Improvements developed during the IEA SHC Task 54

Non-technical Improvements & Learning Curve Issues

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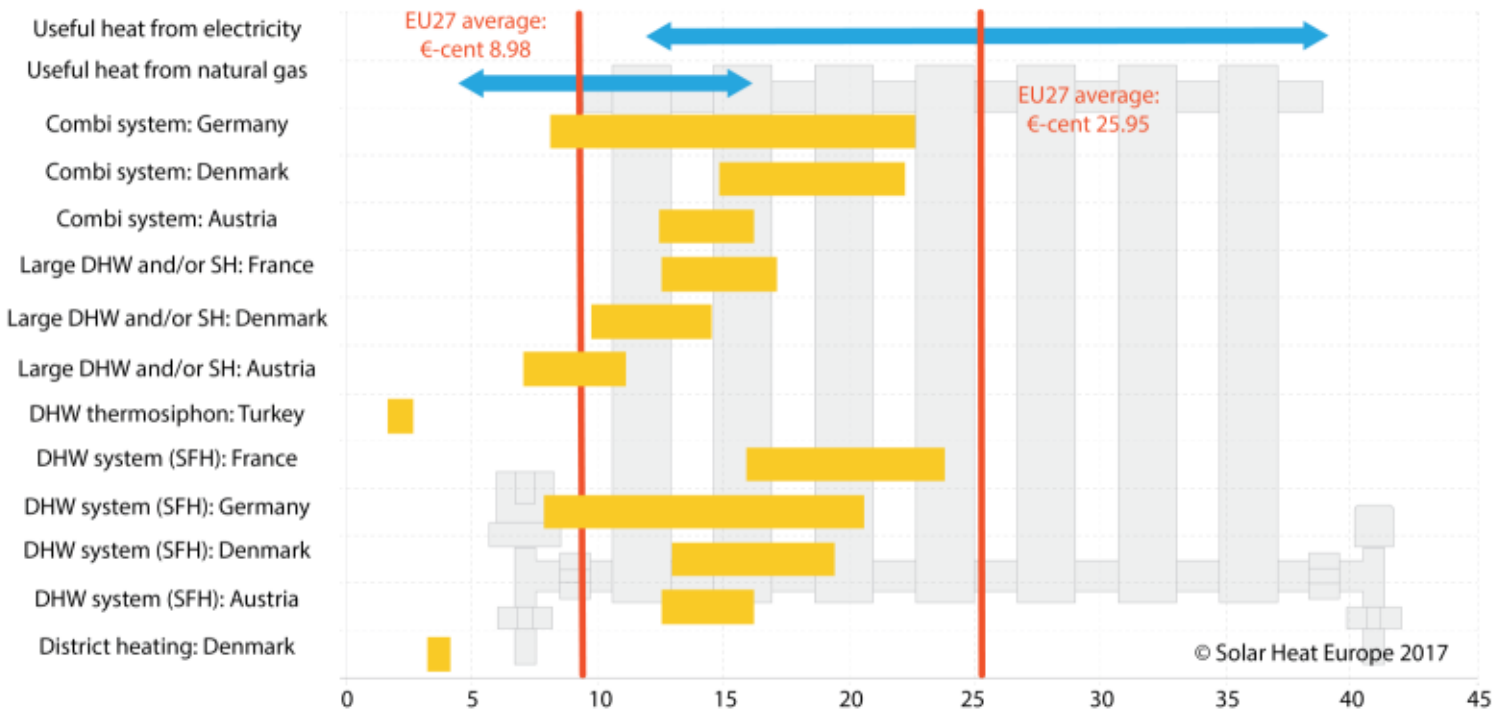
Eurosun 2018
Rapperswil, Switzerland

05 October 2018

Solar Thermal Heat Positioning



Range of solar thermal heat costs for different types of solar thermal systems in different European regions (average costs over lifetime), compared with the range of costs for useful Useful heat considers the losses by converting natural gas and electricity into heat. The conversion efficiency of 85% for gas and 95% for electricity is assumed. Costs of natural gas and electricity of 2016, to domestic consumer.

