IRENA
International Renewable Energy Agency

Workshop on Innovation for Enabling an Accelerated Deployment of Renewable Energy Technologies

IRENA Innovation and Technology Center (IITC)

IRENA Event, TEC

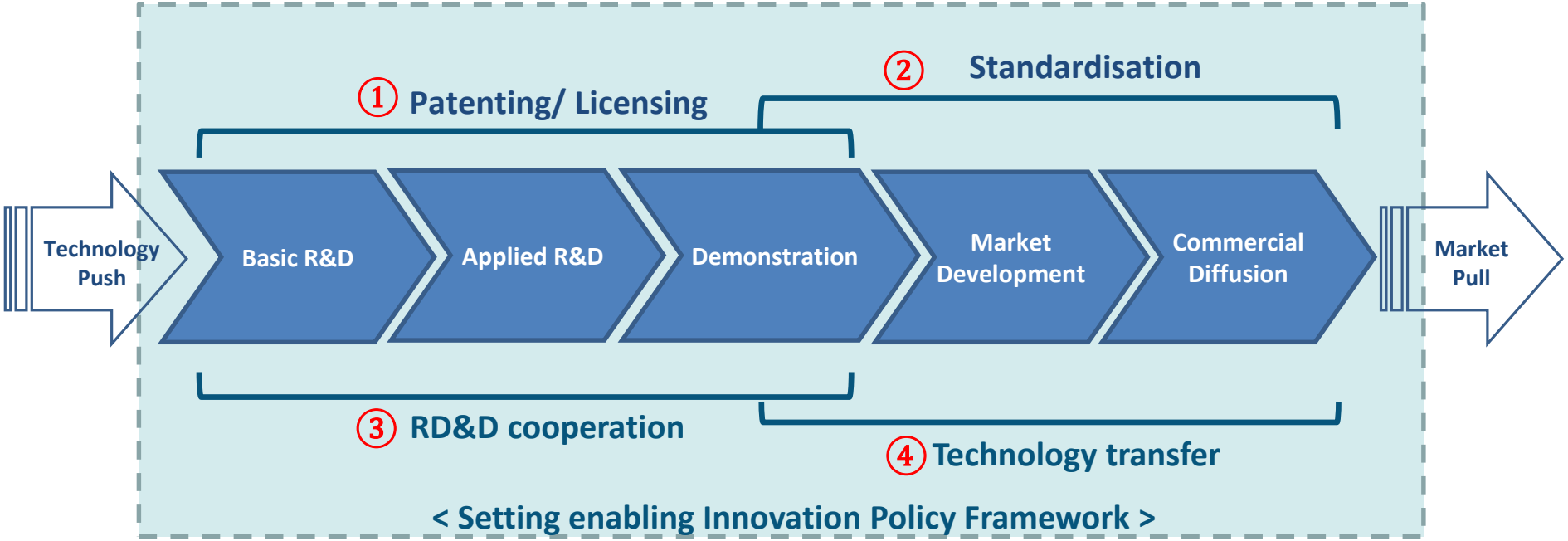
Roland Roesch; Francisco Boshell, Linus Mofor, Maria Ayuso

27 June 2013

Overview

IRENA has initiated an assessment of various instruments for RET innovation including,

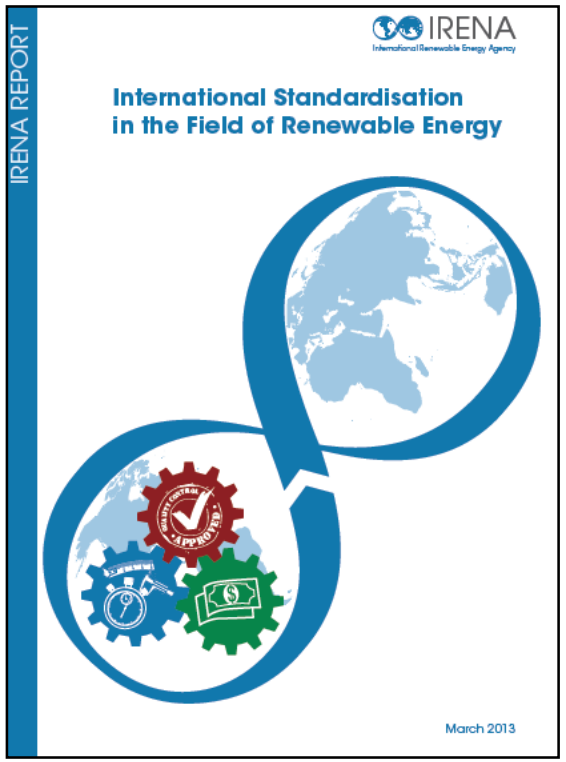
① RD&D trend and status information from patents;
② reduction of technology risk through streamlined standardisation and quality management;
③ current status of global renewable energy technology RD&D cooperation; and
④ assessment of potential technology transfer



