

EUEI PDF – Country Energy Assessment Tool

The EU Energy Initiative Partnership Dialogue Facility (EUEI PDF) Country Energy Assessment Tool is an MS Excel-based tool that supports countries in the identification of (1) progress towards SE4ALL and national targets, (2) readiness for renewable energy interventions and (3) gaps in energy policy. The tool uses more than 250 economic, social and environmental indicators, all derived from international and national datasets and publicly available. As such, the tool provides a comprehensive and integrated assessment of the performance of the energy sector, also in relation to its socio-economic context, and

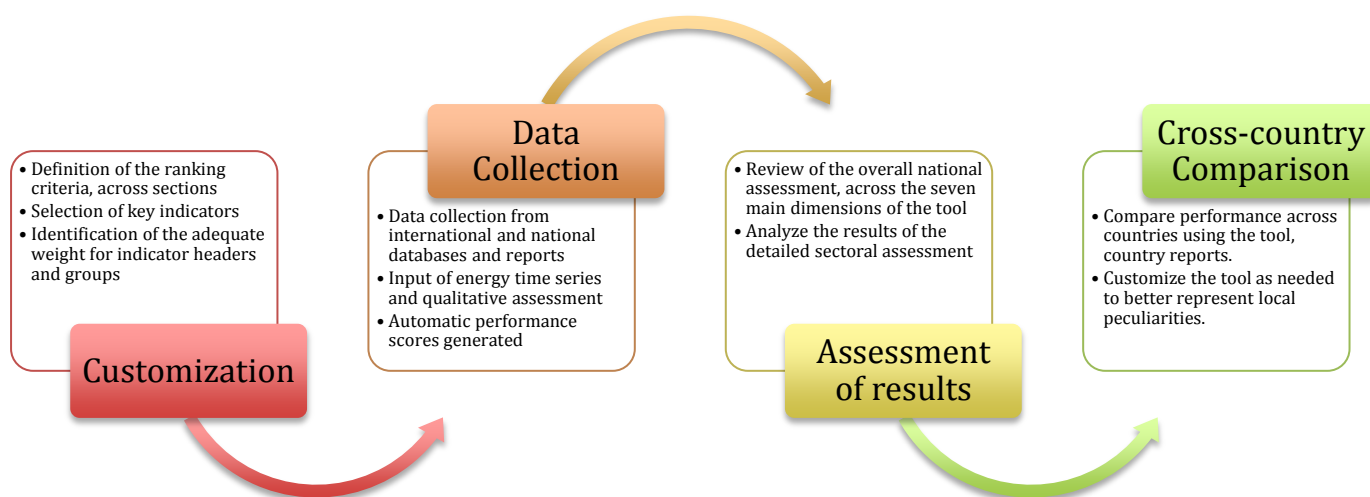
especially focusing on sustainability and inclusiveness criteria.

Overall Objectives

The EUEI-PDF tool aims to:

- Provide country support with an flexible, objective and structured approach, that is also replicable and used for benchmarking across countries;
- Expand conventional analysis reaching beyond the energy sectors by including social, economic, environmental as well as institutional dimensions.

A FOUR-STEP ASSESSMENT PROCESS



CUSTOMIZATION

Depending on the country context and specific assessment objectives, different energy indicators might be prioritized in the analysis.

The EUEI PDF tool allows users to (1) assign different weights to indicators to improve the analysis, (2) add/remove indicators, and (3) modify the values and intervals of indicator rankings.

DATA COLLECTION

Data is collected from a variety of sources, including international and national energy statistics, relevant reports and other official documents.

After energy time series and qualitative assessments are entered in the respective worksheets, the tool automatically generates performance scores and output graphs.

RESULTS ASSESSMENT

Overall Assessment.

Results are displayed in the form of tables and graphs for the seven main assessment categories of the tool.

Detailed Assessment.

Results are displayed in the form of graphs and tables for subcategories of indicators, with the aim to provide a more in-depth assessment of the performance of the sector.

CROSS-COUNTRY COMPARISON

The tool allows its users to compare the performance of the energy sector across dimensions and countries.

The use of common indicators, assessment categories and output graphs facilitates the creation of standardized country reports.

