Solar Heating and Cooling – what to do to wake up the sleeping giant

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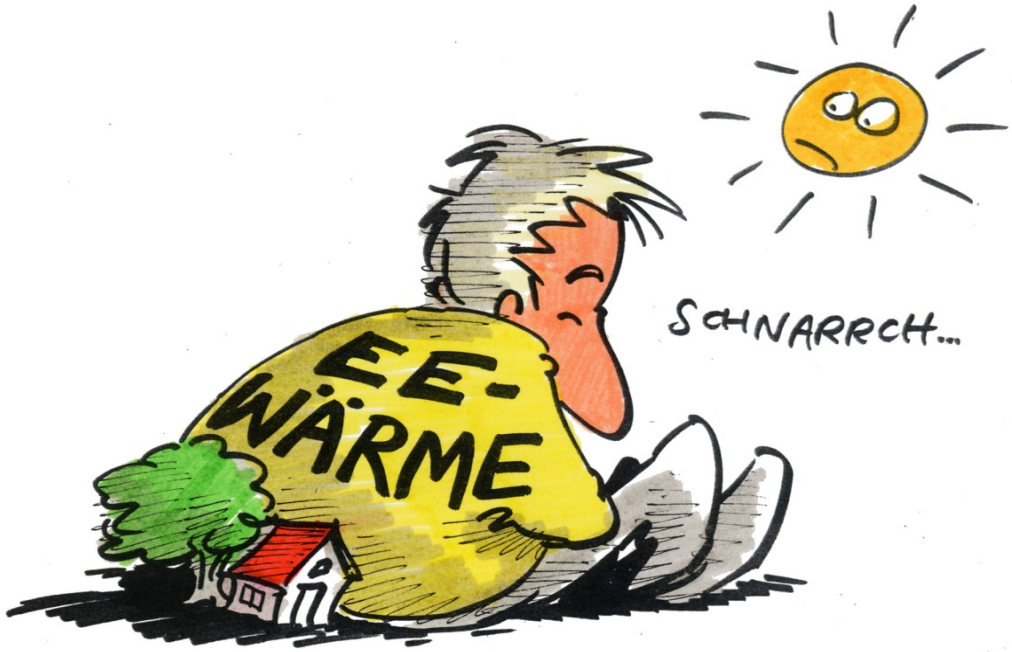
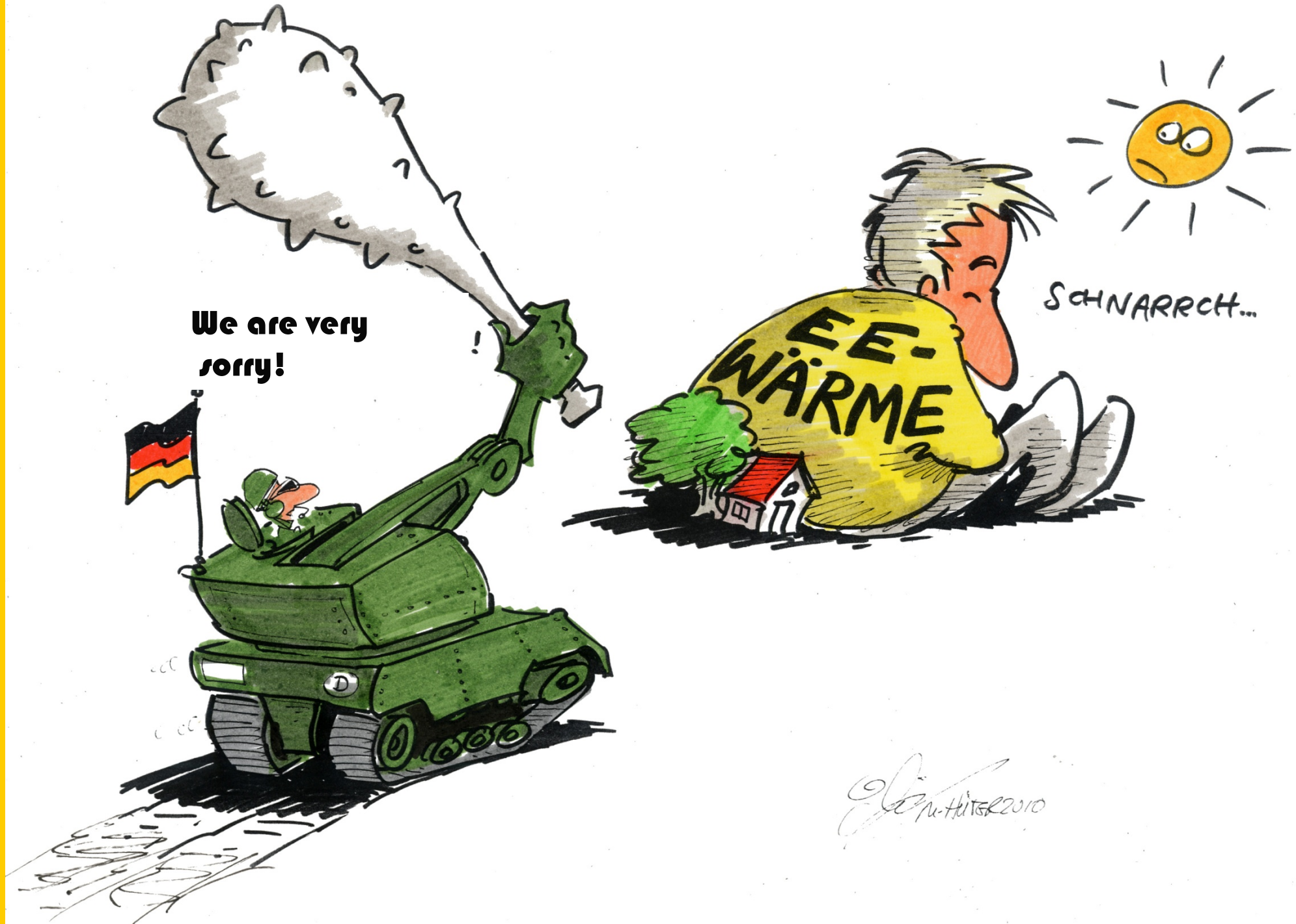
Waking up the sleeping Giant




We are very sorry!
EE-WÄRME
SCHNARRCH...