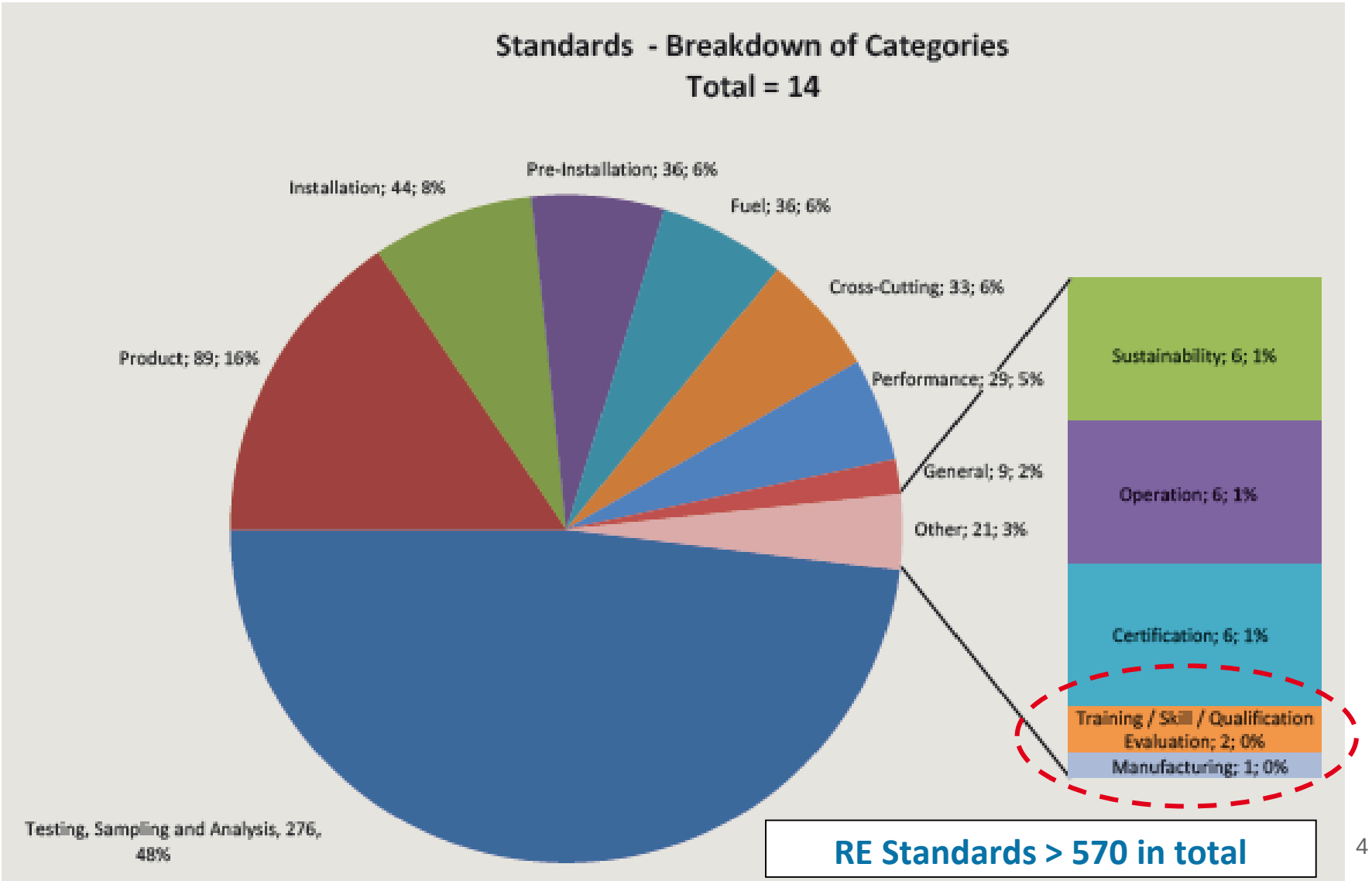
IRENA
International Renewable Energy Agency

STANDARDISATION AND QUALITY ASSURANCE FOR RENEWABLE ENERGY SYSTEMS

IRENA's Analysis on RE Standardisation



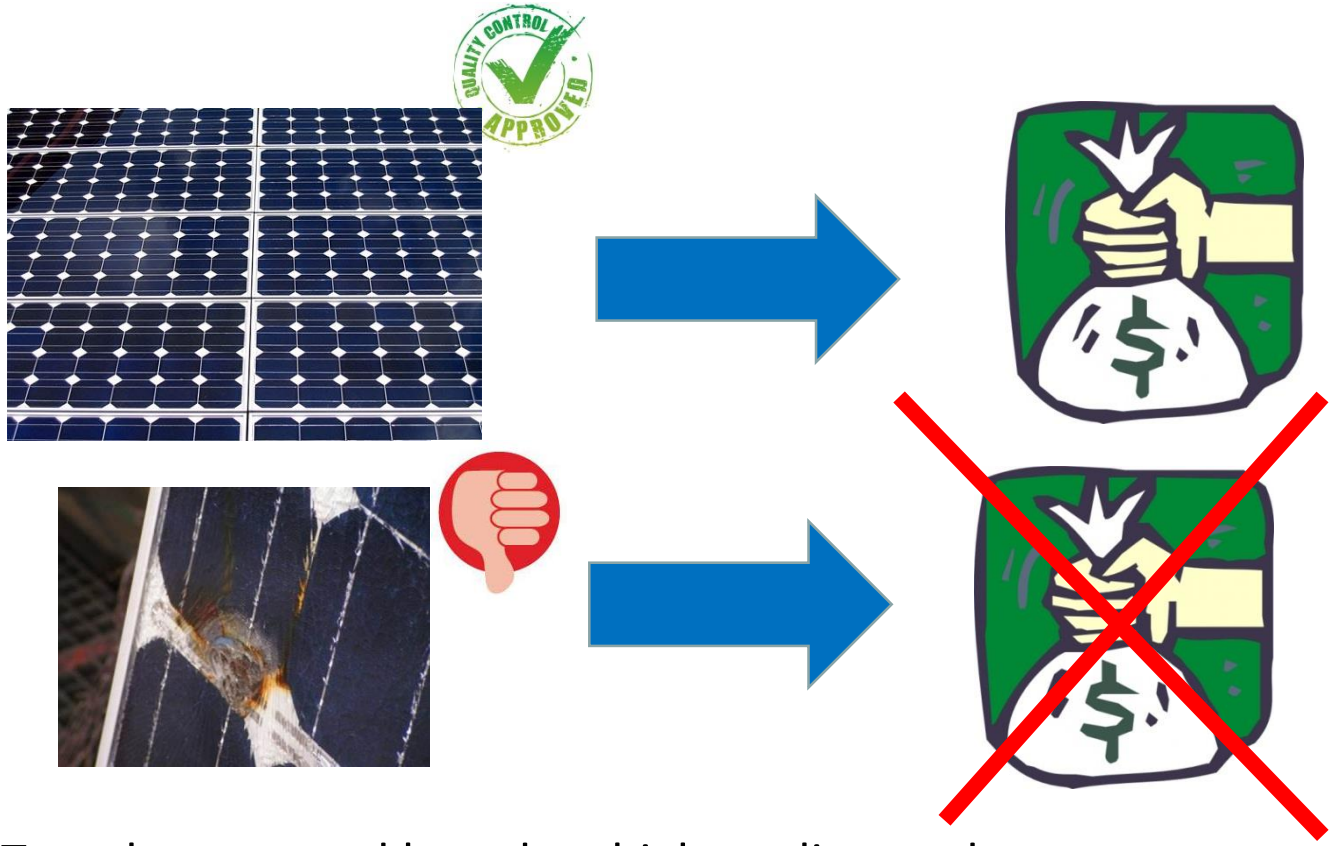
IRENA's Working Paper



Source: IRENA (2013)

Standards supporting national RE regulations

Standards can be linked to national regulations and national incentive schemes for RET (e.g. FiT) to assure that good quality products are promoted.