Sources: solar heat systems: IEA-SHC & AEE-Intec; natural gas and electricity: Eurostat.

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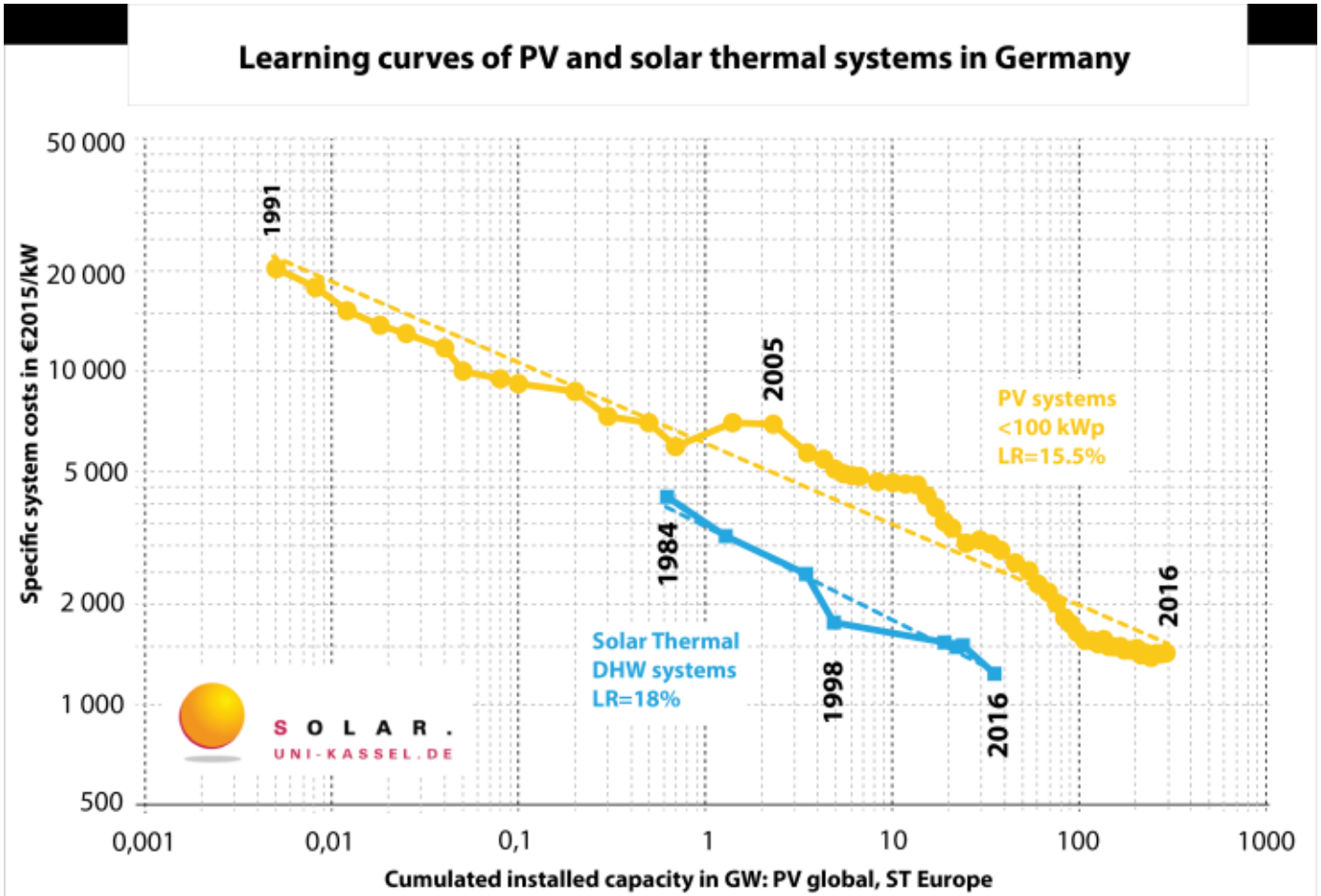
Solar Thermal Learning Curve