First Action:
Find the right arguments to convince authorities

Convincing arguments other than just climate protection

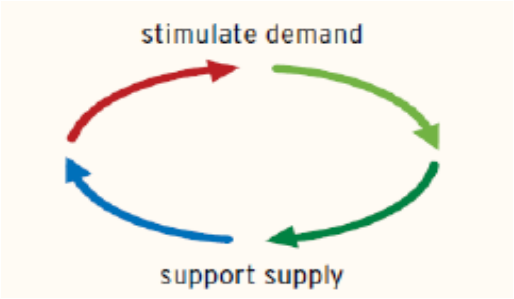
- ✓ Reducing the annual budget for subsidizing energy (Barbados, Tunisia, Egypt, more countries to come…)
- ✓ Satisfy increasing energy demand (Solar India Mission from 2010)
- ✓ Reduce air pollution in cities (Poland, China)
- ✓ Implementing quality standards by making them mandatory in subsidy schemes (China)
- ✓ Avoiding Deforestation (Turkey)
- ✓ Job creation (American Recovery and Reinvestment Act 2009 in USA)
- ✓ Reducing the monthly energy bill of low-income families (Germany, Brazil, South Africa)
- ✓ Demand-side management (South Africa, Brazil)

Second Action:
Increase the visibility of solar / renewable heat

Vicious circle of the weak visibility of the ST sector

Third Action:
Choose the right mix of support measures and plan an exit strategy from the start

Demand and supply side



Carrots

- Tradable certificates / Renewable Portfolio Standards
- Direct financial incentives
- Fiscal instruments

Stick

- New business models like Leasing or ESCOs
- Solar obligations / renewable building laws

Tambourine

- Awareness raising / marketing campaigns

Market Demand ↔ Market Supply

Industry support policy

- Fiscal instruments (reduction or abolition of corporate taxes)
- Local content requirements / rules
- Direct financial incentives (e.g. support in export activities, R&D)

QI + QA

- Quality control (e.g. label or inspection of sites)
- Certification scheme and national test laboratories
- Training and education for installers

Lobbying

- Forming one voice: industry associations or cluster

In the USA for example the carrots work much better than the stick. So in many country it will be a combination of stick and carrot that brings the market forward, but the percentage of both is depending on the culture of the country.

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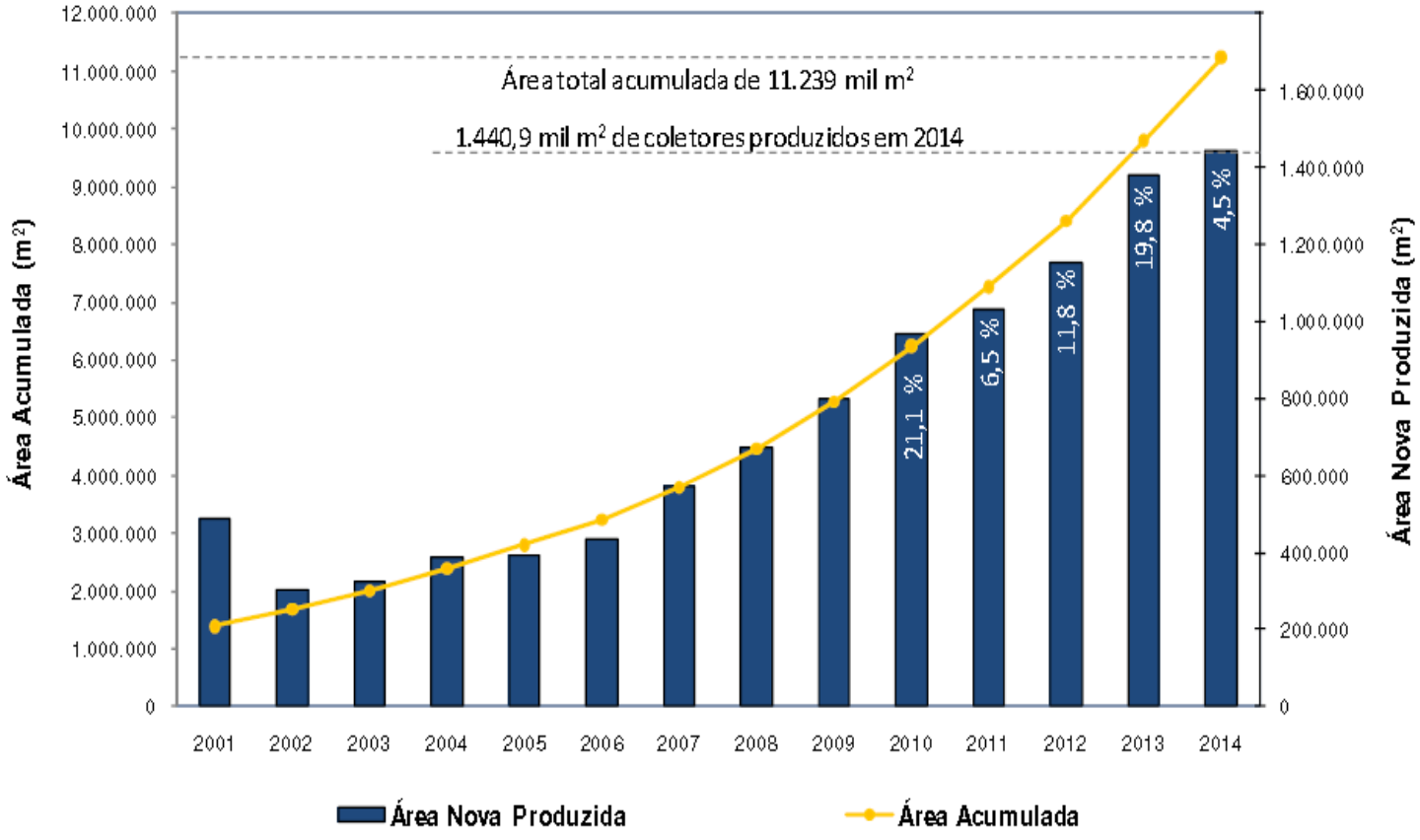
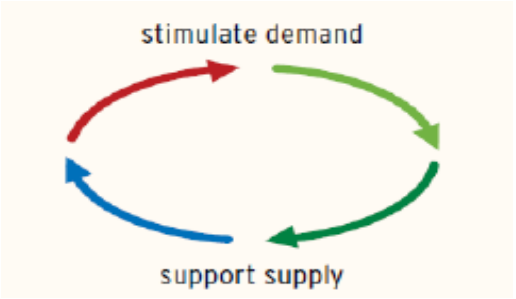
Gráfico 1 – Evolução do Mercado de Aquecimento Solar Brasileiro



