

GENERAL INFORMATION

1.1 What are the applications in which solar thermal collectors and systems are used in your country?

Countries	Arg	Uru	Bra	CR	ES	Mex	EC	Ch	Col
Domestic Hot water	YES	YES	YES	YES	YES	YES	YES	YES	YES
Space heating	YES	YES	NO	NO	NO	YES	NO	NO	NO
Swimming pool heating	YES	YES	YES	YES	NO	YES	YES	YES	NO
Industrial processes	NO	NO	YES	YES	YES	YES	NO	NO	NO
Absorption chilling	NO	NO	NO	NO	NO	NO	NO	NO	NO
Other	YES	NO	NO	NO	NO	NO	NO	NO	NO

Arg: Argentina **Uru:** Uruguay **Bra:** Brazil **Col:** Colombia
CR: Costa Rica **ES:** El Salvador **Mex:** Mexico **EC:** Ecuador **Ch:** Chile

Barbados did not answer the question form

Which are the conventional technologies that are replaced by the use of solar thermal energy? (1.6)

Countries	Arg	Uru	Bra	CR	ES	Mex	EC	Ch	Col
Gas instant heaters	YES	YES	YES	NO	YES	YES	YES	YES	
Electric instant heaters	YES	YES	YES	YES	YES	YES	NO	YES	YES
Gas hot water tank heaters	YES	YES	YES	NO	NO	NO	NO	YES	NO
Wood hot water tank heaters	NO	NO	YES	NO	NO	NO	NO	YES	NO
Gas Space heating by floor	YES	NO	NO	NO	NO	NO	NO	NO	NO
Electric Space heating by floor	YES	NO	NO	NO	NO	NO	NO	NO	NO
Gas Space heating by radiators	YES	YES	NO	NO	NO	YES	NO	NO	NO
Electric Space heating by radiators	YES	YES	NO	NO	YES	YES	NO	NO	NO
Gas Swimming pool heating	YES	YES	YES	NO	NO	YES	YES	YES	NO
Electric Swimming pool heating	NO	YES	YES	YES	NO	NO	NO	YES	NO
Electric hot water tank heaters	YES	YES	YES	YES	YES	NO	NO	NO	NO

- 1.2 Is there a chamber or association that gathers the manufacturers/importers in your country?

Countries	Arg	Uru	Bra	CR	ES	Mex	EC	Ch	Col
Answer	NO	YES	YES	YES	NO	YES	NO	NO	NO

- 1.3 Is there a solar radiation database in your country?

Countries	Arg	Uru	Bra	CR	ES	Mex	EC	Ch	Col
Answer	YES	YES	YES	NO	YES	YES	YES	YES	YES

- 1.4 Is there an ambient temperature database in your country?

Countries	Arg	Uru	Bra	CR	ES	Mex	EC	Ch	Col
Answer	YES	YES	YES	YES	YES	YES	YES	YES	YES

- 1.5 Is there any regulation that protects the “right to the sun” in your country?

Countries	Arg	Uru	Bra	CR	ES	Mex	EC	Ch	Col
Answer	NO	NO	NO	NO	NO	NO	NO	NO	NO

Important obstacle for large cities!!

Technical Standards

2.1 Which are the standardization bodies in your country?

Country	Body	Web
Arg	IRAM (Instituto Argentino de Normalización y certificación)	www.iram.org.ar
Uru	UNIT (Instituto Uruguayo de Normas Técnicas)	www.unit.org.uy
Bra	ABNT (Asociación Brasileira de Normas Técnicas)	www.abnt.org.br
CR	INTECO (Instituto de Normas Técnicas de Costa Rica)	www.inteco.or.cr
ES	OSN (Organismo Salvadoreño de Normalización)	www.osn.gov.sv
Méx	IMNC (Instituto Mexicano de Normalización y Certificación); NORMEX (Sociedad Mexicana de Normalización y Certificación);	www.imnc.org.mx www.normex.com.mx
Ecu	INEN (Entidad Reguladora de Normas)	www.inen.gob.ec
BB	BNYES (Barbados National Standard Institute)	www.bnYES.bb
Col	ICONTEC (Instituto Colombiano de Normalización Técnica)	www.icontec.org.co
Ch	INN (Instituto Nacional de Normalización)	www.inn.cl

2.2/ 2.3 Are there national technical standards for solar water heating systems and equipments in your country?