The turnkey system costs without subsidies and VAT show similar learning rates for PV and Solar Thermal. The stronger market development of PV lead, however, to larger absolute price reductions. Credits: University of Kassel 2017

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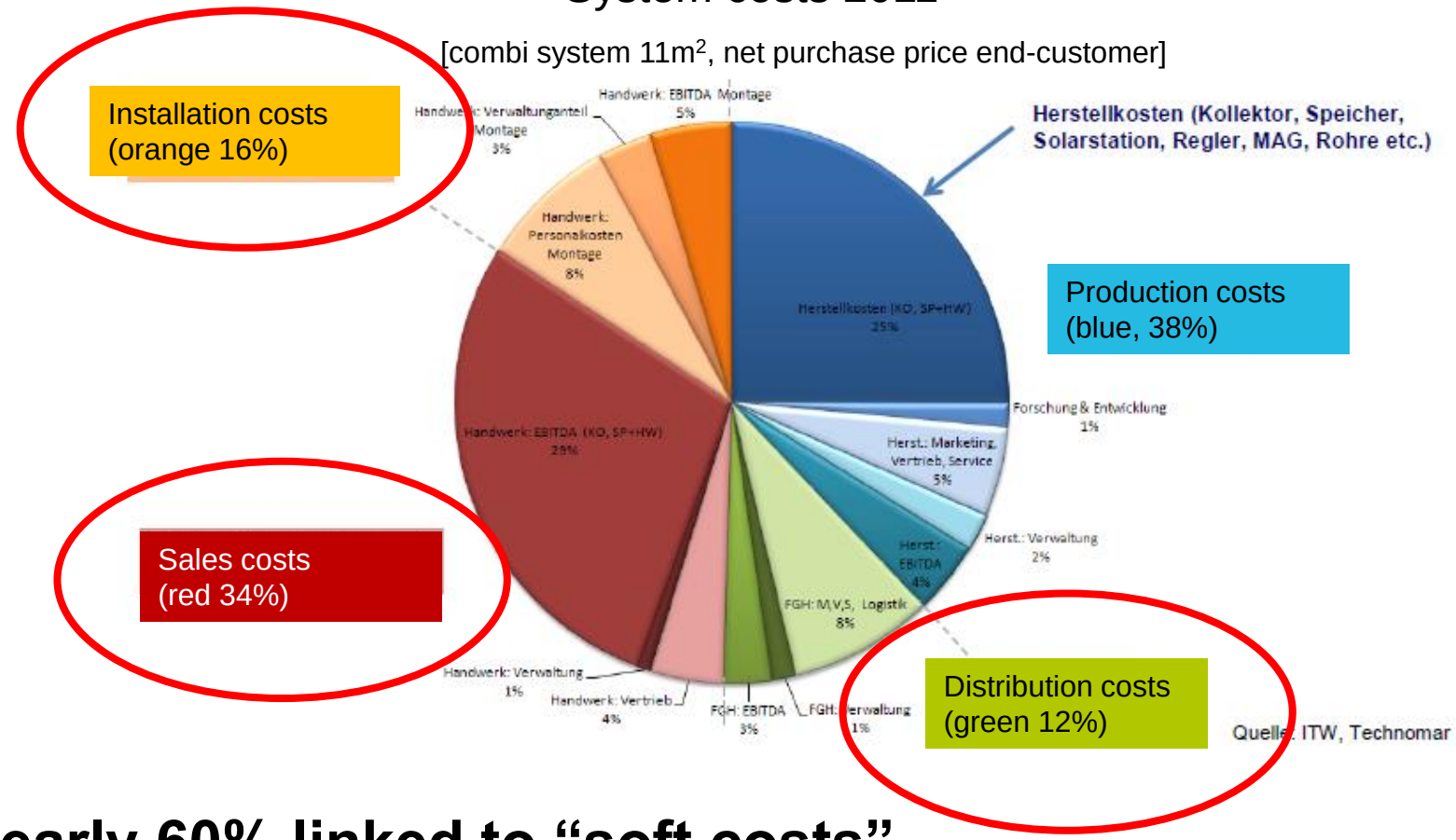
Cost Structures

Combi-system (11 m2) price in 2011

System costs 2011

[combi system 11m^2, net purchase price end-customer]



Nearly 60% linked to "soft costs"….