Case study Brazil



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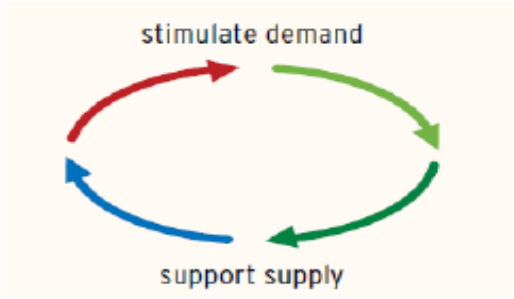

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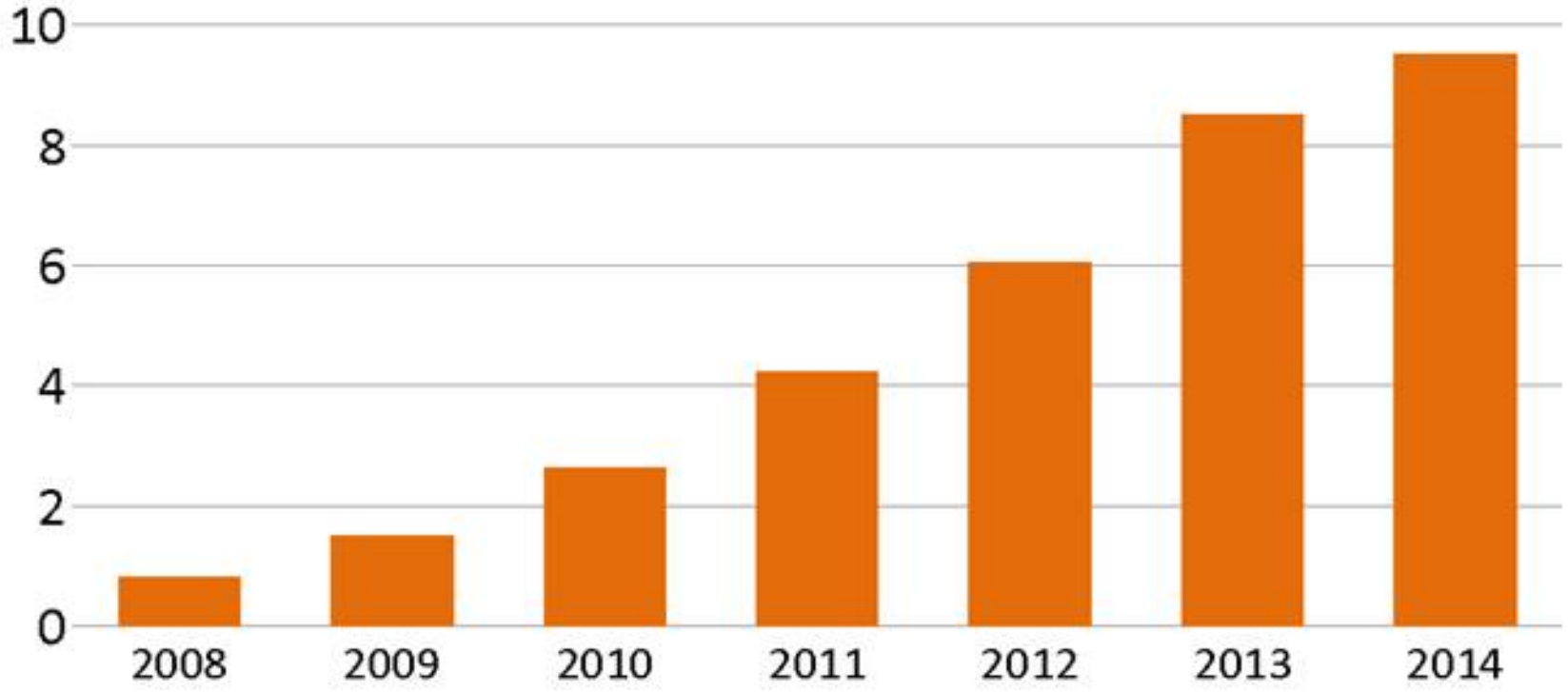
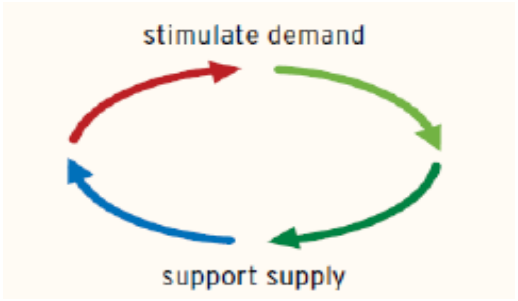
Cumulated installed capacity (kW/1,000 inhabitants); 46,000 m^2 in 2014



