

## ABSTRACT

The world we live in is full of Diversity, very unequal and not very inclusive, however, with the emergence of the internet and social media, these gaps can be bridged through education. To access it there is a need to deploy Solar in areas deprived of electrical power to grant them access to the internet which will translate to improvements in education.

To achieve the goal, we must think outside the box and engage in the design of financial products that can accommodate these goals but at the same time provide the necessary structure to allow communities to leverage these assets for future growth. Having said this, one such product is "Leveraging Energy as a Service", where a project developer, builds a solar installation and collects Certificates of Emission Reduction and Renewable Energy Credits in addition to the charges generated by the service.

After five to seven years, the developer has recovered their investment, leaving him in a position to pass these fixed and financial assets to the community. In doing so, we move closer to a more inclusive with better wealth distribution world.

### People without electricity

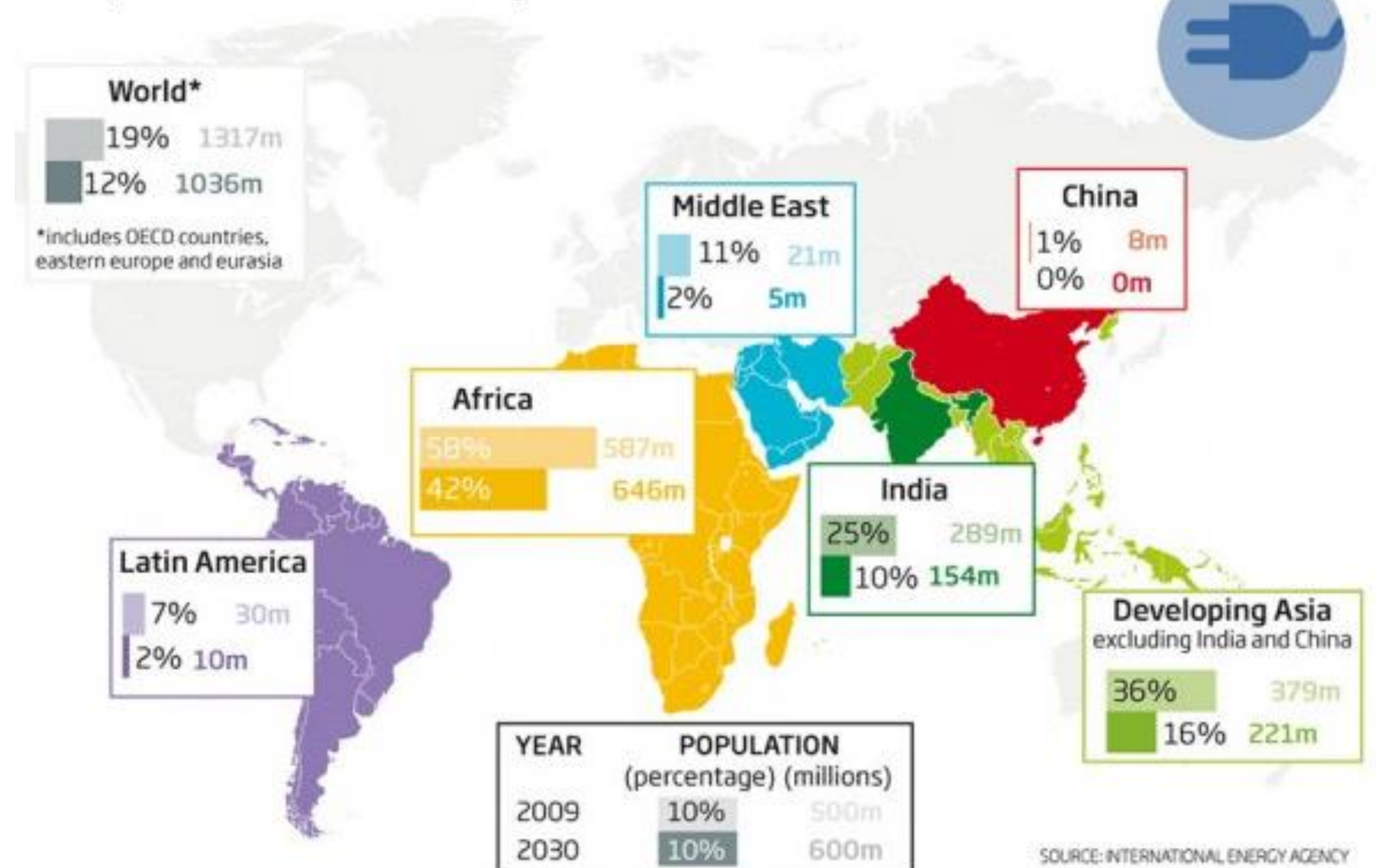


Figure 1.1  
World Map Showing Continents and Percentages of the Population Living without Electricity

<sup>1</sup> Source: The Real Fuel of Poverty, Jeremy Williams, <https://makewealthhistory.org/2012/10/26/the-real-fuel-of-poverty-challenge/>, October 26, 2012.