	Arg	Uru	Bra	CR	Mex	ES	Ecu	Chi	Col	BB
Collector testing standard (with or without cover)	IRAM 210002	UNIT 705 UNIT ISO 9806-1 UNIT ISO 9806-2 UNIT ISO 9806-3	ABNT NBR 15747-1 ABNT NBR 15747-2	NO	NMX-ES-001- NORMEX-2005 NMX-ES-002- NORMEX-2007	NO	NO	NCh 2919/1 NCh 2919/3 NCh 3096-1 NCh 3096-2	NTC 5434/1 Y 2	BNS147- 1983
System testing (custom made or series made)	IRAM 210003	UNIT 1185 UNIT1184 UNIT ISO 9459:2 UNIT 1195 UNIT 1196	ISO 9459:2	NO	NMX-ES-004- NORMEX-2010	NO	NO	NCh 2919/2	NO	NO
Tank testing standards (for solar thermal systems)	IRAM 210004	NO	ABNT 101085:2013	NO	NO	NO	NO	NCh 308-8/3 2008	NO	NO
Installation standards	IRAM 210005	Plan Solar	NO	NO	NMX-ES-003- NORMEX-2007	NO	NO	NCh 314-6 2008	GTC 108	BNS CP20- 1983

Mostly based on ISO/EN, excepting BB and Arg that also use ASHRAE.

Accreditation

3.1 Is there an accreditation body in your country?

Country	Body	Web
Arg	OAA (Organismo Argentino de Acreditación)	www.oaa.org.ar
Uru	OUA (Organismo Uruguayo de Acreditación)	www.organismouruguayodeacreditacion.org
Bra	INMETRO (Instituto Nacional de Metrologia, Qualidade e Tecnologia) - Coordenação Geraç de Acreditação (Cgcre)	www.inmetro.br
CR	ECA (Ente Costarricense de Acreditación)	www.eca.cr
ES	OSN (Organismo Salvadoreño de Acreditación)	www.osa.gov.sv
Méx	EMA (Entidad Mexicana de Acreditación)	www.ema.org.mx
Ecu	INEN (Entidad Reguladora de Normas)	www.inen.gob.ec
BB	BNYES (Barbados National Standard Institute)	www.bnYES.bb
Col	ONAC (Organismo Nacional De Acreditación)	www.onac.org.co
Chi	INN (Instituto Nacional de Normalización)	www.inn.cl

Test Laboratories

Is there an accredited laboratory for testing solar water heating systems and equipments in your country? (3.2)

Country	Laboratory	ISO 17025	Test Standards
Arg	NO	NO	NO
Uru	NO	NO	NO
Bra	Laboratório de Instalações Prediais e Saneamento do Instituto de Pesquisas Tecnológicas (LIP) do Instituto de Pesquisas Tecnológicas (IPT)	YES	ISO 9459:2
CR	NO	NO	NO
ES	NO	NO	NO
Méx	NO	NO	NO
Ecu	NO	NO	NO
BB	NO	NO	NO
Col	NO	NO	NO
Chi	YES	YES	EN12975 EN16976 EN12977

Metrology

3.3 For which of the following magnitudes exists a traceability in your country (for ...) ?

Country	Arg	Uru	Bra	CR	ES	Mex	Ec	Ch	Col
Temperature	YES	YES	YES	YES	YES	YES	YES	YES	YES
Volume	YES	YES	YES	YES	YES	YES	YES	YES	YES
Irradiation	YES	NO	NO	NO	NO	NO	NO	NO	NO
Mass	YES	YES	YES	NO	YES	YES	YES	YES	YES
Longitude	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time	YES	YES	YES	YES	YES	YES	YES	NO	YES
Volume Flowrate	YES	NO	YES	YES	NO	YES	NO	YES	YES
Mass Flowrate	YES	NO	YES	YES	NO	YES	NO	NO	YES
Pressure	YES	YES	YES	YES	NO	YES	NO	YES	YES
Wind	YES	NO	YES	NO	NO	NO	NO	NO	NO