Case study Uruguay



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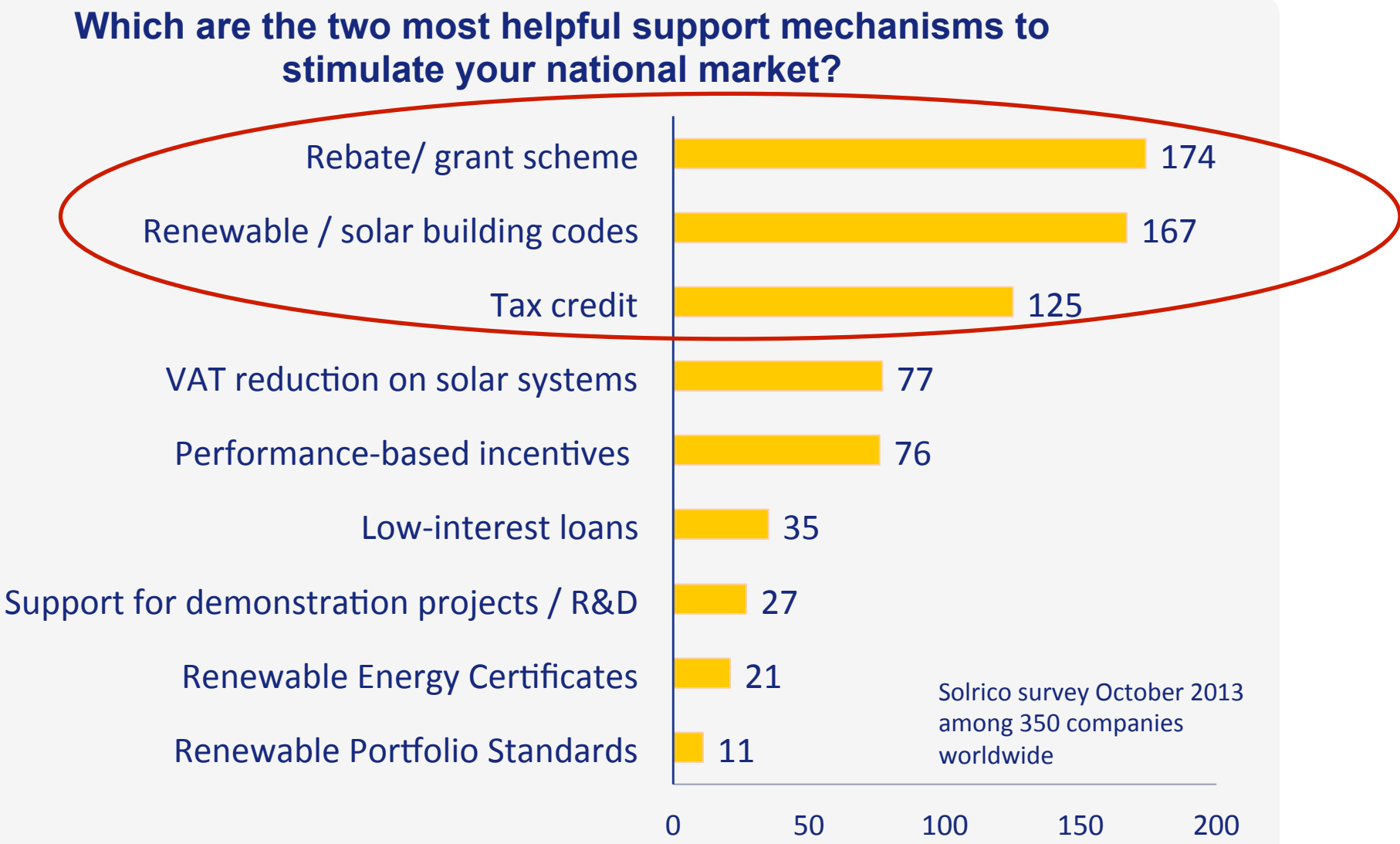
Best practise: Go through the check list

- ✓ Allow retroactive applications (☹ Early announcement make customers hesitate to invest Germany, Czech Republic, Portugal)
- ✓ Encourage reduction of system prices by reducing support level over time (☺ California Solar Initiative)
- ✓ Link your scheme to quality standards for components and systems
- ✓ Minimise paperwork for purchasers (☺ 1-page application in Tunisia)
- ✓ Avoid support regulations that favor one technology over the other (☹ India)
- ✓ Drum the tambourine: make sure that all potential clients know about your scheme