Structure of the tool

The Country Energy Assessment Tool consists of an Excel spreadsheet subdivided into several worksheets. These include:

- **Instructions.** In this worksheet, a step-by-step guide is provided on how to use the tool. In particular, information is provided on data sources, customization of indicators and rankings, and analysis of results.
- **Energy Time Series.** This worksheet contains a list of key indicators for which historical data has to be collected from international and national energy statistics. Data sources are suggested for each indicator, with priority given to international energy statistics databases, so as to avoid major data gaps and allow for easy comparison of the data sets.
- **Evaluation Sheets.** Indicators are grouped, ranked, and evaluated in seven worksheets, each corresponding to a key assessment category. Each indicator is evaluated using a rating scale of 1 (low performance) through 5 (high performance). Specific rankings and weights are assigned to each indicator, indicators groups and headers.
- **Overall Assessment.** This worksheet provides output tables and graphs showing the overall performance of the country energy sector, focusing on seven main assessment categories, namely: (1) Energy Profile; (2) Electricity Profile; (3) Renewable Energy Readiness; (4) Economic and Social Context; (5) Climate Change; (6) Policy Framework; and (7) Institutional Setup. Also, specific output graphs are generated by combining indicators categories from different Evaluation Sheets, with aim to provide a cross-dimensional evaluation and establish causal links between economic, social and environmental indicators. An example is the SE4ALL output graph.
- **Detailed Assessment.** In this worksheet, detailed results are presented for each assessment category, focusing on sub-groups of indicators that provide additional insights on the performance of the energy sector and its relation with other economic, social and environmental indicators.

Customization process

In the Evaluation Sheets, users are allowed to modify weights assigned to individual indicators and indicators groups, in order to adequately reflect country energy priorities. The weight assigned to each indicator will determine the influence of that specific indicator on the final evaluation score.

Also, indicators can be removed or replaced with others, depending on data availability, and relevance to the specific country context.

Expected Benefits

The tool is expected to support the work of both EUEI PDF and its partner institutions, including for:

- Assessing the energy sector, institutional and policy situation of a given country, using a core set of key factors and indicators.
- Developing a comprehensive gap analysis, thereby demonstrating strengths and weaknesses of the current policy and institutional environment.
- Assess the required enabling conditions for policies and programs to achieve multiple energy, environmental, and economic goals in an effective way.
- Design or select policy options that offer increased energy benefits, including environmental and economic aspects.
- Build support for clean energy and climate change mitigation as well as the related adaptation of policies and programs.

Complementarity with ongoing initiatives

The EUEI-PDF tool builds on existing energy databases and policy tools, and aims to contribute to ongoing international efforts for evaluating progress towards energy security, sustainability and inclusiveness. Relevant initiatives include, for example:

- IIASA Energy Access Interactive Tool (ENACT): <http://www.iiasa.ac.at/web-apps/ene/ENACT/AccessTool.html>
- REEGLE Clean Energy Info Portal: <http://www.reegle.info/index.php>
- Sustainable Energy for All (SE4ALL) initiative: <http://www.se4all.org/>

COUNTRY EXAMPLES: GHANA AND VIETNAM PRELIMINARY ENERGY ASSESSMENTS

1	2	3	2	4	2	5	6	7	8	9	10	11					
Indicators Headers	Ranking Check	Ranking Headers	Indicators Groups	Ranking Check	Ranking Groups	Indicators	Ranking Check	Ranking Indicators	Converted	Result	Performance (based on Result)	Score: Indicators Groups	Score 2: Indicators Headers	Ranking Intervals			
1. Energy fundamentals	25%	100%	Energy Production	Energy Production	50%	toe per capita	IEA	0,40	2	2	█	2,5	0,5	1	2	4	>4
				% of fossil fuels in total production	100%	%	IEA	34,16	2	█	1,5		100	60	30	10	5
			Power Generation and Capacity	Total power generation	33%	MWh per capita	IEA	0,32	2	█	2,0		0,5	1	2	4	>4
				% of fossil fuels in total power generation	100%	%	IEA	25,68	3	█			100	60	30	10	5
			Energy consumption	Total power generation capacity	33%	MW per capita	IEA	0,0002	2	█	5,0		0,00001	0,0001	0,001	0,01	>0,01
				Total Energy Consumption	100%	toe per capita	IEA	0,31	5	█			>4	4	2	1	0,5
			Fossil Fuel Reserves	Oil proved reserves	33%	Reserves/Consumption	IEA	33,62	2	█	1,3		0	500	1000	2000	>2000
				Natural Gas proved reserves	100%	Reserves/Consumption	IEA	0	2	█			0	500	1000	2000	>2000
				Coal proved reserves	33%	Reserves/Consumption	IEA	0,00	1	█			0	500	1000	2000	>2000