Conformity Assessment

3.4 Is there any solar hot water system certification/inspection program in your country? **Please describe briefly regulation bodies**

Country	Is there?	Body	Description
Arg	NO	NO	The interested parties test their equipments by different institutions. There is no mandatory regulation.
Uru	YES	URSEA Resolución URSEA Nro. 057-012 21/03/2012	Regulates quality requirements and efficiency of solar thermal systems used in the Phase 1 of the Solar Plan and establishes the procedure to obtain authorization for the incentive.
Bra	YES	ALAC ASSOCIAÇÃO LATINO-AMERICANA DE AVALIAÇÃO DA CONFORMIDADE	The manufacturer must test their products by an accredited lab to obtain the conformity certificate.
CR	NO	NO	NO
ES	NO	NO	NO
Méx	YES	ANCE y A&E Intertrade, S.A. de C.V.	It is not done by an accredited lab. Testing is done by the UniverYESty of Guanjato.
Ecu	NO	NO	NO
BB	NO	NO	The manufacturers/importers certify by third parties
Col	NO	NO	NO
Chi	YES	YESCAL, ICOMCER, INGCER, CESMEC	Solar Thermal products certification (RE 1150 SEC). 1.- Origin acknowledgement 2.- Local or foreign manufacturing 3.Import data

3.5 Is there a labeling program for solar water heating systems and equipments?

Countries	Arg	Uru	Bra	CR	ES	Mex	EC	BB	Chi	Col
Answer	NO	NO	YES	NO	NO	NO	NO	NO	NO	NO

Brazil: There is a labeling program performed by the national accreditation body INMETRO. The product is labeled A, B, C or D depending on how much energy it produces under certain operating conditions defined exclusively for Brazil.

Legal Framework

4.1 Which are the regulation bodies for solar water heating systems and equipment in your country? Which are their roles?

Country	Body	Competence
Arg	None	Currently working with the energy secretariat to develop a agency/authority
Uru	Ministerio de Industria, Energía y Minería (MIEM) Unidad Reguladora de los Servicios de Energía y Agua (URSEA)	Regulation and control agency/authority
Bra	INMETRO	Regulation and control agency/authority. Inmetro is in charge of regulating where other agencies do not have competence or have vacancies.
CR	Ministerio de Ambiente y Energía	Regulates and controls everything related to thermal and electric energy.
ES	No information	No information
Méx	ComiYESón Nacional para el Uso Eficiente de la Energía (CONUEE)	Promotes energy efficiency and is a technical reference for implementation of solar energy programs.
Ecu	No information	No information
BB	No information	No information
Col	Ministerio de minas y energía, Unidad de planeamiento minero energética (UPME).	Develop, implement, control and coordinate policies in energy efficiency and renewable energies.
Chi	SEC (Secretaria de Energía y Combustibles)	The agency is in charge of regulating and controlling the thermal and electric energy market.

4.2 Identify the legislation in your country related to solar thermal systems and equipment. Describe them and relate them to the responsible regulation body.

ARGENTINA

Legislation	Description	Responsible body
Ley CABA N° 4024	Solar energy promotion. The technical regulation for the law is being developed.	Environmental protection agency of Buenos Aires city <i>(it has a technical requirements based on CTE Spain and IRAM)</i>
O.M. Venado Tuerto N° 3633	Renewable energy promotion	Municipal authority
O.M. Ciudad de Santa Fe N° 11867	Solar thermal implementation in state kindergardens	Municipal authority
O.M Ciudad de Rosario N° 12692	Solar thermal implementation in public buildings	Provincial renewable energy secretariat <i>(it has a technical requirements based on CTE Spain and IRAM)</i>
Ley Prov. MiYESones N° 4439	Renewable energy promotion	Provincial authorities