Promising support schemes: Voting of the industry



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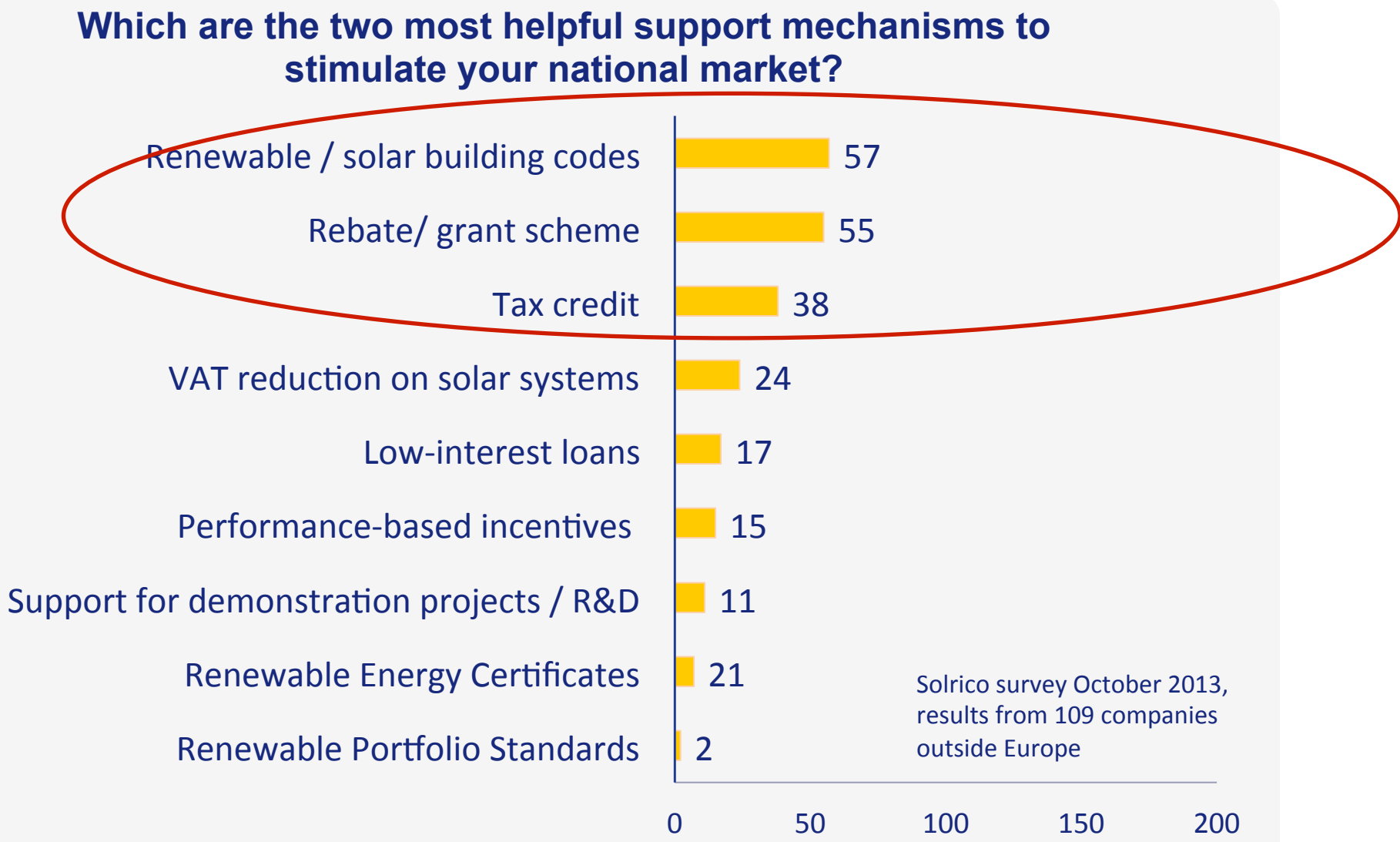
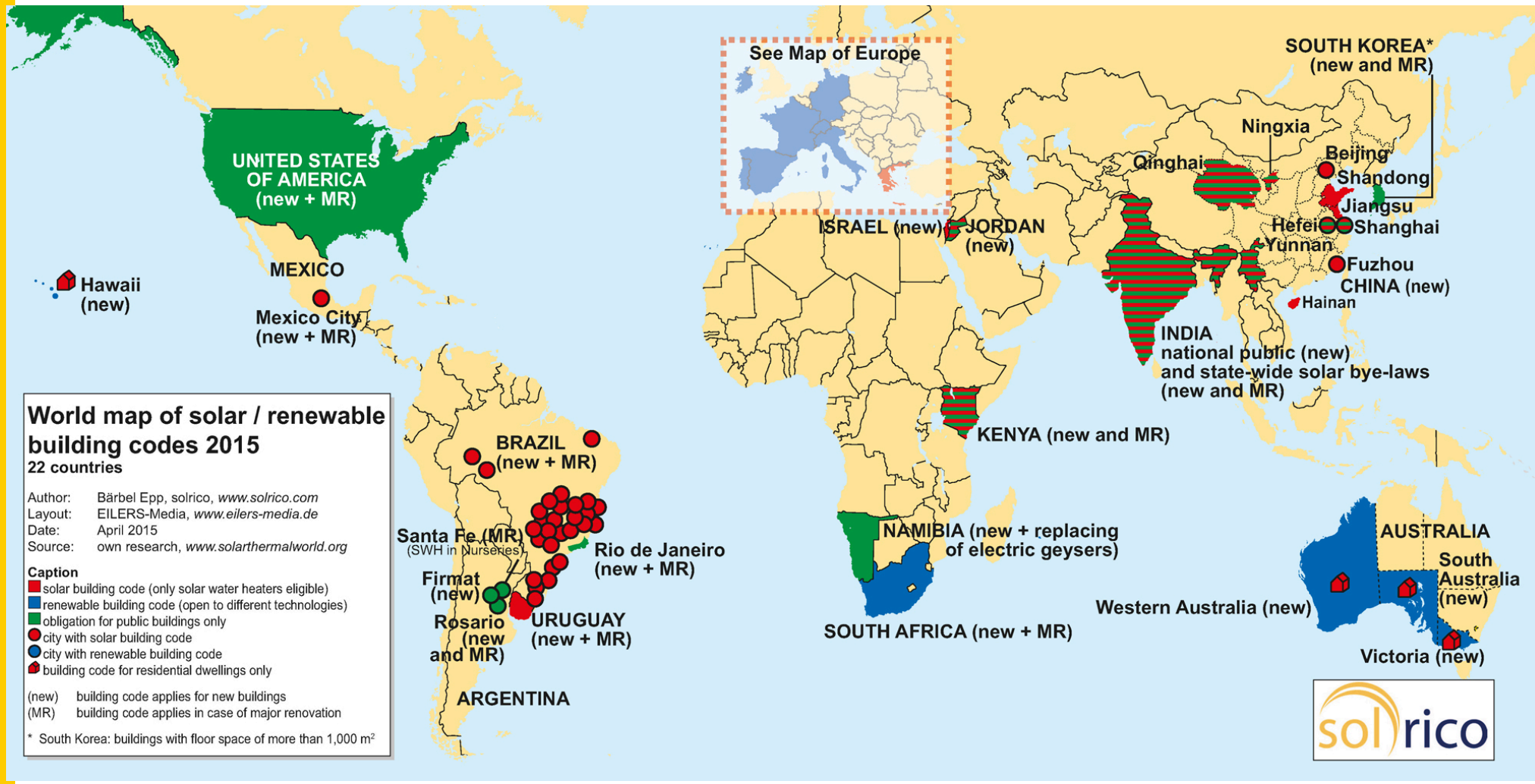


Fourth Action:
Consider obligations as a powerful instrument when controlled and solar-focused


See Map of Europe
UNITED STATES OF AMERICA (new + MR)
Hawaii (new)
MEXICO
Mexico City (new + MR)
BRAZIL (new + MR)
Santa Fe (MR) (SWH in Nurseries)
Rio de Janeiro (new + MR)
Firmat (new)
Rosario (new and MR)
URUGUAY (new + MR)
ARGENTINA
ISRAEL (new)
JORDAN (new)
KENYA (new and MR)
NAMIBIA (new + replacing of electric geysers)
SOUTH AFRICA (new + MR)
SOUTH KOREA* (new and MR)
Ningxia
Qinghai
Beijing
Shandong
Jiangsu
Hefei
Shanghai
Yunnan
Fuzhou
CHINA (new)
Hainan
INDIA national public (new) and state-wide solar bye-laws (new and MR)
AUSTRALIA
South Australia (new)
Western Australia (new)
Victoria (new)
World map of solar / renewable building codes 2015
22 countries
Author: Bärbel Epp, solrico, www.solrico.com
Layout: EILERS-Media, www.eilers-media.de
Date: April 2015
Source: own research, www.solarthermalworld.org
Caption
solar building code (only solar water heaters eligible)
renewable building code (open to different technologies)
obligation for public buildings only
city with solar building code
city with renewable building code
building code for residential dwellings only
(new) building code applies for new buildings
(MR) building code applies in case of major renovation
* South Korea: buildings with floor space of more than 1,000 m²
solrico