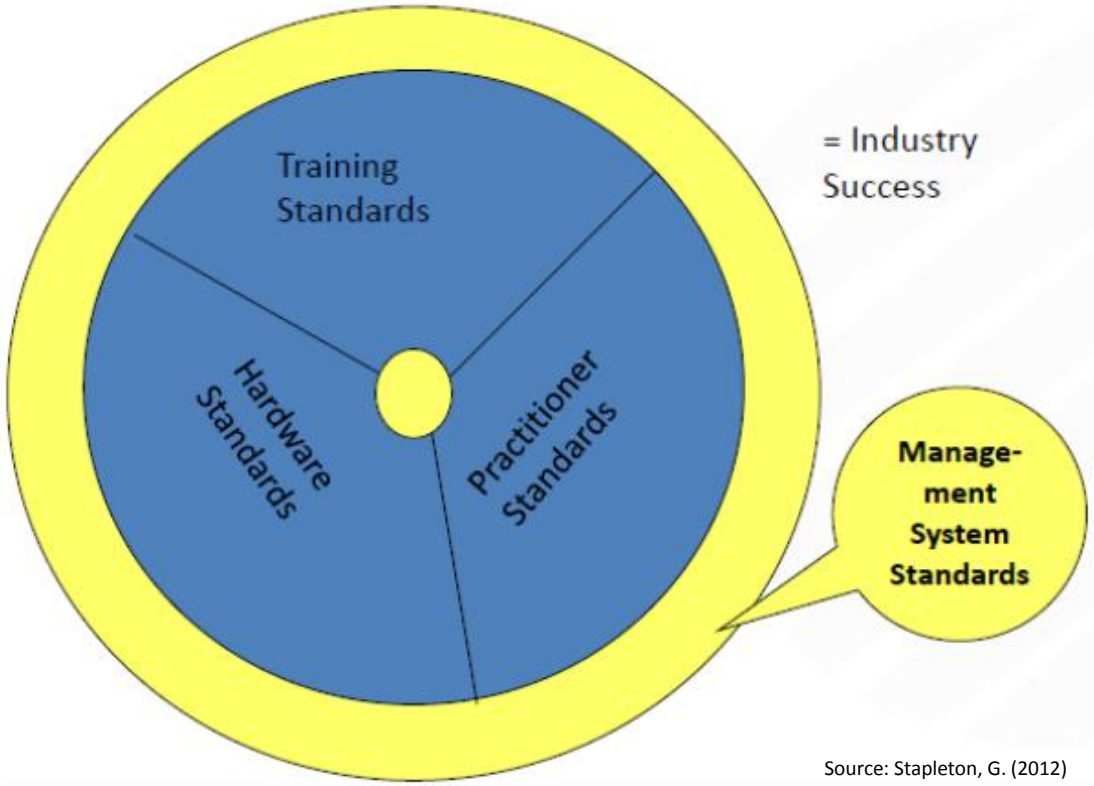


Result: National RET markets created based on high quality products

Use of standards not for products only but for the whole RET system

What is the result of deploying systems with good quality hardware, but not properly installed?

Use of standards not only to assure good quality products (e.g. PV cell or wind turbine), but good quality systems: including competence for designing, installing and maintaining the whole RET system.



Source: Stapleton, G. (2012)

Non-harmonised standards

Non-harmonised standards may create barriers for trading and transfer technologies

Possible approach: development and dissemination of regional harmonised technical guidelines for RET

Quality Infrastructure for small-scale RET (I)

No quality infrastructure….

