

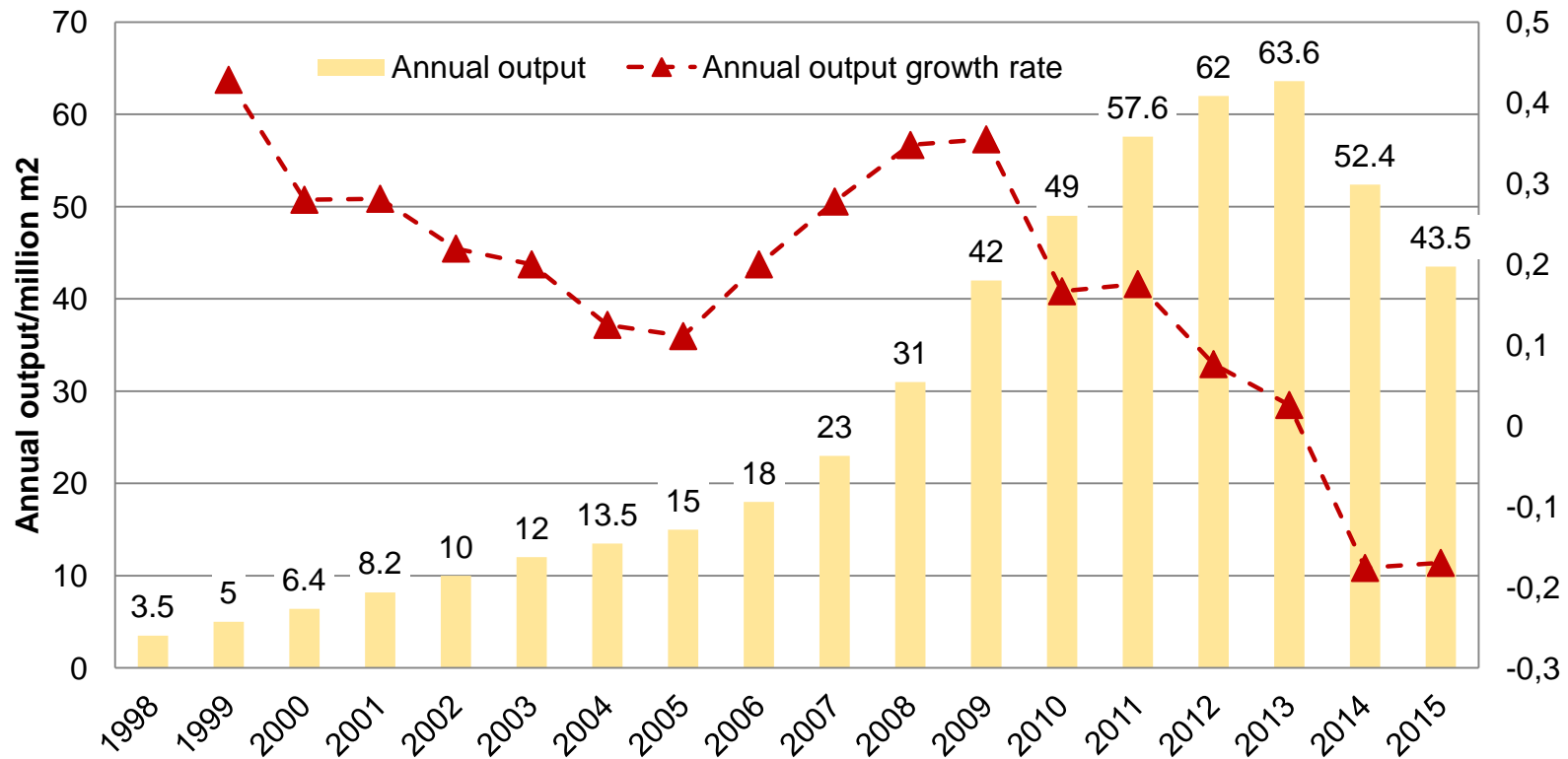
# Brief outline of changes in the environment of SHC in China

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# Overview



- China's annual output growth rate slowed down to -18% and -17% in 2014 and 2015.