Case Study: Israel

Israel: Solar obligation since 1980 for new residential buildings as well as hotels and guest houses up to 27 m

Impact: 80 % of all households in Israel use solar heated waters. SWHs save the country about 4 % of its energy imports and replaces 9 % of the electricity production.
Around 80 to 90 % of the annually installed collector area replaces existing systems.

Case study: Bengaluru in India


Photo: Jaideep Malaviya

Map: Wikipedia

The city in Bengaluru in Karnataka state with around 4 million inhabitants implemented a solar bye-law in 2007 for new-built houses of 56 m^2 living space and more. The local utility BESCOM did not give any or in some cases temporary connection to the electricity grid, if the household did not comply to the building standard.

Impact: According to BESCOM´s statistics, there have been 419,493 solar water heaters installed since 2008, a number growing by 70,000 each year.

Pros and cons of solar / renewable obligations

Pros

- Increases market penetration in the long run
- Gets solar technology in at the early planning stage of new buildings
- Creates demands in new building segments (including commercial)
- Impacts the existing building stock if renovations are included
- Involves new players to solar thermal technology
- Tackles the tenant-owner dilemma, since the building requirement also applies if the energy bill is paid by tenants

Cons

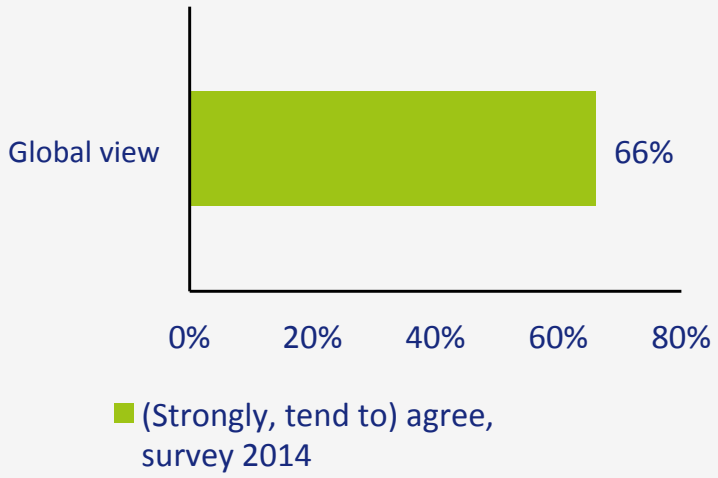
- New building codes have little effect in times of economic crises
- Lack of social acceptance since it is a “must to do”
- Implementation of the municipality level is complex and time consuming
- Technology neutral obligations tend to be fulfilled by the cheapest options, hence not solar thermal
- Any kind of obligation leads to a certain degree of non-compliance . What is not controlled is not adapted!

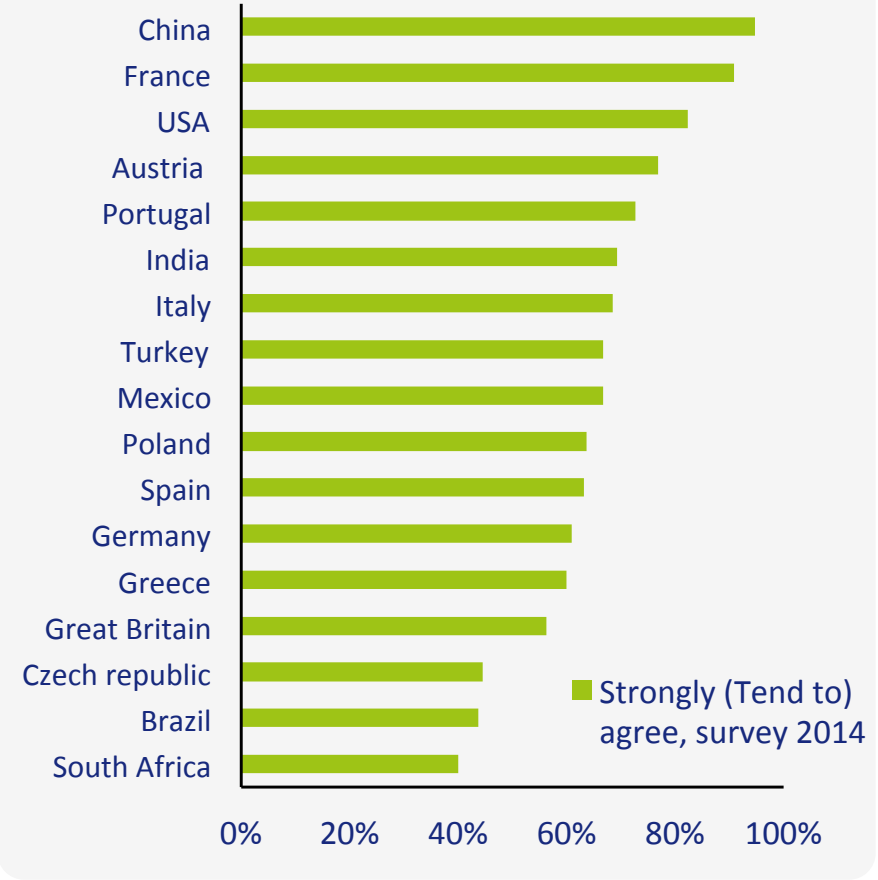
Fifth Action :
Support the transition of SHC markets towards commercial