…result

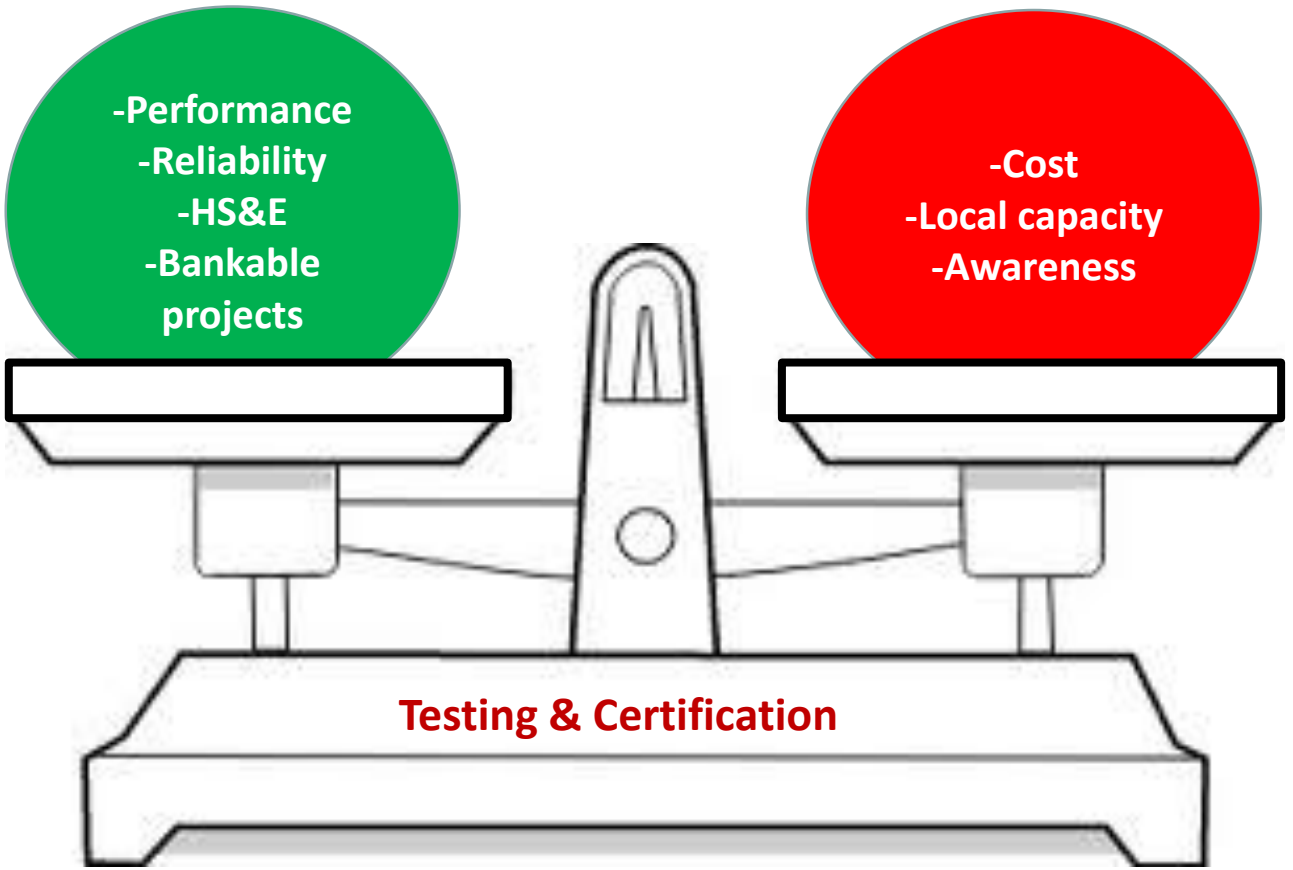
High risk

Lack of confidence in the technology

Quality Infrastructure for small-scale RET (II)

Guidelines to establish national QI

Balance cost/benefits



In 2013:

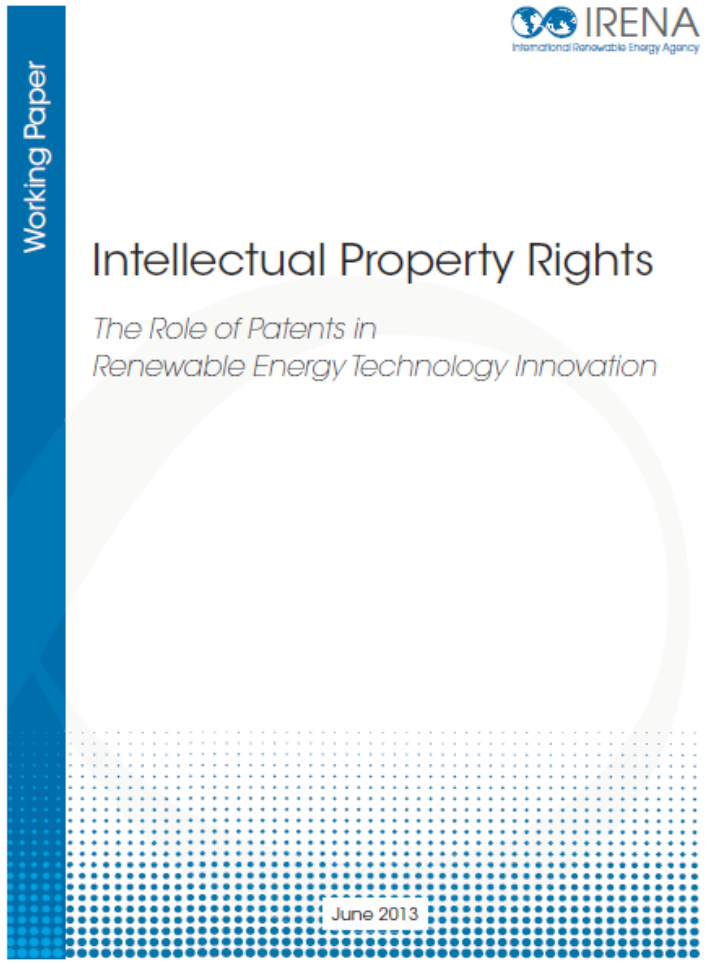
Solar water heaters

Small wind turbines

IRENA
International Renewable Energy Agency

ROLE OF PATENTS IN RENEWABLE ENERGY TECHNOLOGY INNOVATION

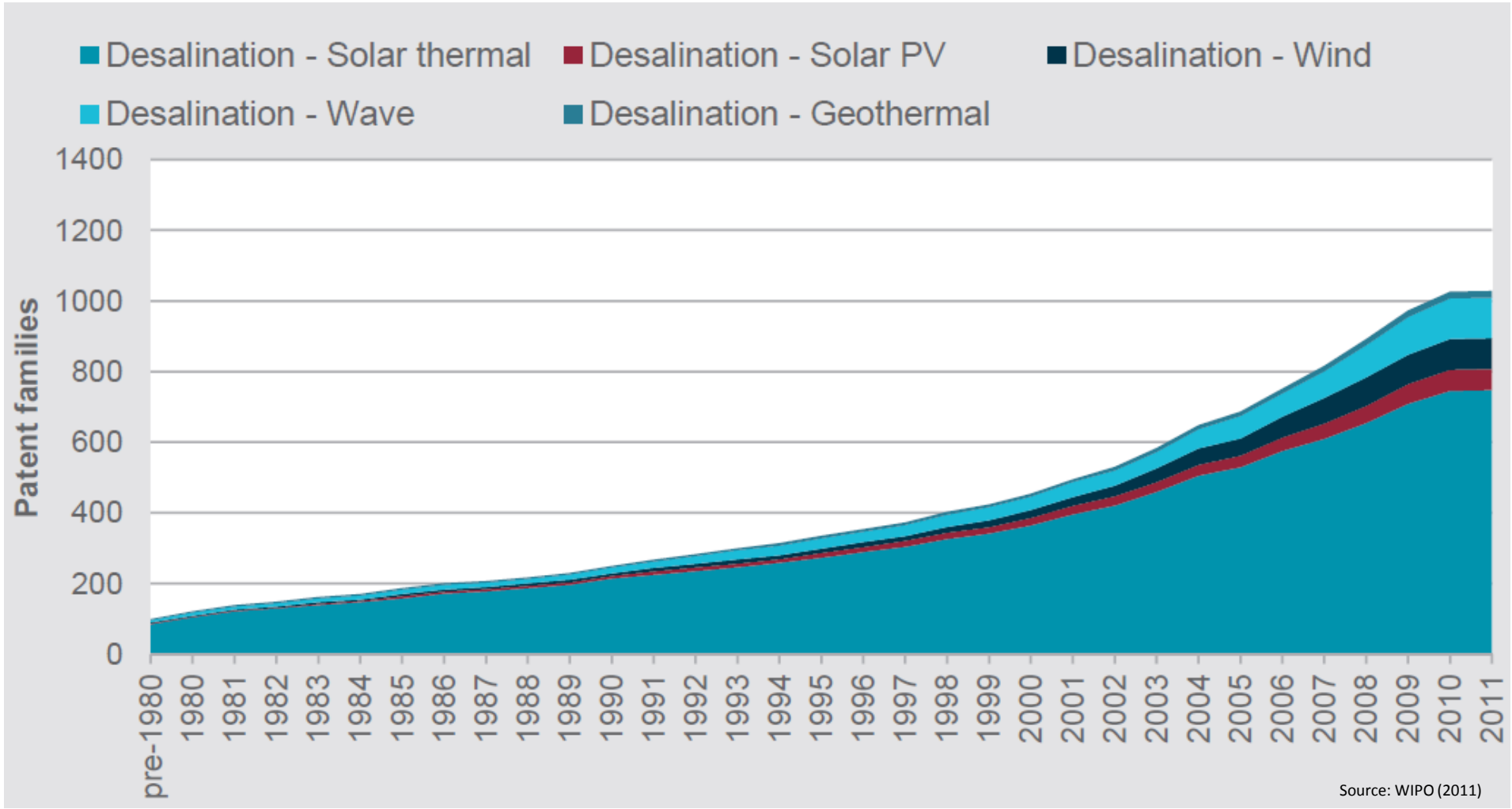
Patents for RET



IRENA's Working Paper

- The role of patents in RET innovation still needs to be better understood.
  - Different views – Incentivize / Restrain
- Patents seen as an engine for innovation in R&D intensive sectors. Further analysis is still required for RET sector.
- Patenting in most renewable energy areas has increased more than five-fold in the last two decades.
- Very few renewable energy patents have been filed outside OECD countries and China

Patents and RET trends



Cumulative patent families in desalination and renewable energy

Key remarks

Ranking (overall desalination)	Assignee	Overall	Solar thermal	Solar PV	Wind	Wave	Geo-thermal
1	MITSUBISHI HEAVY INDUSTRIES LTD	119	8				
2	HITACHI LTD	118	10	1			
3	JAPAN ORGANO CO LTD	99					
4	KURITA WATER IND LTD	87					
5	EBARA CORP	75	6				
6	TOSHIBA CORP	49	6				
7	TORAY INDUSTRIES INC	42					
8	HITACHI ZOSEN CORP	37	7			1	
9	CHEN MING	33	2				
10	ISHIKAWAJIMA HARIMA HEAVY IND CO LTD	31					

Source: WIPO (2011)

RET patent information can provide:

- Which countries and innovators are active
- Which countries are potential markets
- Trends of technology developments
- International research and co-operation as indicated by co-invention

Governments, through their patent offices, must be stewards of patent quality

IRENA
International Renewable Energy Agency

COOPERATIVE RD&D IN THE LAC REGION

Project objectives

IRENA
International Renewable Energy Agency

Public and private RD&D initiatives

Key stakeholders and players in LAC

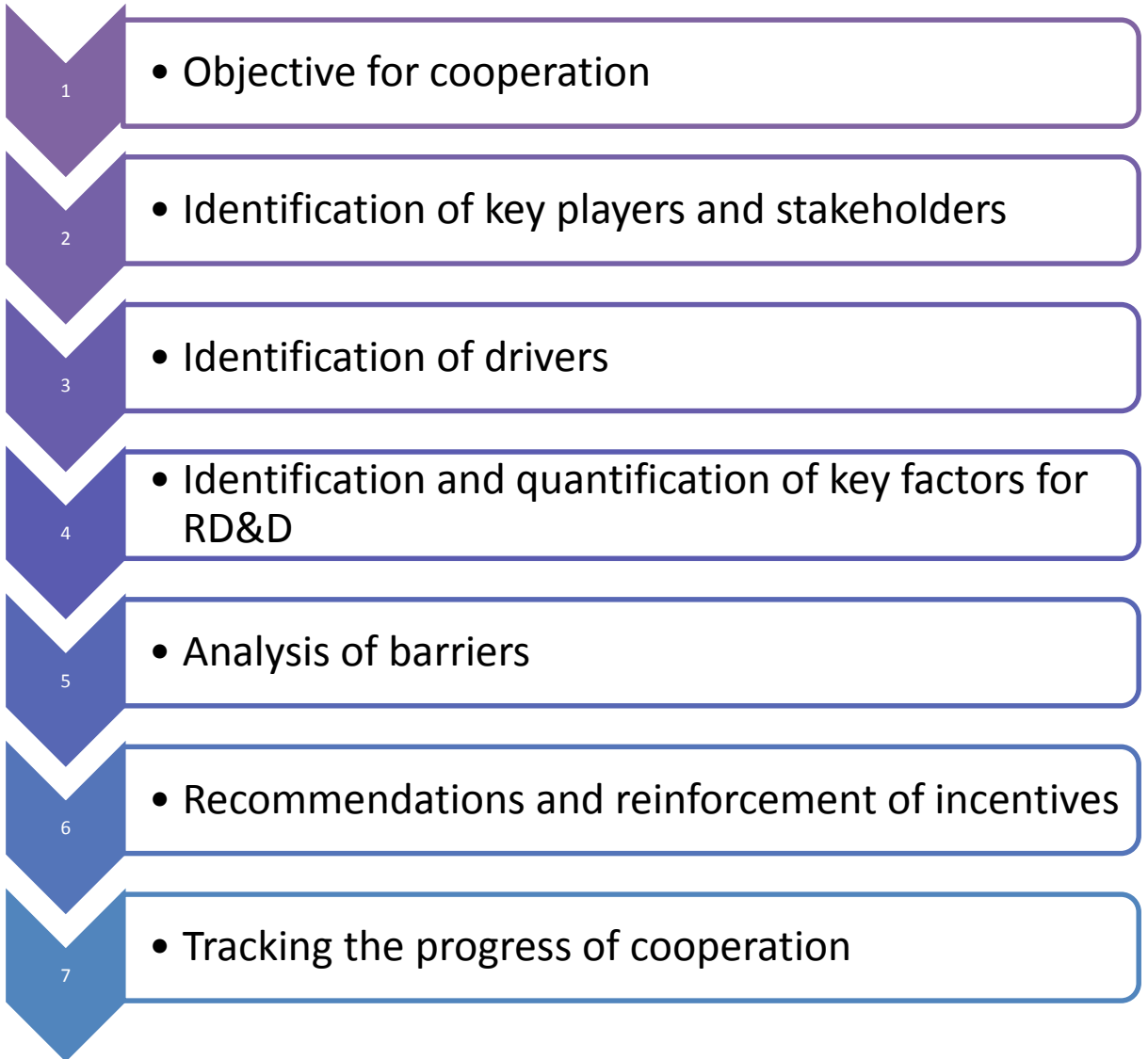
Barriers to RD&D due to gaps in cooperation