BRAZIL

Regulation	Description	Responsible body
Portaria Inmetro nº 301 de 2012	Establishes minimum requirements to be fulfilled by solar water heaters, regarding energy production, security, hygiene and efficiency.	INMETRO <i>(it has technical requirements based on ABNT and ISO)</i>
Portaria nº 352 de 2012	Establishes the conformity criteria to be fulfilled by solar water heaters.	INMETRO <i>(it has technical requirements based on ABNT and ISO)</i>
Municipal and state laws	Several cities have regulations that make mandatory the use of solar energy for water heating. Several examples can be mentioned: Sao Paulo, Porto Alegre, Rio, Campo Grande, Belo Horizonte, Salvador. The law of Porto Alegre is in vigor and was the first, followed by the law of Sao Paulo	States and municipalities

URUGUAY

Regulation	Description	Responsible body
<p>Law Nº.18585 (18 /09/2009 Dec. 451/2011</p>	<p>Describes the participation of the Energy and Water regulatory Agency (URSEA). It creates three registers related to solar thermal in the National Energy Directory (DNE):</p> <ol style="list-style-type: none"> 1)Equipment producers 2)Equipment importers 3)Installation responsible <p>It deals also with the tax deduction applicable to solar thermal equipment. A percentage related to energy efficiency is used to determine the amount of deduction in each case.</p>	<p>Ministry of Industry, Energy and Mining (MIEM) and Economy and Finance Ministry (MEF)</p> <p><i>(it has technical requirements based on CTE Spain and UNIT)</i></p>
<p>Solar Plan (march 2012)</p>	<p>The Solar Plan allows users to acquire solar thermal energy equipment in accessible and generalized manner. People can get cheap loans and other economical benefits in order to disseminate the use of solar thermal energy.</p>	<p>The Solar Plan is coordinated by the MIEM, through the DNE. Other institutions such as the National Bank of Uruguay collaborate in the plan. URSEA is the regulation agency.</p> <p><i>(it has technical requirements based on CTE Spain and UNIT)</i></p>

COSTA RICA

Legislacion	Descripcion	Responsible body
Regulation law of Rational Use of Energy N°7447 (1994)	Three mechanisms to achieve energy efficiency and fossil fuels substitution are established. 1) Make mandatory the implementation of energy efficiency in companies with high energy consumption 2) Control over high energy consumption equipments 3) Labeling programs in all electrical equipment. Solar energy is included as a measure to achieve energy efficiency and rational energy use.	Environmental and Energy Ministry <i>(It has technical regulations based on local technical standards)</i>

MÉXICO

Regulation	Description	Responsible body
Dictamen Técnico de Energía Solar Térmica en Vivienda (CONUEE)	Defines the requirements that all solar thermal systems must fulfill to be included in the social housing programs.	ANCE and INTERTRADE emit testing certificates for solar thermal collectors and systems that participate in the social housing programs.. <i>(It has technical regulations based on mexican standards NMX and NORMEX)</i>
PROCALSOL (Finalizado)	Promotion of Solar Energy	CONUEE <i>(It has technical regulations based on Mexican standards NMX and NORMEX)</i>

Ecuador and el Salvador reported no information

Chile

Regulation	Description	Responsible body
law 20365 DS 331	Establishes tax benefits for those companies/individuals that implement solar hot water systems.	SEC <i>(It has technical regulation based on EN and ISSO standards)</i>