Promising Applications by 2020

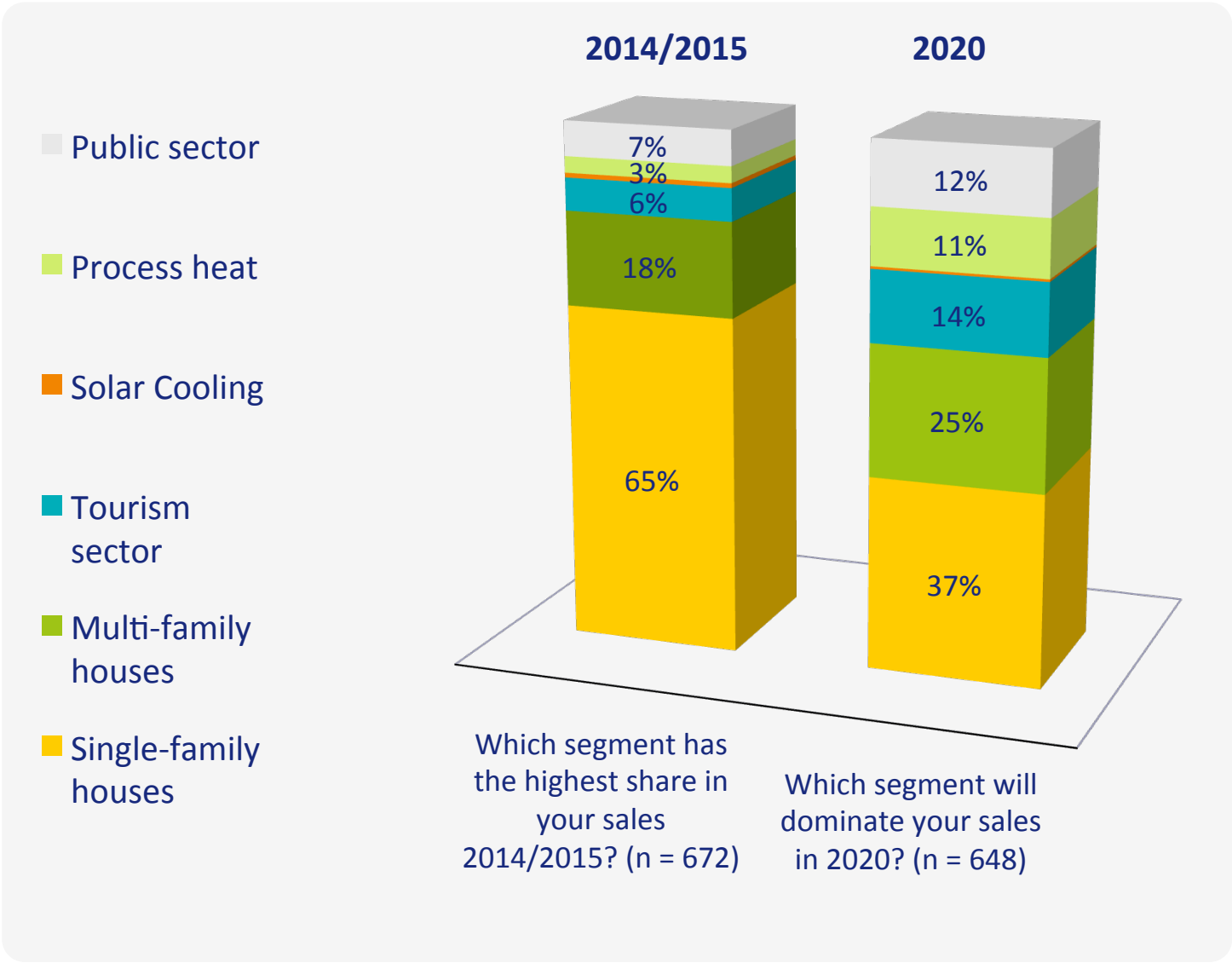
Do you agree with the following statement?

The commercial segment (multi-family, tourism, industry) will surpass the market share of single-family homes in 2020.