Recommendations to strengthen local, regional, national and international cooperation

Key areas where IRENA can contribute best

Methodology

- Have the objectives or drivers changed?
- Are there new key players/stakeholders?
- Has the quantification of key factors evolved?
- Should the barriers be reanalyzed?
- Are there new recommendations required?



Research of initiatives …any contribution?

IRENA
International Renewable Energy Agency

More than 40 institutions

More than 18 countries

More than 12 cases

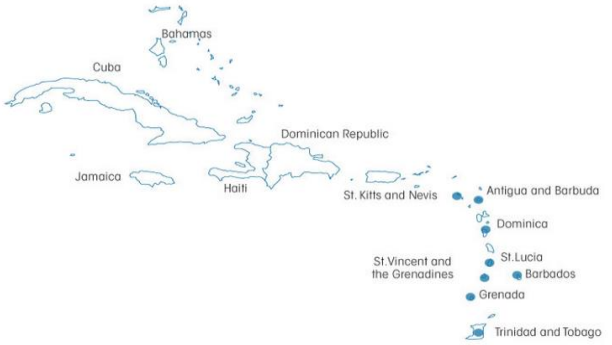
…and a first set of recommendations

- Breaking the traditional scheme: cooperation with more advanced regions
- Prioritizing RE projects: investing in economic growth
- Spreading awareness in political realms: top-bottom approach
- Motivating the research: economic rewards and recognition awards
- Importing knowledge to export technology
- More efficient administrative processes to support RD&D initiatives
- Call for proposals: the RDD&C concept

In which areas could IRENA best contribute?

- The area of required help needed was identified in 90% of the responses as the lack of coordination and understanding on how to operate cooperation systems.
- From the analysis the absence of funds is not referred as a key barrier in this region.

- Innovators, policy-makers and funding institutions network?
- Innovators and researchers contact book?
- Innovation Renewables Readiness Assessment?