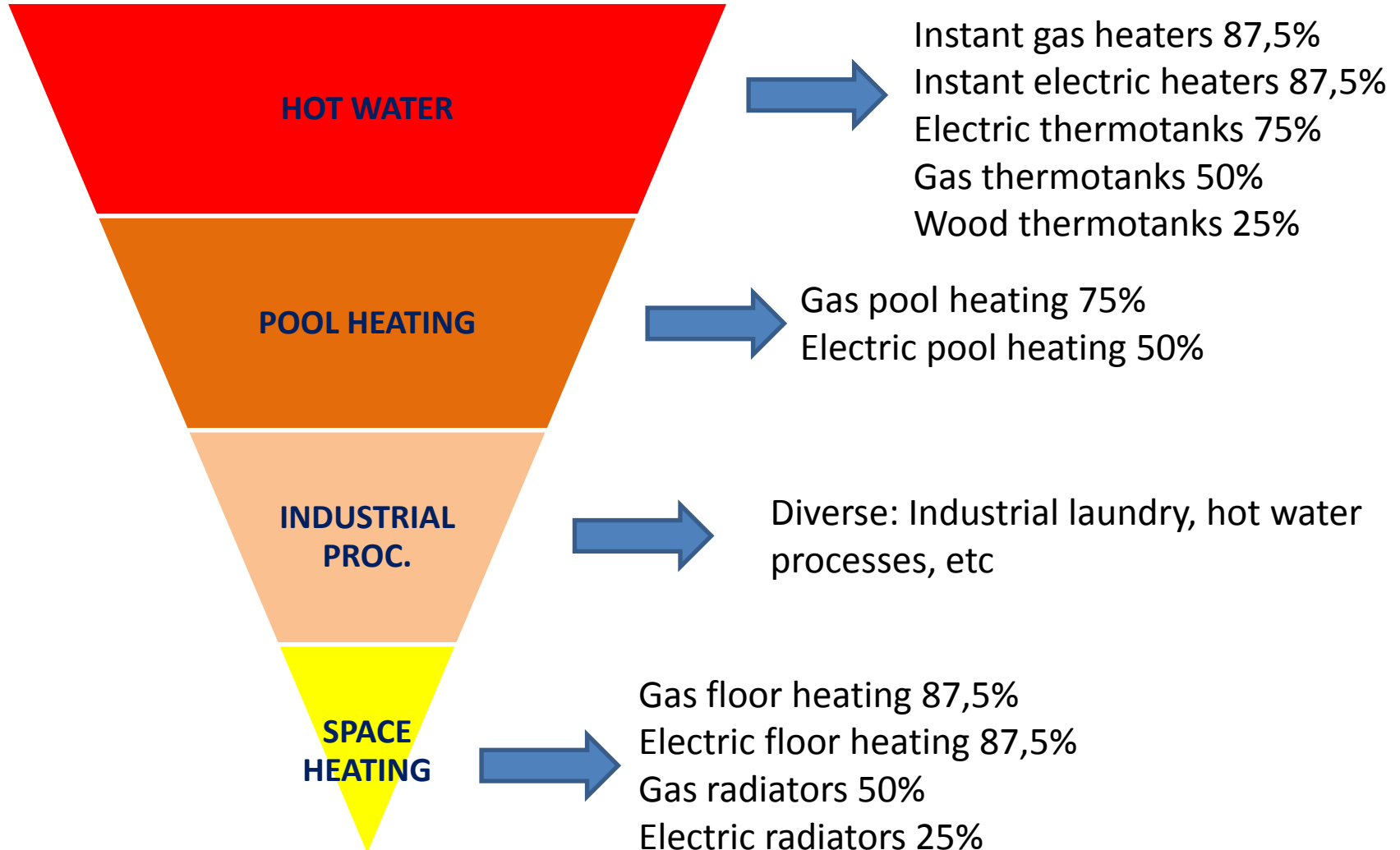
Colombia

Regulation	Description	Responsible body
Law 697	Promotion of solar and other renewable energies.	No Data