Figure 1. Screenshot of a section of the “Energy Profile” Evaluation Sheet for Ghana. Evaluation Sheets are divided into the following columns: Indicators Headers (1); Rankings (2); Indicators Groups (3); Indicators (4); Units (5); Data sources (6); Indicator value (7); Indicator performance on a 1-to-5 scale, displayed as number and color coded (8); Sparkline graph showing 10-year trend (9); Weighted scores of indicator groups and indicators headers (10); Ranking intervals for evaluating indicator performance (11)

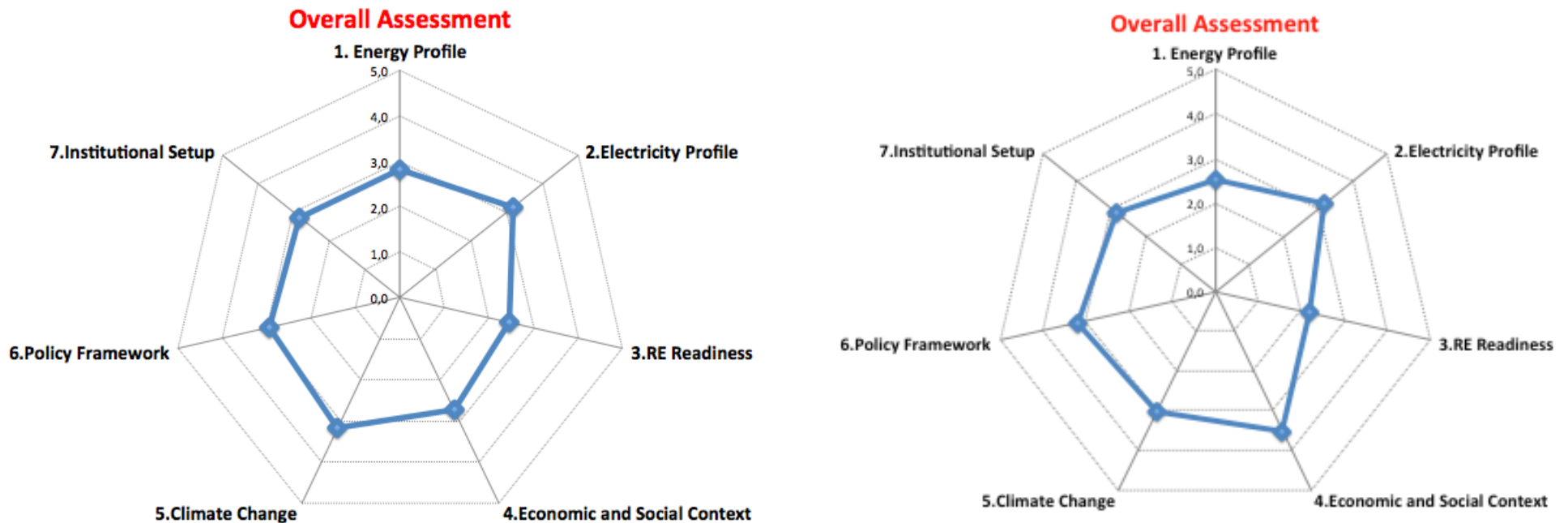
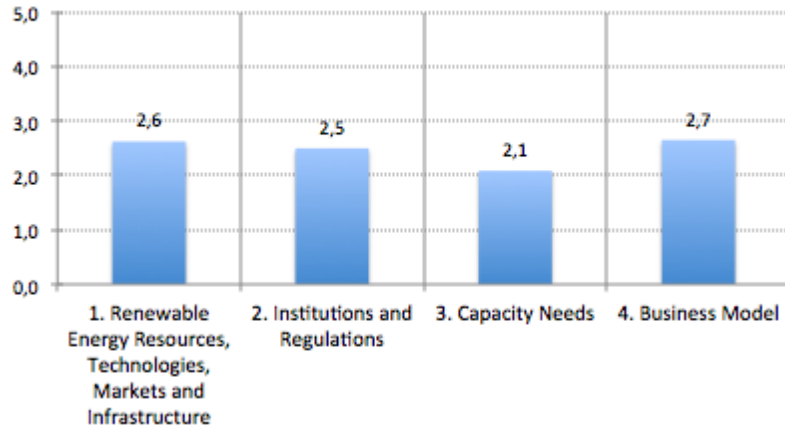