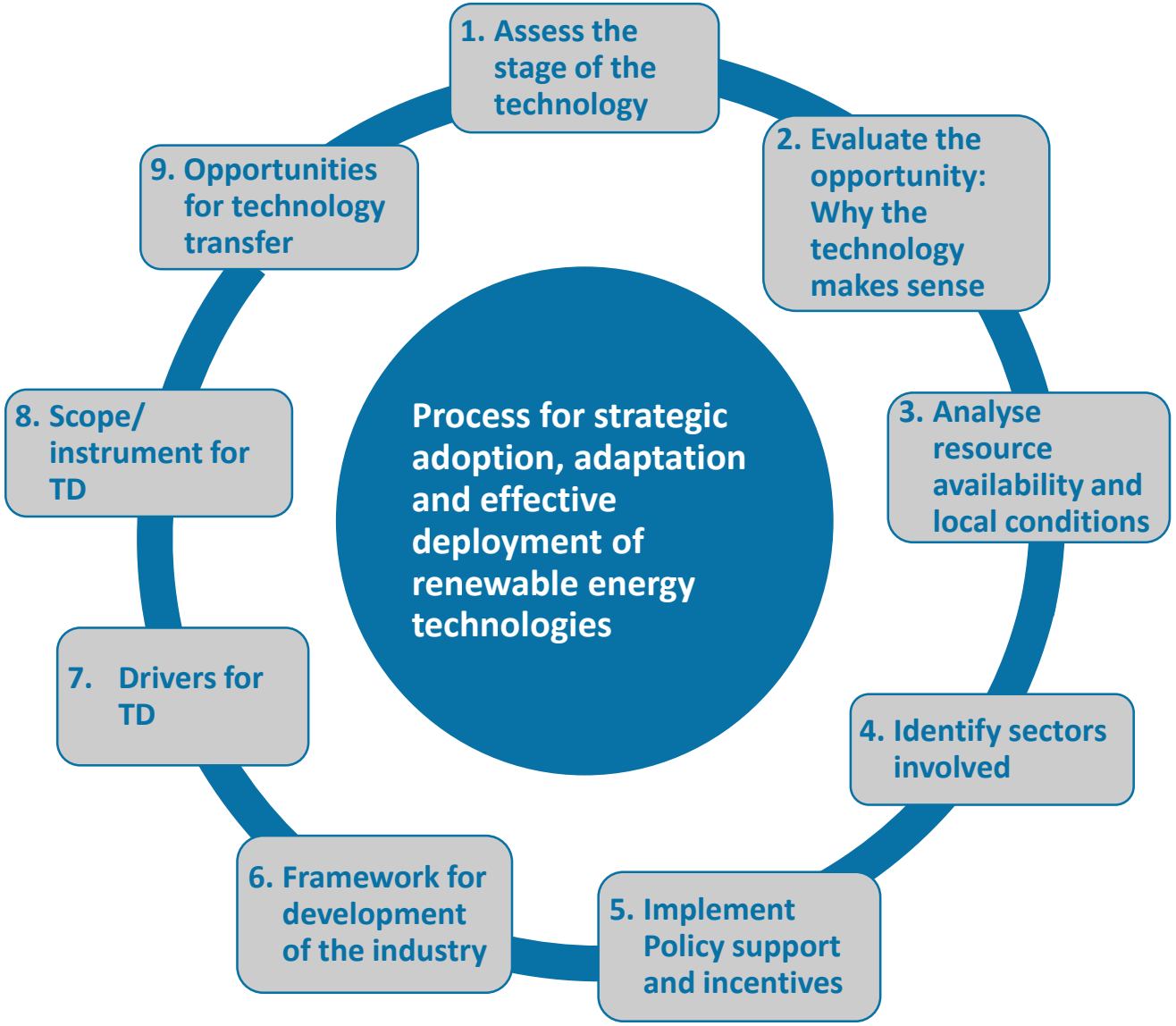


… any Suggestions?

IRENA
International Renewable Energy Agency

ENABLING RENEWABLE ENERGY TECHNOLOGY ADAPTION

Process for strategic adoption, adaptation and effective deployment of RET



Current IRENA topics under investigation:

- A case study of the potential for enhanced deployment of bioethanol technology in Africa (Working paper 07/2013)
- Identify and promote techno- economic valorisation pathways for renewable energy generation from biomass residues in the agro processing sector in Africa
- Pilot the assessment of agro-industrial wastes potential in LAC

IRENA
International Renewable Energy Agency

RENEWABLE ENERGY INNOVATION POLICY

Innovation Policy Framework
Process Overview

IRENA
International Renewable Energy Agency

Setting a macro-objective:

- Competitiveness in a global market
- Mitigation of climate change
- Sustainable development …

Assess renewable energy resource potentials

Identify priority sector

- Industry
- **Energy**…

Select a strategy

- The Germany approach
- The Korean approach
- The approach in Chile
- The Mexican approach…

Establish the governance structure

Apply the actual instruments:

- IPR strategies
- Standards and regulation
- RD&D cooperation
- Others:
  - Market based instruments (Taxes, Tariffs…)
  - Loan softening/loan guarantees

The Goal:

Acceleration of the Deployment of Renewable Energy Technologies

Main activities ongoing in 2013

IRENA
International Renewable Energy Agency

Setting enabling Innovation Policy Framework

- A report on the practical application of the innovation policy framework for renewable energy technology (in collaboration with NREL)

Instrument 1: Patents/Licensing

- Development of a pilot information platform for RET patent
- A report on the assessment of ocean energy technology using patent

Instrument 2: Standardisation

- Development of a web access information platform
- Guidelines for establishment of quality assurance schemes for small-scale and off-grid applications
- Dissemination of harmonised technical guidelines for PV systems in Pacific Islands

Instrument 3: RD&D cooperation

- A report on the overview of renewable energy RD&D status and gap analysis focusing on the LAC region

Instrument 4: Technology transfer

- A report on the assessment of technology transfer on bioethanol from Brasil to Africa
- A report on the assessment of technology transfer opportunities in the power sector from China to Africa

Possible Activities Beyond 2013

IRENA
International Renewable Energy Agency

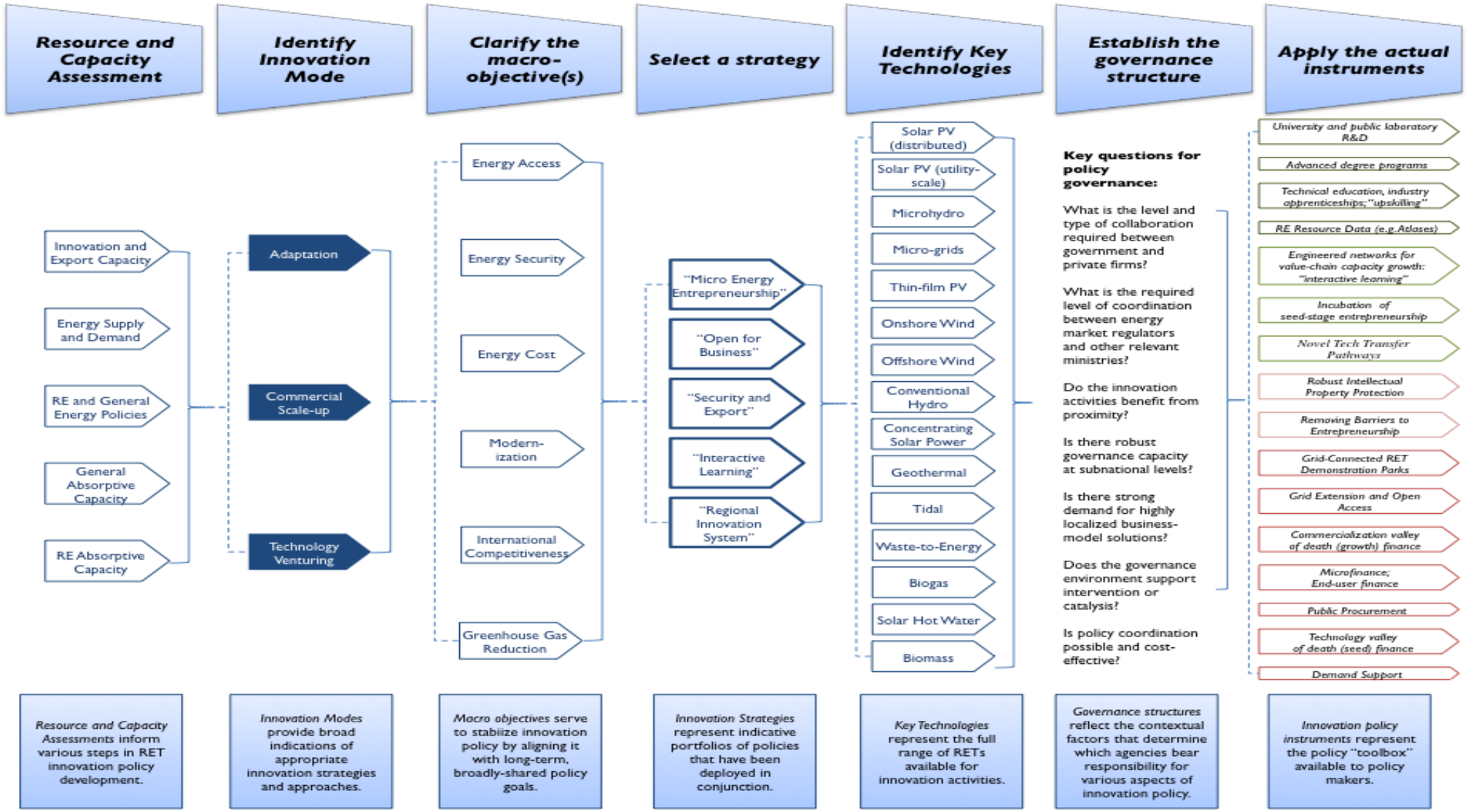
Setting enabling Innovation Policy Framework

