Selection criteria and examples of tool application

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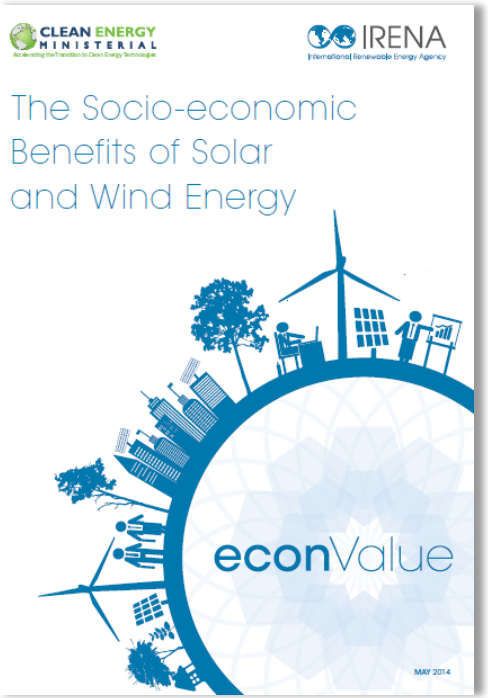
IRENA
International Renewable Energy Agency

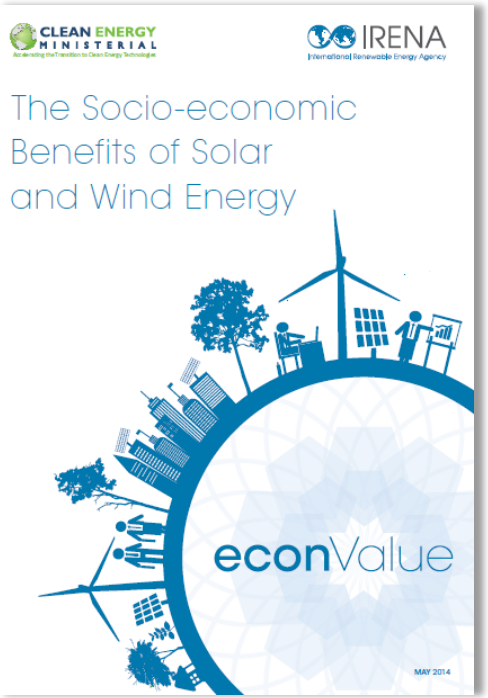
Key messages from the chapter on tools in IRENA's *econValue* report (1 of 2)



- **Sound quantitative analysis** of the expected socio-economic effects of renewable energy deployment **is essential to enable informed policy choices**.
  - Helps to monitor policy effectiveness (e.g. job creation)
  - Communicate benefits to the society with reliable figures
  - Key to ensure economic sustainability and stability of policies in the medium-term
- Albeit valuable, such analysis is a **complex endeavour**.
  - Can be intensive in time, human and financial resources
  - Important data gaps remain (renewable energy is a cross-cutting and relatively new sector)
- It is already been done in some countries (examples coming next)

Source: IRENA & Clean Energy Ministerial. (2014). The socio-economic benefits of large-scale solar and wind: an econValue report.

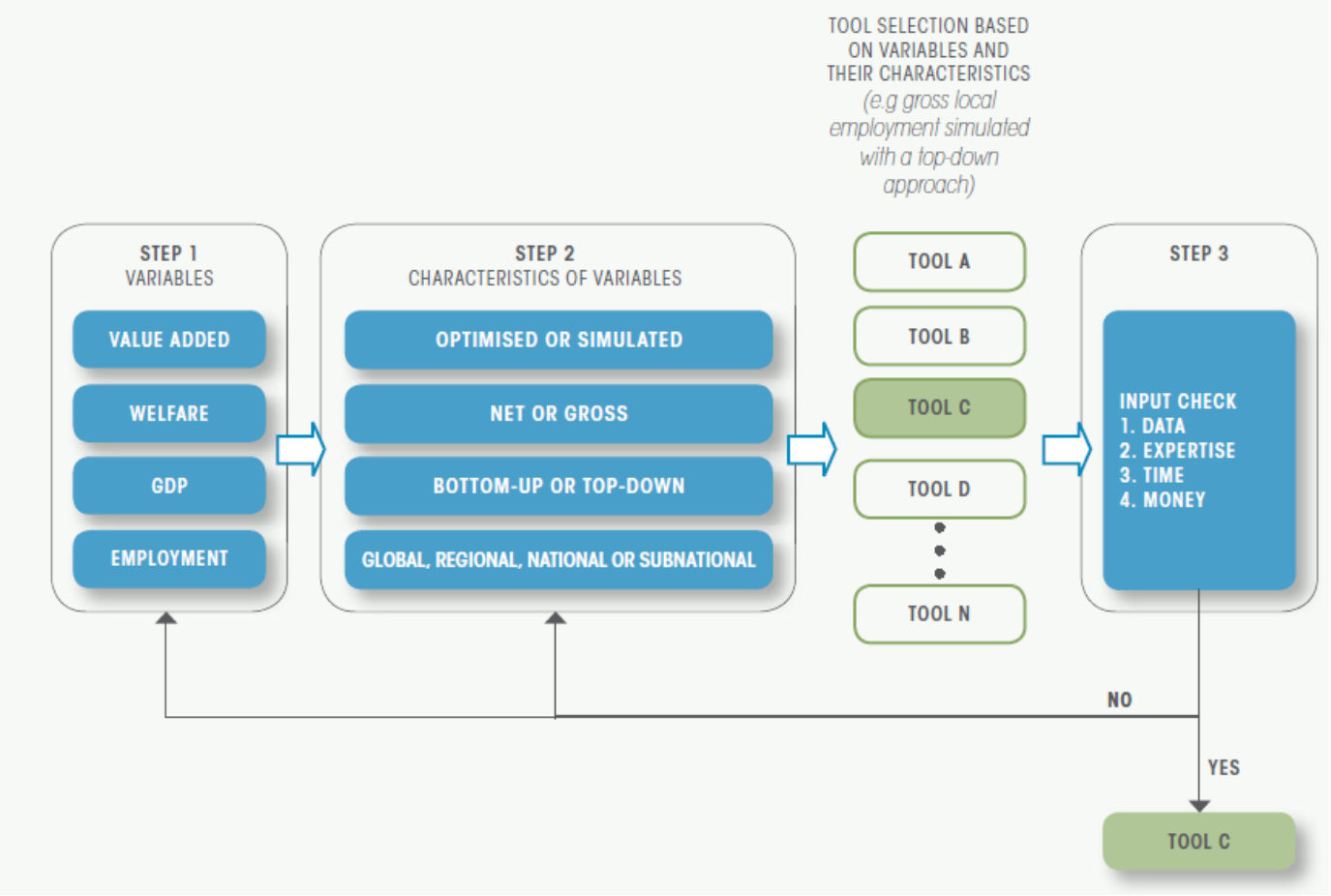
Key messages from the chapter on tools in IRENA's *econValue* report (2 of 2)