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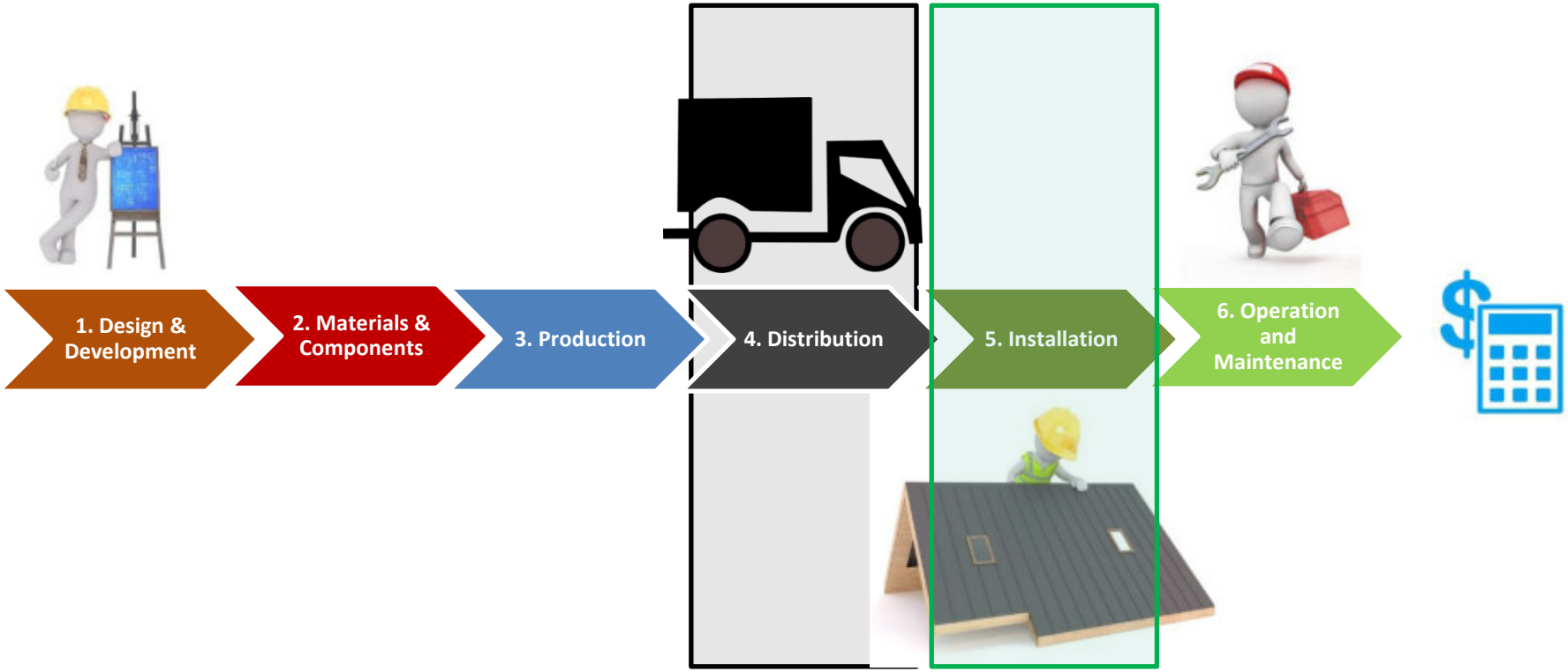
Non-Technical Improvements along the Solar Thermal Value Chain