- Identify different RET technology innovation strategies
- Identify different ways of governing RET technology innovation
- Develop a RET innovation policy toolbox for policy makers

Instruments

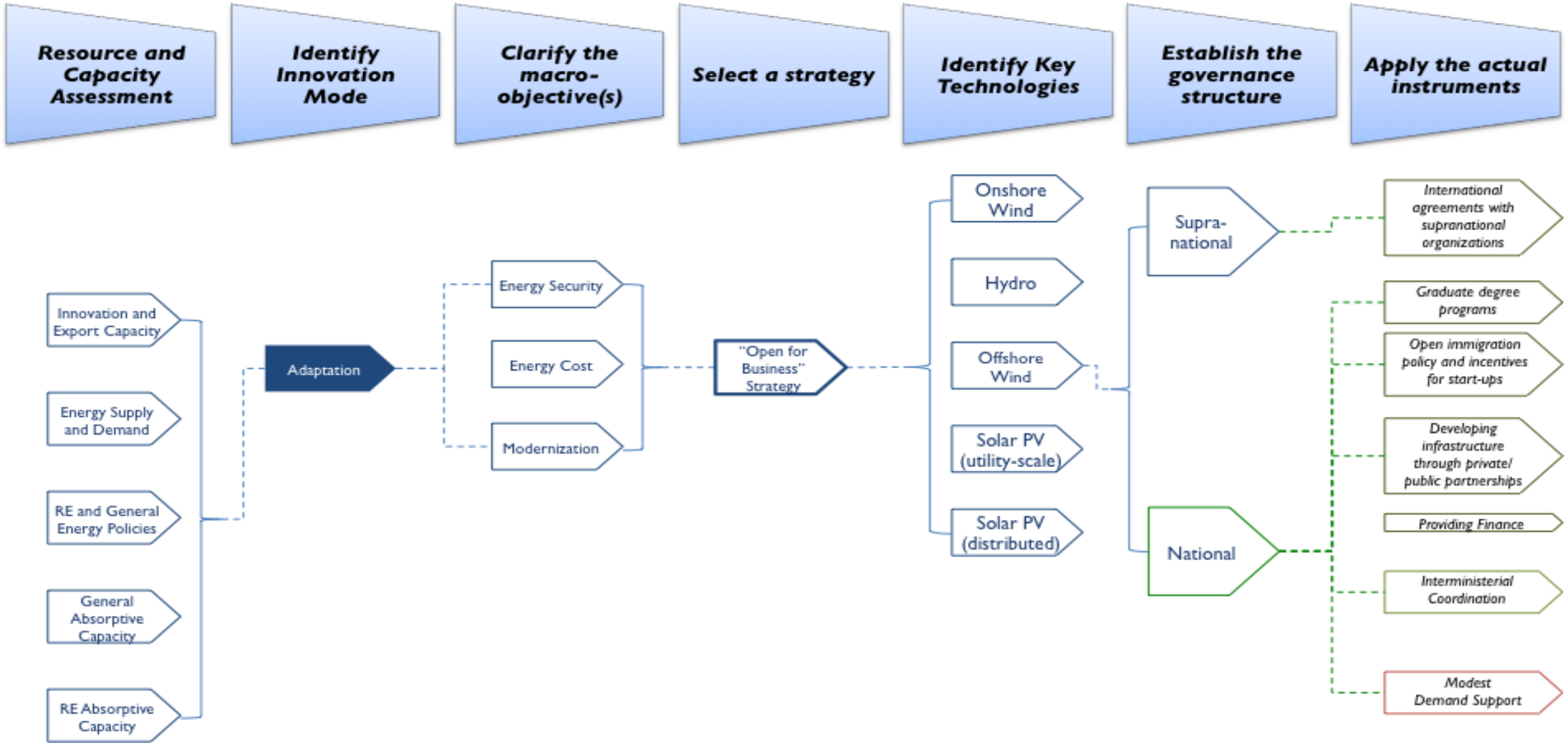
- Creation of a Renewable Energy Standardisation Forum: Facilitate discussion between standards developers and users
- Support member countries in setting quality assurance schemes for RET
- Refine information platform on standards and patents based on needs from Member Countries
- Other case studies of RET innovations based on needs from Member Countries

Guide to the RET innovation policy development process



Source: Mackay Miller and Carla Bustamante. The RETIP Process. A Guide for the Development of Renewable Energy Technology Innovation Policy (Draft). NREL and IRENA, 2013.

Illustrative decision guide for Chile RET innovation policy



Source: Mackay Miller and Carla Bustamante. The RETIP Process. A Guide for the Development of Renewable Energy Technology Innovation Policy (Draft). NREL and IRENA, 2013.

IRENA
International Renewable Energy Agency

Thank you for your attention !