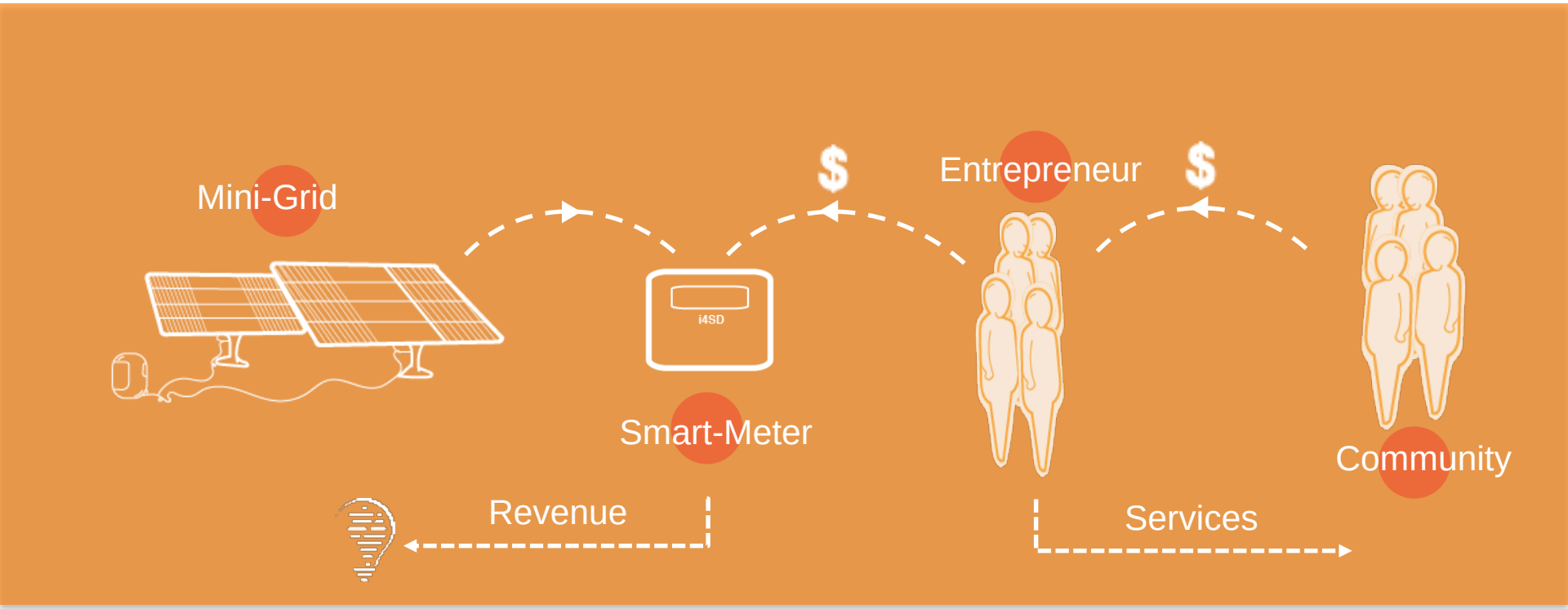
ICT VOCATIONAL TRAINING

- FOR YOUTH AND ADULTS
- ELEARNING MODULES FOR ICT, ENGLISH, LIFE SKILLS AND VOCATIONAL TRAINING
- EXAMPLES:
  - ENERGY MANAGEMENT
  - ENTREPRENEURSHIP
  - FINANCIAL MANAGEMENT
  - KNOWLEDGE
  - COMPUTER SKILLS
  - LANGUAGE SKILLS