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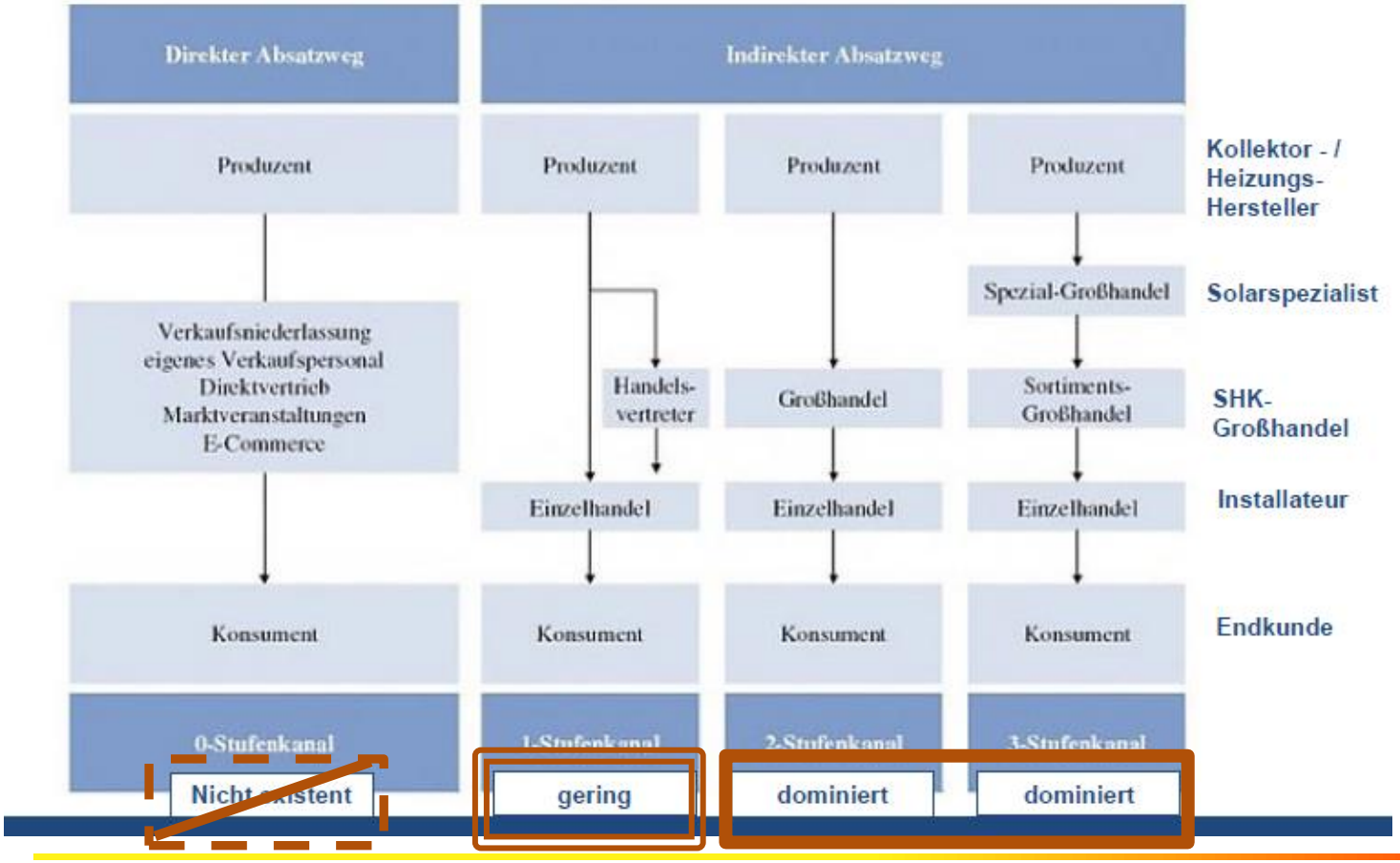
Current Distribution Channels as Obstacles

Study "Three-step distribution of solar thermal in the course of time"

- Author : Martin Fasold (GreenOneTec)



Source: Runia, P. *Marketing: Prozess- und praxisorientierte Grundlagen,* 2015, p.230.