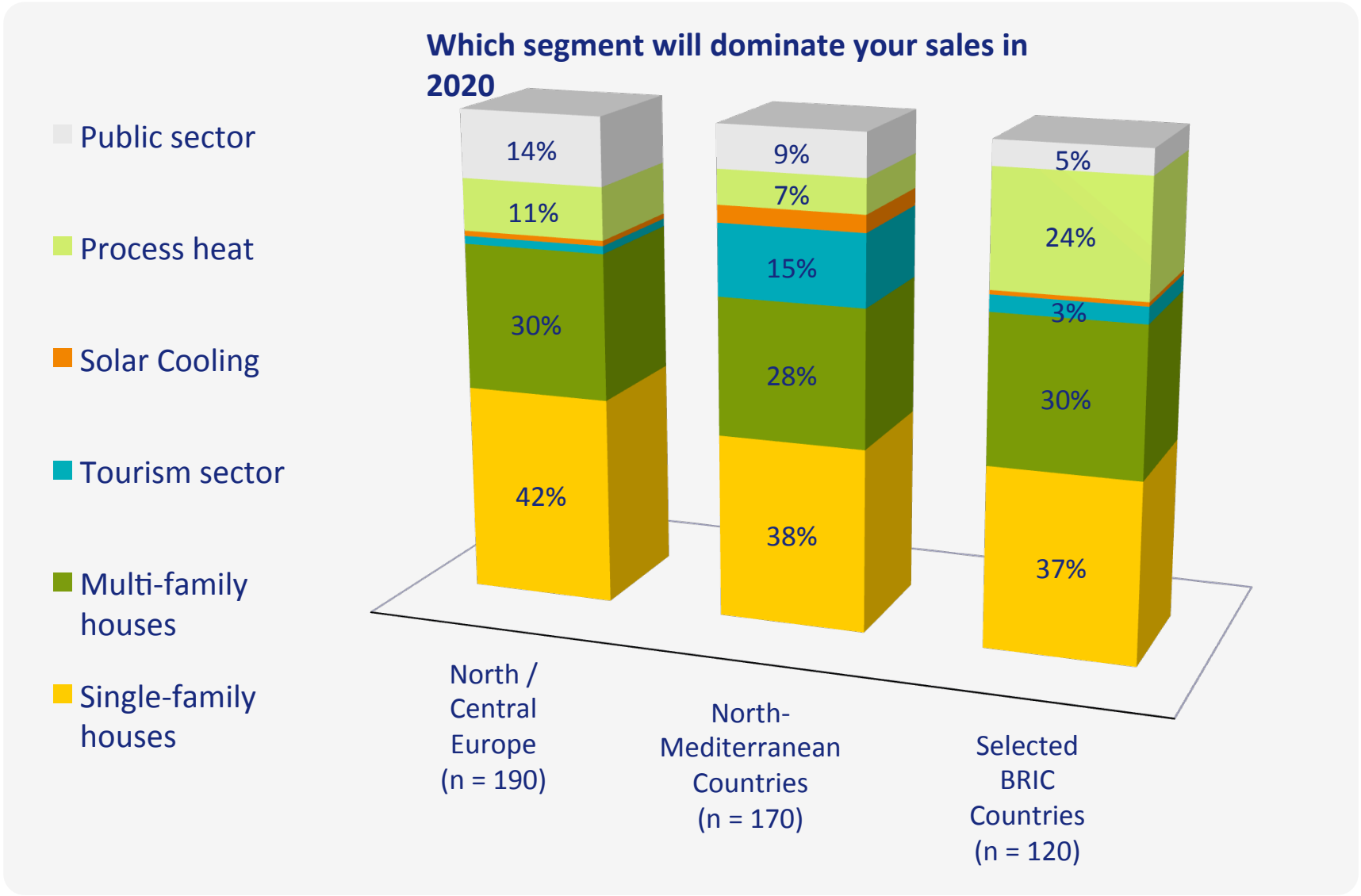




Promising Applications by 2020: Global view



Promising Applications by 2020: Regional view



There is a growing number of non-residential policies for SHC, but with very different impact on the market, a few examples:

- **Germany:** Since August 2013 the MAP programme subsidises solar process heat installations with investment of up to 50 %. **Impact:** 174 installations in 2.5 years with a total of 10,278 m^2**,** 44 m^2 in average**,** the largest one is a 300 m^2 installation
- **Austria:** Investment subsidy for large-scale commercial systems since 2010, up to 50 % of the costs. Impact: 165 projects between 2010 and 2013 with 60,414 m^2, average size of 400 m^2, budget overbooked each year

- **Danish** incentive programme RE for Production Processes since August 2013. **Impact:** The scheme supported 196 renewable projects of which one included solar heat.

- **Thailand:** programme subsidises new hybrid systems in the industry, which combine solar collectors with the use of waste heat from air conditioners, boilers, etc with a minimum collector area of 40 m^2. **Impact:** 45,918 m^2 between 2008 and 2013, largest system 1,500 m^2, since 2013 the available budget was not used completely, because of the PV Feed-in tariff and the programme was halted in 2015.

More investigations are necessary to analyse the efficiency of the non-residential support schemes

Non-residential policies for SHC

Commercial clients are demanding. They do not want to….

- … invest money in activities, that are not part of their core business.

- … they expect turnkey solutions with clear messages about the performance of the system and the economic competitiveness.

Why is SHC not bankable?

- SHC system suppliers and financial experts do not speak the same language when describing projects.
- SHC is not known enough among bankers. It needs more exposition by the ST industry to attract financial institutions.
- Project budgets are too small.
- Refinancing periods are too long mostly above 10 years, resulting in a high risk for the financing provider.

Supporting/creating innovative financing models (small number of case studies so far)

- Quotas of utilities (Brazil)
- Crowdfunding (S.O.L.I.D, Austria)
- Leasing (USA, Japan)
- Energy Service Companies (very few companies focus on SHC ESCO, there is one each in Spain, Jordan, Austria, France, USA, India, Germany)
- ✓ Mechanism to Guarantee Energy Supply Contracts

Sixth Action:
Consider Local Content Rules to strengthen the national supply chain

Pros and cons of Local Content Rules

Definition: Local Content Rules stipulate the SHC manufacturers to produce a certain share of equipment locally or to purchase certain components from domestic suppliers because of import taxes. There are Local Content Rules in effect in Turkey, Uruguay, South Africa, Tunisia, Mexico.

Pros

- Creates local jobs
- Supports the creation of a national industry that forms a strong voice to claim sector interests
- Better after sales service by local producers (in contrast with importers)
- Supports the foundation of local test centres and quality infrastructure

Cons

- Controversial to international trade rules
- Reduces competition with foreign suppliers, hence might keep national prices up
- Reduces the variety of technologies available on the market

Six actions at a glance

1. Find the right arguments to convince authorities
2. Increase the visibility of solar / renewable heat
3. Choose the right mix of support measures and plan an exit strategy from the start
4. Consider obligations as a powerful instrument when controlled and solar-focused
5. Support the transition of the SHC markets towards commercial
6. Consider Local Content Rules to strengthen the national supply chain

1,500 news about SHC from 50 countries worldwide published between 2008 to 2015

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For f ation on SHC

ds and barrier analysis

eck solarthermalworl.org

Thanks for your attention!

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Pros and cons of tax credits

Definition: The investor can deduct parts or the total of the investment in a solar thermal system from the income tax or corporate tax (used terms: tax credits / tax reductions / tax allowances). Implemented in France, Italy, Chile, USA

Pros

- No allocation of public money necessary (lower risk for stop and go)
- No limitation in the number of accepted applications
- Applicable to both private and commercial customers
- No paper work before installation for the investor
- Lower administrative burden

Cons

- Does not lower the upfront investment
- Impact depends on the level of taxation (socially unfair)
- Applies only in countries with a developed taxation system
- Does not support improvements in quality or performance of the solar thermal systems
- In conflict with target of increasing the state tax revenues

Case study Chile

Chile: Law 20.365 in force since 2009 allowed construction companies to deduct a certain share depending on the type of the building. Two years so preparation. Ended in December 2013.

Impact: 30,000 flats profited from SWH until the end of the programme.

Lessons learned: Tax credits in the housing industry in Chile are seen as very efficient and the association is fighting for extending the scheme. The four-years scheme was far to short, since development periods for housing projects extend over several years.