IMPACT

EDUCATION | EMPLOYMENT | GENDER | HEALTH | ENVIRONMENT

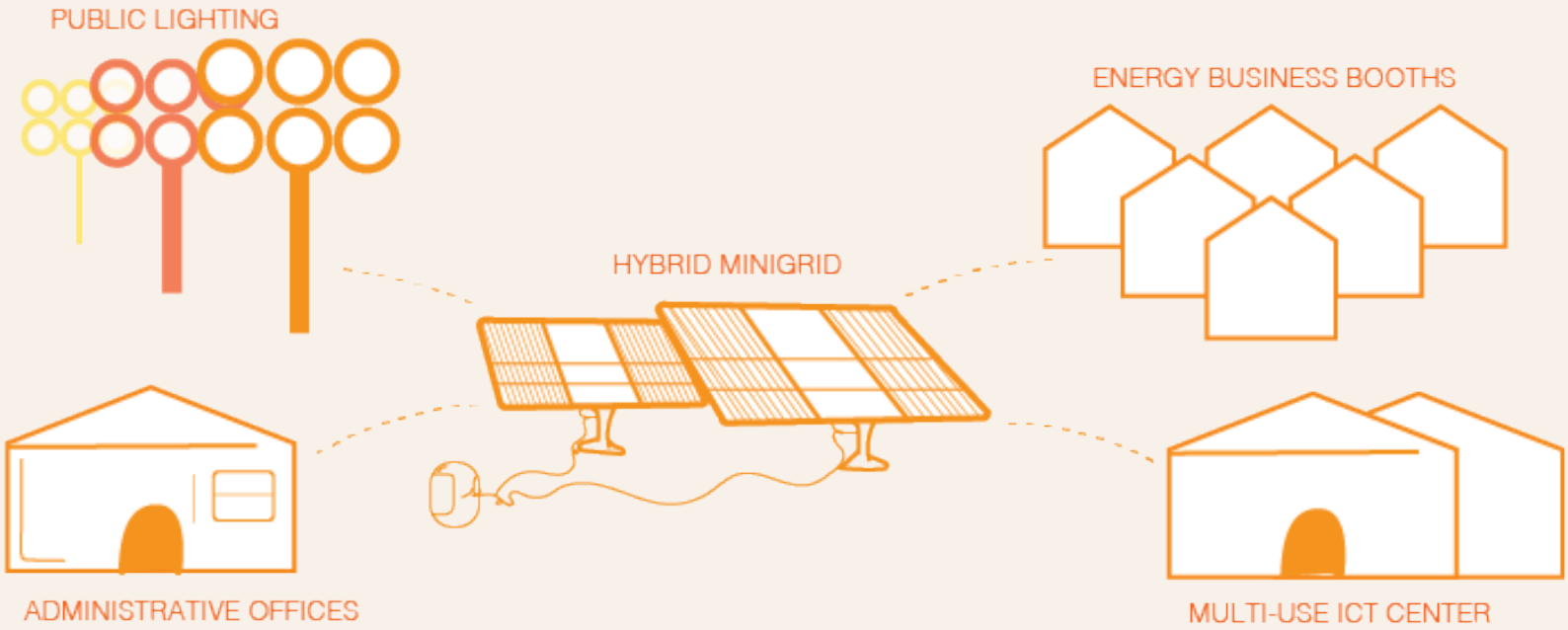
ENERGY BUSINESS BOOTH: MARKET MODEL



IMPACT

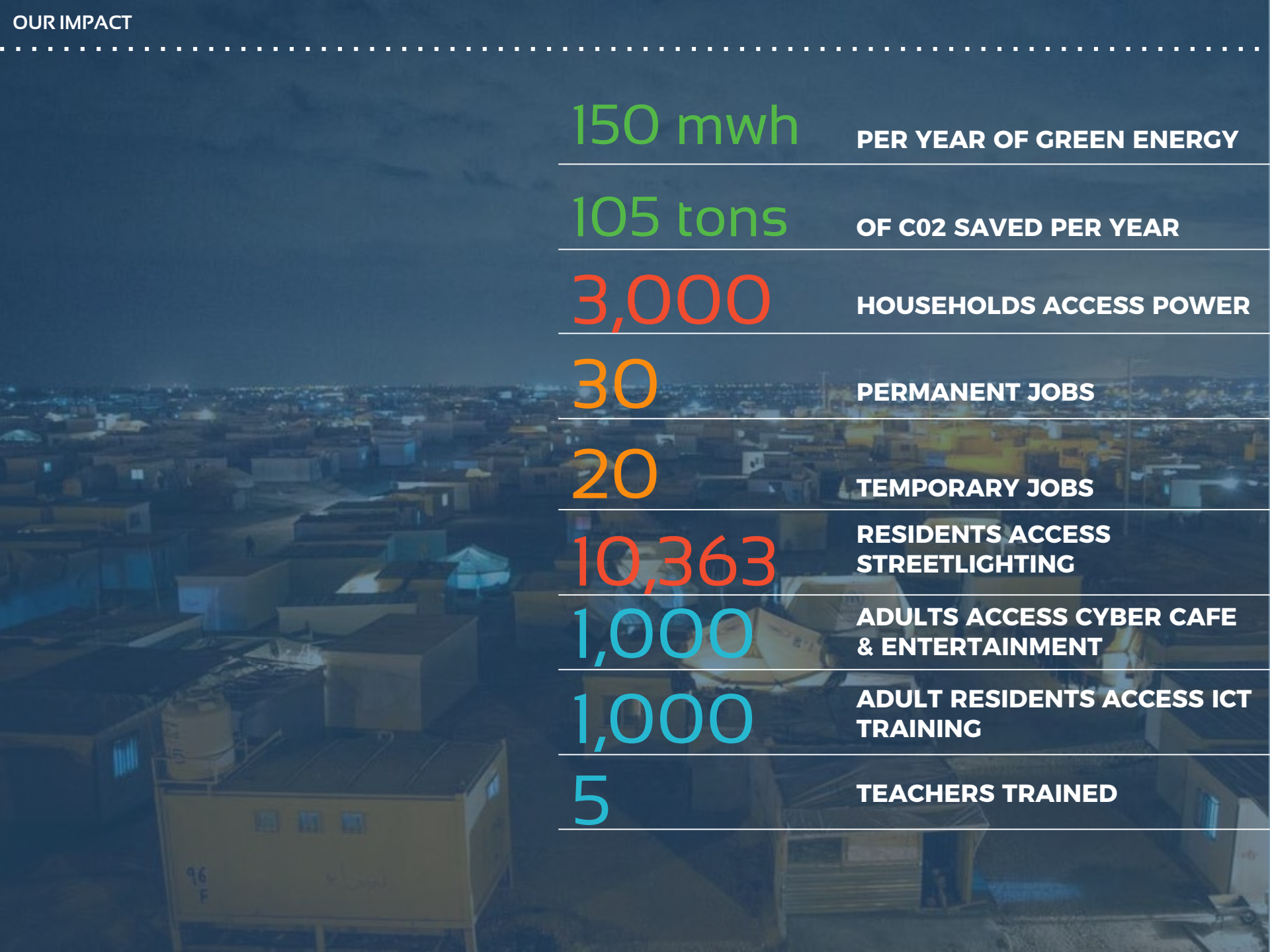
EDUCATION | EMPLOYMENT | GENDER | HEALTH | ENVIRONMENT

OVERVIEW OF PROJECT SCOPE



IMPACT

EDUCATION | EMPLOYMENT | GENDER | HEALTH | ENVIRONMENT



150 mwh	PER YEAR OF GREEN ENERGY
105 tons	OF C02 SAVED PER YEAR
3,000	HOUSEHOLDS ACCESS POWER
30	PERMANENT JOBS
20	TEMPORARY JOBS
10,363	RESIDENTS ACCESS STREETLIGHTING
1,000	ADULTS ACCESS CYBER CAFE & ENTERTAINMENT
1,000	ADULT RESIDENTS ACCESS ICT TRAINING
5	TEACHERS TRAINED

DELIVERY PLAN


i4SD
INFRASTRUCTURE FOR
SUSTAINABLE DEVELOPMENT
Thank you
www.i4sd.com

About i4SD

Infrastructure for Sustainable Development (i4SD) is a social impact start-up that develops innovative projects for sustainable development. The founding team brings executive experience from the UN, World Bank, Earth Institute, as well as the Millennium Villages, where they led pioneering work in multi-sector development programs.

In our first three years of operation, we've implemented significant projects in East Africa and Latin America, blending Pay-as you-Go tech with last-mile distribution and a high-quality supply chain. We've already stress-tested our Pay-as you-Go model at scale in both Tanzania and Bolivia.

We've grown swiftly to deliver sizable impact. We have been a partner of Kopagas, a leading LPG distributor in Tanzania because of our innovations in last-mile delivery and Pay-as you-Go tech. We are electrifying fishing communities on the island of Jibondo with our hybrid mini-grid solutions. Finally, we've just entered a national partnership with a national Bolivian utility agency to scale our smart-meters into 10,000 homes.

Delivering energy services to refugee camps is an unfamiliar starting place for many experienced organizations within development, including us. However, the reason we think we're placed to succeed is because our project model puts learning and adaptation to local contexts first. Our track record shows we are experts in immersive research, at getting local partners on board and at delivering complex projects in challenging operating contexts.

We do this by placing design-thinking at the center of our work and grow our team to develop this as a core strength. While we have market-leading renewables and Pay-as you-Go technology, it doesn't dictate our approach to project design. In contrast, we *always develop projects backwards* from the unique needs of the beneficiary we seek to serve. We also customize our strategies for design-led ideation to local culture. Our team draws from experience implementing human-centered design across the middle-east, Sub-Saharan Africa and Latin America to make sure we choose appropriate strategies.

Finally, we are deeply motivated by the mission of the Sustainable Development Goals and see this project as opportunity to deploy our technology, expertise and design-led methodology to advance this agenda within the refugee settlement and the host communities.

About the project

We will deliver stable and low-cost energy through a hybrid (LPG and solar) mini-grid. Our pilot will show that by subsidizing the installation of mini-grid solutions, settlements and surrounding communities can transition towards low-carbon alternatives that can be sustainably financed through long-term services.