Current Distribution Channels as Obstacles

Study "Three-step distribution of solar thermal in the course of time"

- **Result 1:** There is no direct B2C distribution of Solar Thermal so far, which shows the rather conservative stance of the sector as a whole

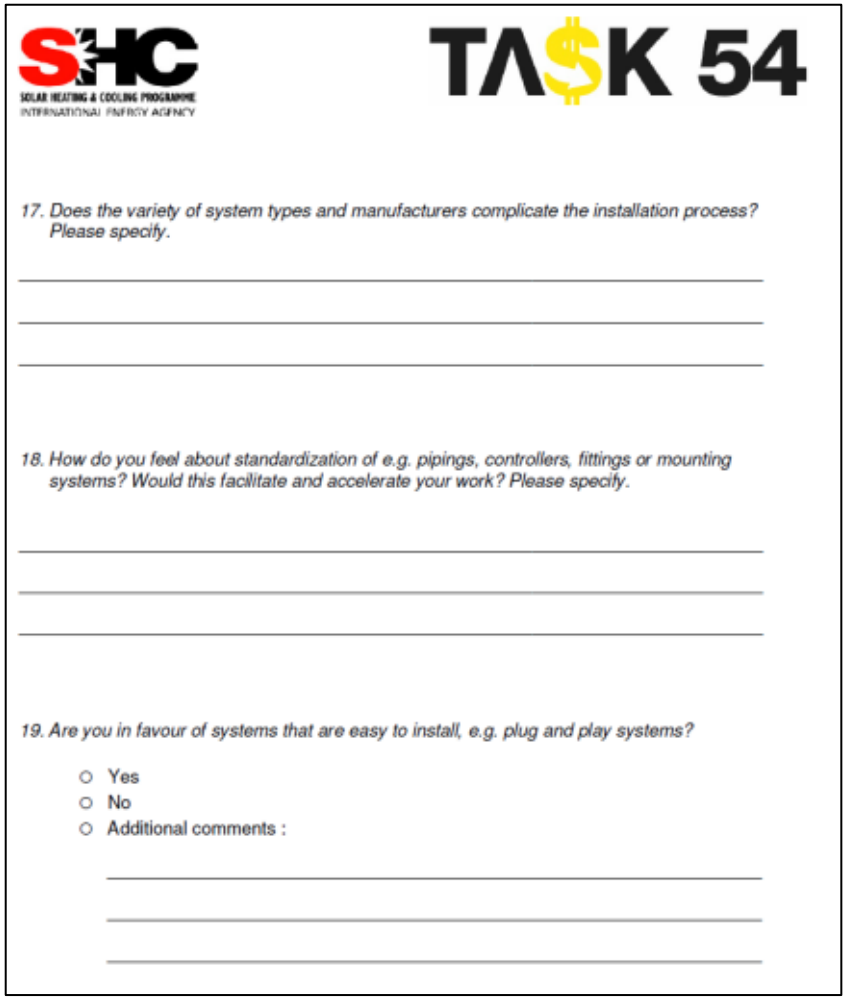
- **Result 2:** The future of Solar Thermal distribution lies in the following activities:
  1.) New business models with direct marketing
  2.) Online shops and tools
  3.) Leasing and contracting models for heating and solar thermal
  4.) Targeted marketing measures and branding
  5.) Definition of a common future vision of the sector for Solar Thermal

+ “Installation teams” like e.g. Citrin Solar (GE) / EKLOR (FR) offered to the installers

Obstacles in Installation & Ways of Improvement

Methodology

- **Task 54 questionnaires** in Austria, Switzerland, France, Romania, Denmark, the Netherlands and Germany.
- Feedback by **23 installers from 7 countries,** recommendations and wishes for working with solar thermal systems
- Insight on soft factors that influence the day-to-day business
- Recommendations for a positive transformation of future installation routines



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17. *Does the variety of system types and manufacturers complicate the installation process? Please specify.*

18. *How do you feel about standardization of e.g. pipings, controllers, fittings or mounting systems? Would this facilitate and accelerate your work? Please specify.*

19. *Are you in favour of systems that are easy to install, e.g. plug and play systems?*

- ○ Yes
- ○ No
- ○ Additional comments :