## METHODOLOGY AND RESULTS

### SDGs to Measure

Improvements in Diversity, Equality and Inclusion come from addressing SDGs 10, 13, 16. Several Metrics are used for this purpose.



However, the most used KPIs are Corruption Perception Index, Human Development Index, Unemployment and The Gini Index.

### Linear Regression Model

$$\hat{\beta}_{OLS} = \frac{\sum(x_i - \bar{x})y_i}{\sum(x_i - \bar{x})^2} = \frac{\sum x_i y_i - \sum \bar{x} y_i}{\sum x_i^2 + \sum \bar{x}^2 - 2 \sum x_i \bar{x}} = \frac{\sum_{i=1}^{n_1} y_i - \frac{n_1}{n} \sum_{i=1}^{n_1} y_i}{n_1 + (n) \left(\frac{n_1}{n}\right)^2 - 2 \left(\frac{n_1}{n}\right) n_1} = \frac{\sum_{i=1}^{n_1} y_i - n_1 \bar{y}}{n_1 - \frac{n_1^2}{n_0 + n_1}}$$

$$= \frac{\frac{1}{n_0 + n_1} \sum_{i=1}^{n_1} y_i - \frac{n_1}{n_0 + n_1} \bar{y}}{\frac{n_1}{n_0 + n_1} - \left(\frac{n_1}{n_0 + n_1}\right)^2} = \frac{\frac{1}{n_0 + n_1} \sum_{i=1}^{n_1} y_i - \frac{n_1}{n_0 + n_1} \left(\frac{1}{n_0 + n_1} \sum_{i=1}^{n_1} y_i\right)}{\frac{n_1 n_0 + n_1^2 - n_1^2}{(n_0 + n_1)^2}}$$

$$= \frac{\left(\frac{1}{n_0 + n_1}\right) \left[\sum_{i=1}^{n_1} y_i - \frac{n_1}{n_0 + n_1} \left(\sum_{i=1}^{n_0} y_i + \sum_{i=1}^{n_1} y_i\right)\right]}{\frac{n_1 n_0}{(n_0 + n_1)^2}}$$

$$= \frac{\left(1 - \frac{n_1}{n_0 + n_1}\right) \sum_{i=1}^{n_1} y_i - \frac{n_1}{n_0 + n_1} \sum_{i=1}^{n_0} y_i}{\frac{n_1 n_0}{n_0 + n_1}} = \frac{\frac{n_0}{n_0 + n_1} \sum_{i=1}^{n_1} y_i - \frac{n_1}{n_0 + n_1} \sum_{i=1}^{n_0} y_i}{\frac{n_1 n_0}{n_0 + n_1}}$$

$$= \frac{\sum_{i=1}^{n_1} y_i}{n_1} - \frac{\sum_{i=1}^{n_0} y_i}{n_0} = \bar{y}_1 - \bar{y}_0$$

Although the construction of the Model does not pose many difficulties, all variables must be evaluated to collinearity as this is the biggest issue. As this is likely to affect the results of our model.

### Results of the Regression Models

Source	SS	df	MS	Number of obs =
Model	102.861109	2	51.4305546	F( 2, 48) = 1152.36
Residual	2.14226876	48	.044630599	Prob > F = 0.0000
Total	105.003378	50	2.10006756	R-squared = 0.9796
				Adj R-squared = 0.9787
				Root MSE = .21126

lny	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
ln1	.3653485	.055353	6.60	0.000	.2540538 .4766432
lnk	.6687599	.059298	11.28	0.000	.5495334 .7879865
_cons	2.464661	.4692812	5.25	0.000	1.521107 3.408214

After conducting several iterations of the different regression models, we evaluate the results and search for improvement in the predictions based on the blend of different financial instruments. The results corroborate our Hypothesis, of improvements in SDGs 10, 13 and 16 when financial resources are boosted to allow the deployment of Distributed Energy Resources.

## CONCLUSIONS

We live in a diverse world, where inequality is prevalent and not until we understand that sustainability is achieved with everyone's input and collaboration, the gap will continue to widen. Innovative solutions such as using a blend of several financial platforms to deploy Distributed Energy Resources in communities that are in need allow for significant improvements in the quality of life.

The blending of financial products for the construction of PV systems of wattages ranging from a few Kilowatts to a couple of Megawatts, under blended third-party ownership programs, allows communities to access electrical power, allowing for a world of possibilities.

When this happens wages are enhanced, investment in education happens, and the SDG gap shortens.