Figure 2. Overall Assessment graphs showing preliminary results for Ghana (left) and Vietnam (right).

3. RE Readiness



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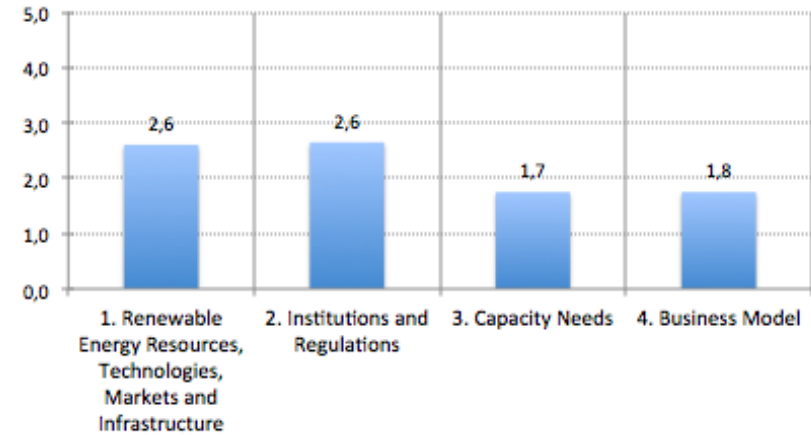


Figure 3. Detailed Assessment graphs showing preliminary results for Renewable Energy Readiness, Ghana (left) and Vietnam (right)

3. RE Readiness			
1. Renewable Energy Resources, Technologies, Markets and Infrastructure			
RE Potential	2,3	2,6	
RE Production	3,0		
RE Generation Capacity	2,5		
Local Cost of RE Technology	4,0		
RE Infrastructure	2,3		
RE Market	2,0		
RE Policy or Specific Mandate	1,9		
Sector Specific Policies targeting key RETs	3,0		
2. Institutions and Regulations			
Institutional Commitment	2,6		2,5
Int'l Organizations active in the country	2,3		
Non-government institutions active in the country	2,2		
Coordination	3,0		
Laws and Regulations	2,3		
3. Capacity Needs			
Education and Training Institutions for RE	0,0	2,1	
RE Research and Development	2,3		
Knowledge and Skills along the Supply Chains	3,0		
Cross-Sectional Knowledge	3,0		
4. Business Model			
RE Business Model	3,5	2,7	
RE Financing	1,8		

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RE Generation Capacity	2,5		
Local Cost of RE Technology	4,0		
RE Infrastructure	3,0		
RE Market	0,0		
RE Policy or Specific Mandate	2,3		
Sector Specific Policies targeting key RETs	3,0		
2. Institutions and Regulations			
Institutional Commitment	3,8		2,6
Int'l Organizations active in the country	3,3		
Non-government institutions active in the country	2,1		
Coordination	3,0		
Laws and Regulations	1,0		
3. Capacity Needs			
Education and Training Institutions for RE	1,0	2,0	
RE Research and Development	1,0		
Knowledge and Skills along the Supply Chains	3,0		
Cross-Sectional Knowledge	3,0		
4. Business Model			
RE Business Model	1,5	1,8	
RE Financing	2,0		

Figure 4. Detailed Assessment tables showing preliminary results for Renewable Energy Readiness, Ghana (left) and Vietnam (right)