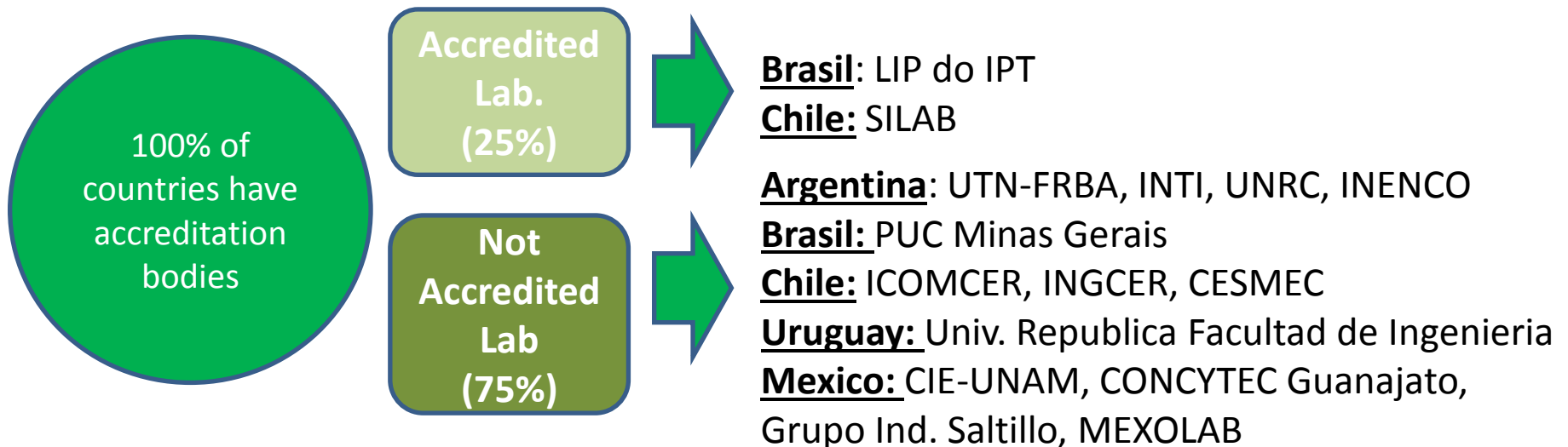
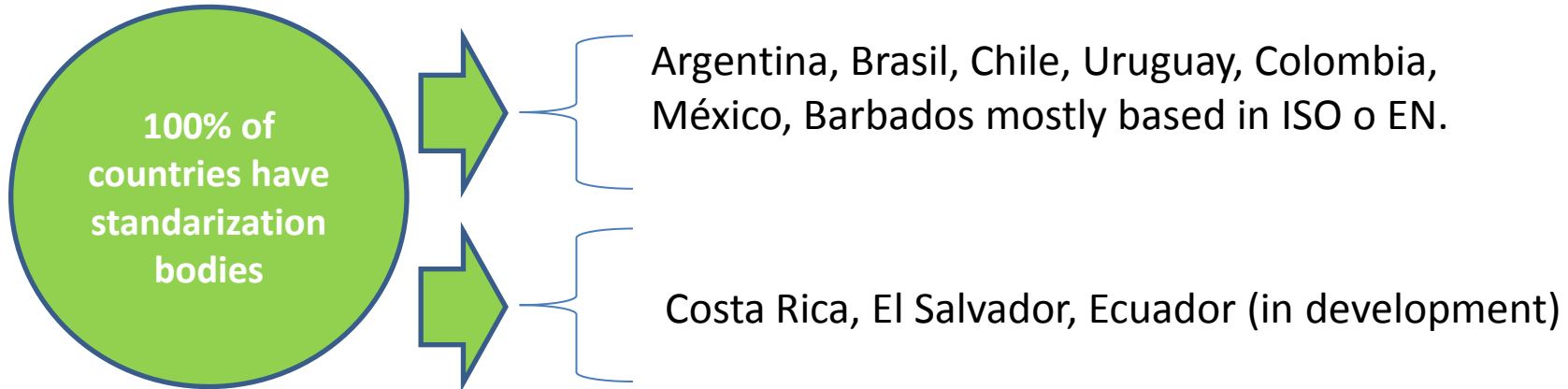
Barbados

Regulation	Description	Responsible body
Income Tax Act	Tax benefits for those who implement solar thermal systems.	No Data