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Obstacles in Installation & Ways of Improvement

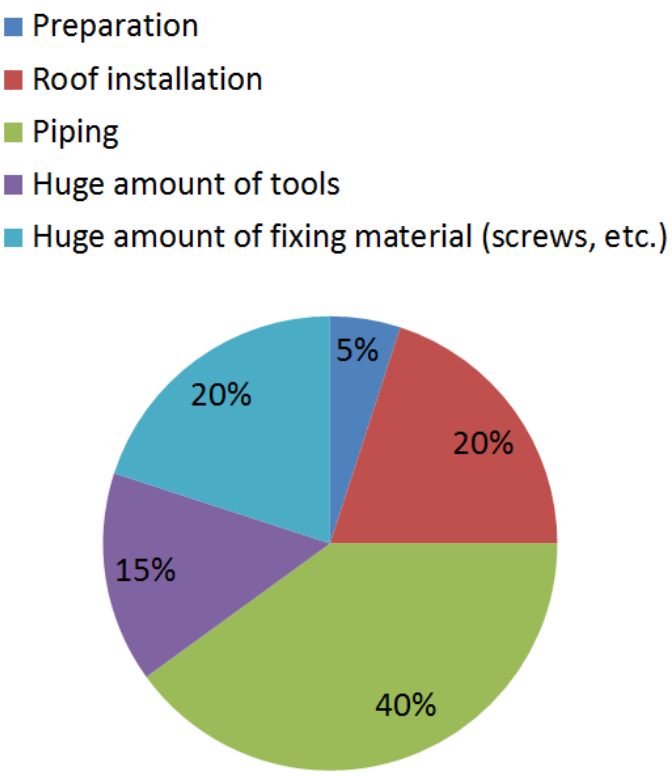
On the Choice of Manufacturers

- **Questions**: How are the solar thermal systems chosen? Are there framework contracts or other factors influencing an installer's choice?
- High majority of installers prefers solar thermal sets that are **easy to install** with convenient installation sets.
- Competitive **prices** and **customer wishes**, best and **long-term quality** as decisive factors, even if more expensive.
- **Maximum margin with least risk** is on the bottom of any decision for or against a certain system type and manufacturer.
- **Familiarity with specifics of one manufacturer** speed up the time for installation. **Routine and experience** make the process smooth and predictable for both costumers and installation partners.

Obstacles in Installation & Ways of Improvement

Time Consuming Parts during Installation

- Big agreement amongst the countries:
  major time losses occur in connection to piping as well as to roof installation in general



Obstacles in Installation & Ways of Improvement

Recommendations for improvement

- **Standardized mounting for all kinds of systems**
- Suggestions for **useful collector fixing kits or detailed mounting videos** explaining crucial steps in the installation process.
- An increased and **open communication amongst all stakeholders, better cooperation and sharing schemes of "lessons learnt**". These could also be acquired from the installation of large area collectors with specialized and efficient plumbing and heating installers.
- **Wireless sensors and an increase in electrical wiring efficiency** is another wish, uttered by French partners

Consulting

Energy Consultants and their Recommendations for the ST Sector

- Survey from Fraunhofer ISE with the Germany Association of Energy Consultants in 2018

- Goal :
  - to see which technologies are currently installed as opposed to what is actually advised,
  - how they see the future of renewables in general and that of ST in particular
  - what can be done in order to overcome current obstacles.

- Out of 500 feedback <u>by 138 respondents received …</u>

Consulting

Energy Consultants and their Recommendations for the ST Sector

1) Customers are looking for the **most cost efficient solution**, price reduction one way to go ..

2) Urgent **need for financing offers.** Funding or financing models for Solar Thermal should be easy to understand and to get

3) Possibility should be given to use second hand or non-branded components (as it is shown in the automotive industry)

4) Solar Thermal needs technological improvement, such as stagnation prevention for example. **Systems need to be robust**

5) Reduce costs, increase efficiency, specially educated installers

6) More **cost transparency, and transparency on amortization times** (esp. in direct comparison to PV / heat pump)

Consulting

Energy Consultants and their Recommendations for the ST Sector

7) More **lobby work in ministries**

8) **Image campaigns**, best practice studies, etc.