- Countries should enhance **systematic data collection and handling**.
  - It could be done:
    - Adding targeted questions to industry and statistical surveys
    - Or developing case studies.
  - The data should:
    - Be well defined and collected over a long time series
    - Comply with international reporting standards to ensure comparability among countries
    - Ideally, a solid input output framework with significant disaggregation of energy industries.

Source: IRENA & Clean Energy Ministerial. (2014). The socio-economic benefits of large-scale solar and wind: an econValue report.

How to select a tool? Proposal from *econValue*



Source: IRENA & Clean Energy Ministerial. (2014). The socio-economic benefits of large-scale solar and wind: an econValue report.

Some existing examples (1 of 2)

- Using employment factors:
  - Global:
    - IRENA global job estimations REmap 2030:16 M jobs in RE sector in 2030
    - Rutovitz and Harris estimations for Greenpeace Energy [R]evolution: 12 M jobs in RE sector in 2030
  - Regional:
    - IRENA job estimations GCC: 116,000 jobs in RE per year on average in RE
    - Potential for renewable energy jobs in the Middle East (van der Zwaan et al., 2013)
    - ECOWAS (Evan Mills, 2014 for UNEP and BMZ): up to 500,000 jobs by efficient off-grid lighing
  - National:
    - Brazil (Simas and Pacca, 2014), South Africa (Rutovitz *et al*., 2010), United States (Wei *et al*., 2010), Saudi Arabia (KACARE)

Some existing examples (2 of 2)

- Using Input/Output:
  - National
    - Tunisia (Lehr et al., 2012)
    - Spain (APPA, Deloitte, CIEMAT, Abay Analistas)
    - Mexico (PwC):
    - United States (NREL's JEDI model)
- Using full economic models:
  - Regional
    - European Comission (both general equilibrium and econometric approaches)
  - National
    - Germany (Lehr et al., 2012, Böhringer et al., 2013, etc.)
    - Ireland (Cambridge Econometrics, 2013)
    - Poland (Bukowski et al., 2014)
    - South Korea (KEIS, 2012)

Thank you!

Increasing scope, sophistication, data requirements, cost

	GROSS IMPACT ASSESSMENTS		NET IMPACT ASSESSMENTS	
	EMPLOYMENT FACTORS	GROSS INPUT-OUTPUT AND SUPPLY CHAIN ANALYSIS	NET INPUT-OUTPUT	COMPREHENSIVE ECONOMIC MODELS*
Economic performance (*e.g.* GDP, value added, welfare)		X	X	X
Employment	X (only direct jobs)	X	X	X
Applicability	Quick assessments and simple monitoring of employment in the RE industry	More sophisticated monitoring of economic value creation in the RE industry	Rough economy-wide assessments for the short term	Short to long-term economy-wide assessments
Relative cost	$	$$	$$$	$$$$

Fuente: IRENA & Clean Energy Ministerial. (2014). The socio-economic benefits of large-scale solar and wind: an econValue report.

TABLE 3.7 METHODS CATEGORISED BY THEIR MODEL CHARACTERISTICS

		SECTORAL SCOPE			
		GROSS (ONLY ONE SECTOR)		NET (ECONOMY)	
		MATHEMATICAL TECHNIQUE		MATHEMATICAL TECHNIQUE	
		OPTIMISATION	SIMULATION	OPTIMISATION	SIMULATION
Technological approach	Bottom-up		Employment Factors		Economic simulation (*e.g.* System Dynamics)
			Supply Chain Analysis		
	Top-down		Gross Input-Output		Net input-output
				Computable General Equilibrium	
					Economic simulation (*e.g.* System Dynamics)
					Macroeconometric

Fuente: IRENA & Clean Energy Ministerial. (2014). The socio-economic benefits of large-scale solar and wind: an econValue report.