General Information



Standards and Accreditation



Traceability

SOLAR RADIATION
11%

WIND
22%

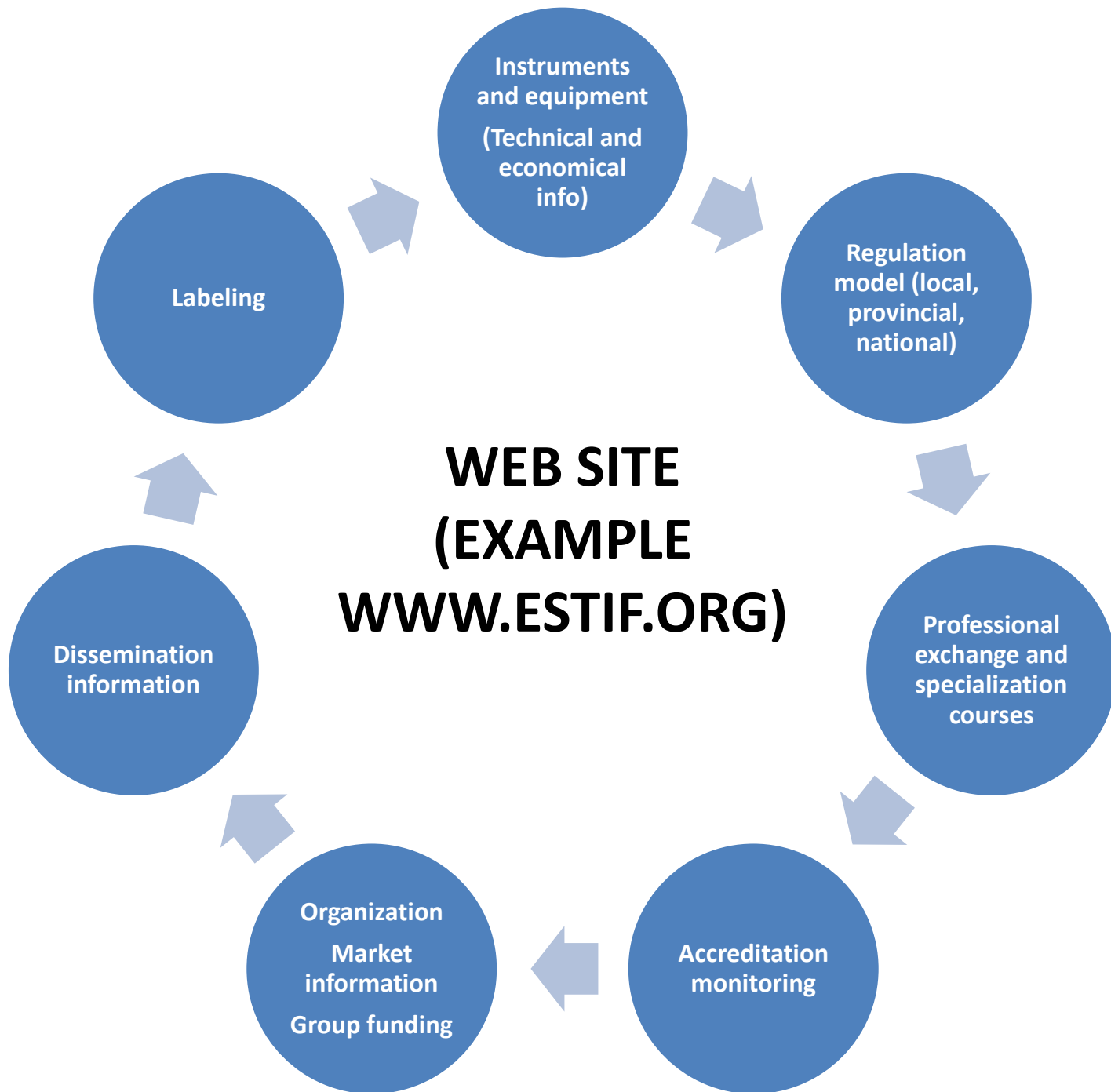
VOLUME FLOWRATE
MASS FLOWRATE
PRESSURE
66%

MASS
TIME
88%

TEMPERATURE
VOLUME
LONGITUDE
100%

Proposals

- 1) Homogenize standards in the region (Almost all countries have ISO or EN as reference).
- 2) Define a document with minimum technical installation requirements for solar hot water, swimming pool heating and space heating for the entire region (Possible source, Spain technical building code).
- 3) Homogenize calculation and dimensioning methods by application (hot water, space heating, pool heating), based on ambient and irradiation databases which all countries have.
- 4) Create a laboratory network. Web site with instrument and knowledge exchange.
- 5) Promote laboratory accreditation in a regional scale.
- 6) Promote regulations that protect the “right to the sun” that forbid new constructions that cast shadows on existing solar thermal system installations.



**Instruments
and equipment
(Technical and
economical
info)**

**Regulation
model (local,
provincial,
national)**

**Professional
exchange and
specialization
courses**

**Accreditation
monitoring**

**Organization
Market
information
Group funding**

**Dissemination
information**

Labeling

**WEB SITE
(EXAMPLE
WWW.ESTIF.ORG)**