Intervention components

1. Institutional Needs

Poor working conditions severely limit the capacity of institutions working in the settlement; it is a priority area for impact. Recent studies show "implementing partners lack computers and even lights for their offices. Most activities have to be conducted using pen and paper or mobile phones."[1] Through mini-grid connections we can resolve this issue.

Another critical problem is the absence of street-lighting in the camp. With people housebound after dark in 58% of homes, it is a huge opportunity cost for productive uses of time and quality of life. This burden has an unequal gendered impact; of those who do leave home, only 4% are women.[2] While pilots of solar street-lamps in refugee camps have struggled through maintenance failures, mini-grid solutions have brought encouraging results, showing greater reliability than grid connections in some regions.[3] We will install 200 streetlamps throughout the camp, and deliver the service with a strategy to improve links between host and refugee communities. With minimal training required to roll out street-lamps, we will hire within the host community and contribute to the local economy.

2. Community Needs

Implementing partners and refugees are very receptive to models that encourage energy entrepreneurship.[4] We will implement an Energy Business Center, with a smart metered outlet (230V AC), where the people can recharge their appliances. They can buy or rent, solar products or even battery packs that they can charge and use within their homes. Our smart-meter technology will allow us to control demand, capture revenue and collect data to establish whether this is a viable model to scale within the camp, and to other camps.

These Energy Business Centers can also establish the backbone for future business, for example fridge services, barber shops or entertainment. Revenue generated from connections will enable us to hire and train local agents to coordinate the service, as well as to hire and train a local engineer to maintain the mini-grid.

We will maximize the impact of the mini-grid investment by striking creative partnerships with established local NGOs, as well as internationally renowned experts. This intervention will center

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[1] https://www.chathamhouse.org/sites/files/chathamhouse/publications/research/2016-05-19-mei-energy-situation-goudoubo-refugee-camp-vianello.pdf
[2] https://www.chathamhouse.org/sites/files/chathamhouse/publications/research/2016-05-19-mei-energy-situation-goudoubo-refugee-camp-vianello.pdf
[3] http://www.unhcr.org/innovation/labs_post/mini-grids-nepal/
[4] https://www.chathamhouse.org/sites/files/chathamhouse/publications/research/2016-05-19-mei-energy-situation-goudoubo-refugee-camp-vianello.pdf

around the delivery of a multi-use ICT center that will run educational programming for young adults by day, and open as a revenue-generating cyber cafe by night.

We have already built a close partnership with the Center for Sustainable Development at the Earth Institute at Columbia University (CSD) to design this intervention. They have a long history of success with field implementations of Information and Communications Technology (ICT) integration to classrooms and are experts at creating context-specific learning materials with appropriate teacher support and resources. CSD have implemented similar initiatives within India and Myanmar and won strong results.

We stress the need for further user-centered research prior to implementation, but our working plan is to power an ICT educational facility to support adult learners by giving them access to connectivity, electricity, computer skills and English language education. We plan to validate these assumptions through learning from a planned partnership with the Nsamizi Training Institute for Social Development, as well as through engaging refugee committees. These human-centered design activities will be instrumental in helping us learn how to integrate programs into the community and adapt the curriculum to culture and capabilities.

This intervention will boost education and also directly tackle the concentration within the camp of young college educated people who lack employment opportunities.[5] We will develop and hire local talent to become camp educators, and also create jobs through the planned mixed use of the space.

Our mixed-use strategy to open the classroom as an evening cyber-cafe will boost ICT outcomes, create jobs and generate revenue. A second idea for commercializing the space comes from the camp refugee committee, who support the creation of an entertainment center. By charging a small fee for entry for screenings, income can be generated to both employ staff and contribute towards the running costs of the ICT center. We plan to work closely with the local NGO Terre des Hommes-Lausanne, which has been implementing employment generating activities, to co-create and finalize our employment strategies.

Monitoring and evaluation strategy

Our smart meter technology will generate high quality usage data tracking the impact and cost-effectiveness of pay as you go energy services. In general, we will benefit strongly from our years of implementation and M&E experience in similar projects and look forward to outlining this strategy in full if we progress to stage 2.

CSD have also developed data collection tools through Open Data Kit, for Android, to track the ICT intervention in real-time. Coupled with our smart-meters, this means we will have us access to real-time M&E data for a significant portion of this intervention, which will be a big boost to project transparency.

[5] https://www.chathamhouse.org/sites/files/chathamhouse/publications/research/2016-05-19-mei-energy-situation-goudoubo-refugee-camp-vianello.pdf