9) Media should be involved

10) **Distribution channels must strengthen and better promote Solar Thermal**

Image Enhancement & Marketing

The example of … HeatChangers

Awareness about Solar Heat is very low, and information about it can be confusing and overwhelming.

Many people….

- still don't know how much saving potential is in their heating habits and consumption.
- are not aware of the ecological and economic benefits of Solar Heat.
- are sceptical and avoid change.
- still use inefficient gas and/or oil boilers.
- are overwhelmed with the information about all different types of heating technologies.

We want to change that.

Image Enhancement & Marketing

We're the HeatChangers

Heat Changers educate, inspire, and motivate people to use solar energy to heat water, contaminate less and build a greener future for all of us.

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Marketing

Image Enhancement & Marketing

Be a HeatChanger

Join the Heat Changers community and become a brand ambassador for Solar Heat to

- show that Solar Heat is able to compete with other energy sources.
- provide evidence that solar heating is worth it, financially and ecologically.
- reduce uncertainty and awaken interest by providing useful and easy-to-understand technical facts.

Contact:

Marisol Oropeza / Stefan Abrecht

info@heat-changers.com

Social Media:

Follow, tag, share in Twitter, Instagram and Facebook

@HeatChangers

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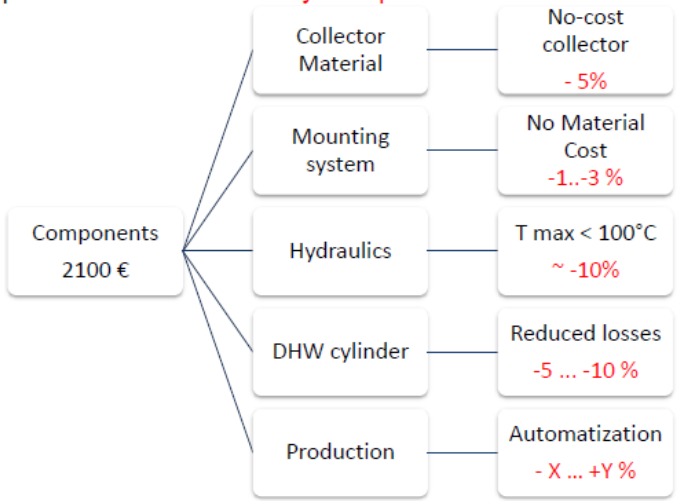
Conclusion

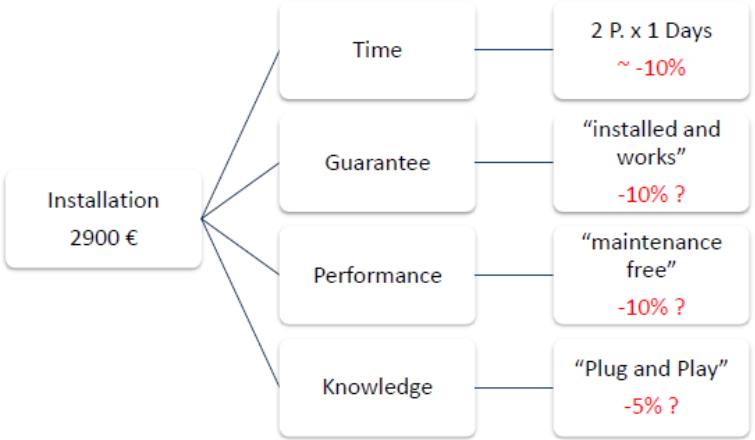
- Equal importance on **technical and non technical factors to go for overall cost reduction during all the Solar System Life duration**

Cost reduction potential – and effect on system price



Potential 5 … 25 %

Cost reduction potential – and effect on system price



Potential 10 … 35 %

Solar thermal sector must engage now its deep transformation !

Thank you for your attention!

More on Task 54:

http://task54.iea-shc.org

https://twitter.com/iea_shc_task54

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