



Sampling Design and Survey Weights
Transition to Clean Energy Enterprise
Survey- Morocco 2023

Transition to Clean Energy Enterprise Survey

ECONOMIC
RESEARCH
FORUM



منتدى
البحوث
الاقتصادية

OPEN ACCESS MICRO DATA INITIATIVE (OAMDI)

*for the Arab Countries,
Iran and Turkey*

Renewable Energy Morocco:
Sampling design and survey weights
Mahmoud Elkasabi, PhD

This document describes sampling design and survey weights of the survey of Renewable Energy in Morocco.

Sampling design

Target population and Sampling frame

The target population of the surveys was businesses with less than 100 employees that started business operations before 2023. Businesses that started their operations during 2023 were not eligible for the survey. An ideal sampling frame for a probability sample should cover all target population units, i.e., a list of all working businesses of size 100 employees or less that started operations before 2023 with their telephone numbers. Unfortunately, we could not find such list in Morocco. Therefore, we used data from Morocco Yellow Pages (Télécontact) - (<https://www.telecontact.ma/>). We had access to the complete list of about 72,644 businesses from a broad list of business sectors in three regions (Casa-Rabat, Nord, and Sud). The available digital copy of the list could not be readily used for sampling purposes. A pdf version of the frame was used instead. All pages were selected within each region, and systematic random samples of 30 businesses were selected from each page for the survey. The frame included business names, addresses and telephone numbers.

Sample design and selection

A stratified systematic random sample of 18,971 businesses were selected. See Table 1 for allocation of businesses in Yellow Pages frame and selected sample by regions.

Table 1: Sample allocation of businesses in Yellow Pages frame and selected sample by regions

Regions	Pages	Businesses in sampling frame	Businesses selected
Casa-Rabat	351	43836	10527
Nord	138	13404	4106
Sud	145	15404	4338
Total	634	72644	18971

Survey implementation

Up to three calls were attempted to contact phone numbers that did not answer or busy lines. Table 2 presents the distribution of the selected businesses according to the final status after the three attempts.

Table 2: Distribution of selected samples according to the final contact

Final contact result	n	%
Phone disconnected/ busy	620	3.27%
Not in service	5595	29.49%
Did not answer	1835	9.67%
Picked up and refused	4847	25.55%
Incomplete and refused	2923	15.41%
Incomplete and call returned	155	0.82%
Complete	1007	5.31%
Company size is ineligible	168	0.89%
Someone who cannot tell about the business earnings and employees, and did not give phone number of someone who can	1622	8.55%
The owner's company is the government	7	0.04%
The establishment year is 2023	5	0.03%
Someone who cannot tell about the business earnings and employees, but gave phone number of someone who can	177	0.93%
Canceled by quality check	10	0.05%
Total	18971	100.00%

Survey weights

The weight calculations started by calculating design weights that reflect the selection probabilities of selecting the businesses from the sampling frame. Because a simple systematic sample of businesses was selected from all the frame pages, the design weights were calculated as the inverse of the overall selection probability of businesses as follows:

$$W_j^0 = \frac{M_i}{m_i}$$

where M_i is the total number of businesses in page i , and m_i is the number of businesses selected for the survey in page i .

The design weights were adjusted for nonresponse among eligible phone numbers, including numbers without known eligibility. Eligible cases are defined in Table 3. A nonresponse adjustment factor was calculated as the inverse of the weighted response rates by regions as follows:

$$A_c = \frac{\sum_{c=1}^{E_c} W_{cj}^0}{\sum_{c=1}^{E_c} W_{cj}^0 R_{cj}}$$

where E_c is the number of eligible businesses in region c , R_{cj} identifies the completed businesses among eligible businesses, where $R_{cj} = 1$ for businesses who completed the survey and $R_{cj} = 0$ otherwise. The adjusted weight for nonresponse was then calculated as:

$$W_j^1 = W_j^0 A_c$$

The survey weight was then calculated as a normalized version of W_j^1 as follows:

$$W_j^2 = \frac{W_j^1 n_{comp}}{\sum_{j=1}^{n_{comp}} W_{cj}^1}$$

where n_{comp} is the total number of businesses completed the survey.

Table 3: Final contact results by eligibility status

Final contact result	Eligibility	R_{cj}
Phone disconnected/ busy	Unknow eligibility	0
Not in service	Ineligible	NA
Did not answer	Unknow eligibility	0
Picked up and refused	Eligible non-respondent	0
Incomplete and refused	Eligible non-respondent	0
Incomplete and call returned	Eligible non-respondent	0
Complete	Eligible respondent	1
Company size is ineligible	Ineligible	NA
Someone who cannot tell about the business earnings and employees, and did not give phone number of someone who can	Eligible non-respondent	0
The owner's company is the government	Ineligible	NA
The establishment year is 2023	Ineligible	NA
Someone who cannot tell about the business earnings and employees, but gave phone number of someone who can	Eligible non-respondent	0
Canceled by quality check	Eligible non-respondent	0