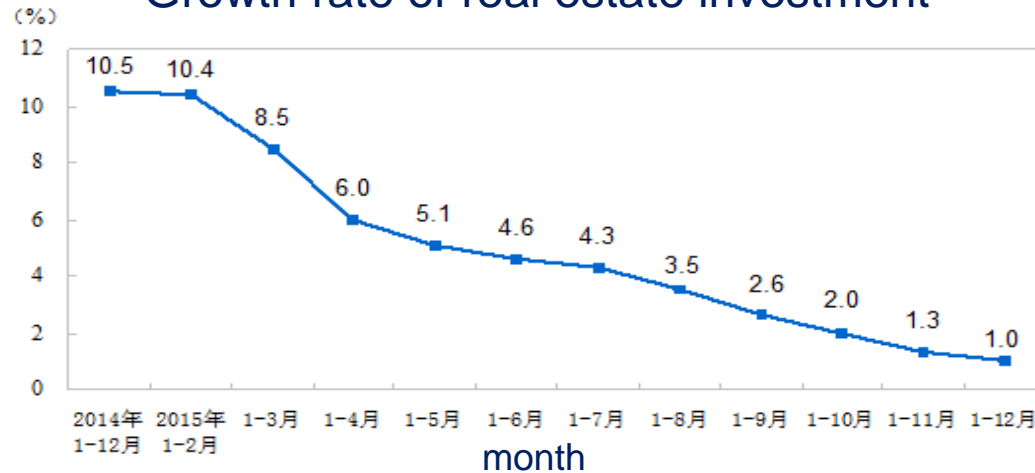
# New development

- National energy bureau issued “the 13th Five-Year (from 2016 to 2020) Draft Plan for solar application in 2015.
- According to the plan, total installed capacity of solar collectors will reach 0.8 billion m<sup>2</sup>, annual investment will be 100 billion RMB by the end of 2020.
- The industry makes great efforts to find new field:
  - Solar space heating system
  - Solar Heat for Industrial Processes
  - Solar space cooling

# Challenges

## ➤ Decline of real estate investment

Growth rate of real estate investment



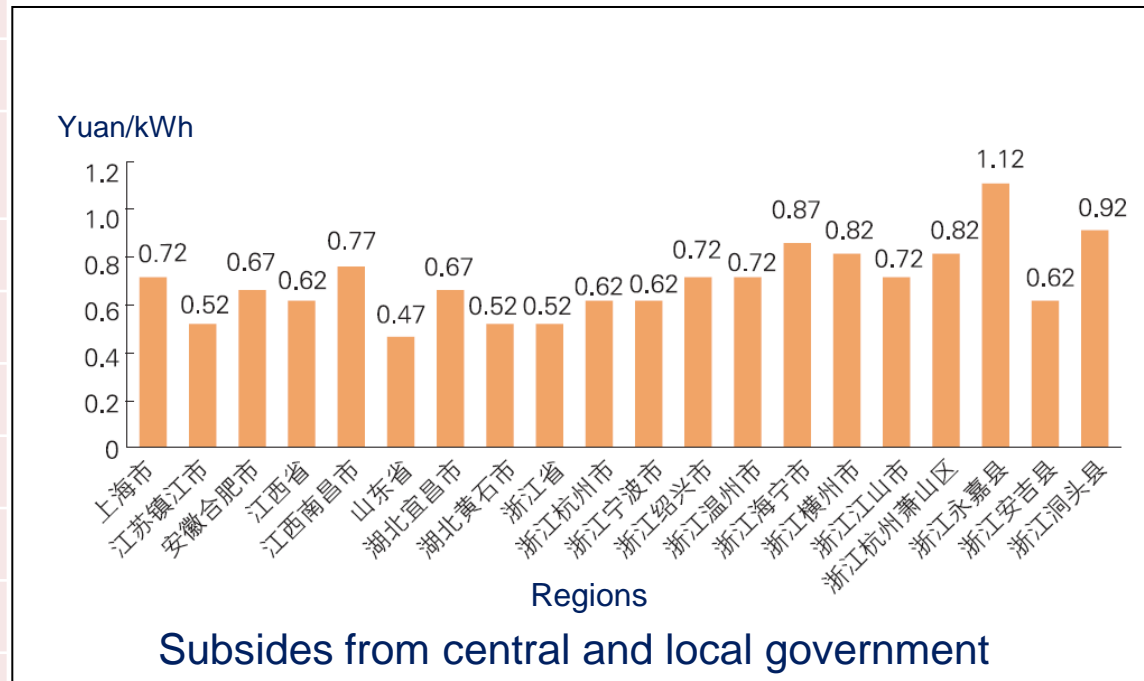
# Challenges

- There are still no support policies for solar heating and cooling industry after “the 13rd Five-Year Draft Plan for Solar application” issued.
- Several support policies for PV and solar thermal power have been started.
- National subsidy policy of SWHs for the peasants was withdrawn.
- Demonstration cities supported by Central Government stopped.

# Challenges

- Price of PV modules is falling sharply with strong subsidies from central and local government.

	单位千瓦造价 Cost per kWp		
	2013	2014	
地区/Region	Yuan/kWp	Yuan/kWp	降幅 % decreasing
华北/NC	11526	10310	10.6%
东北/NE	11896	-	-
华东/EC	10316	9232	10.5%
华中/MC	13508	10175	24.7%
西北/NW	12414	11133	10.3%
南方/SC	12915	10314	20.1%
平均/Average	12214	10243	16.1%

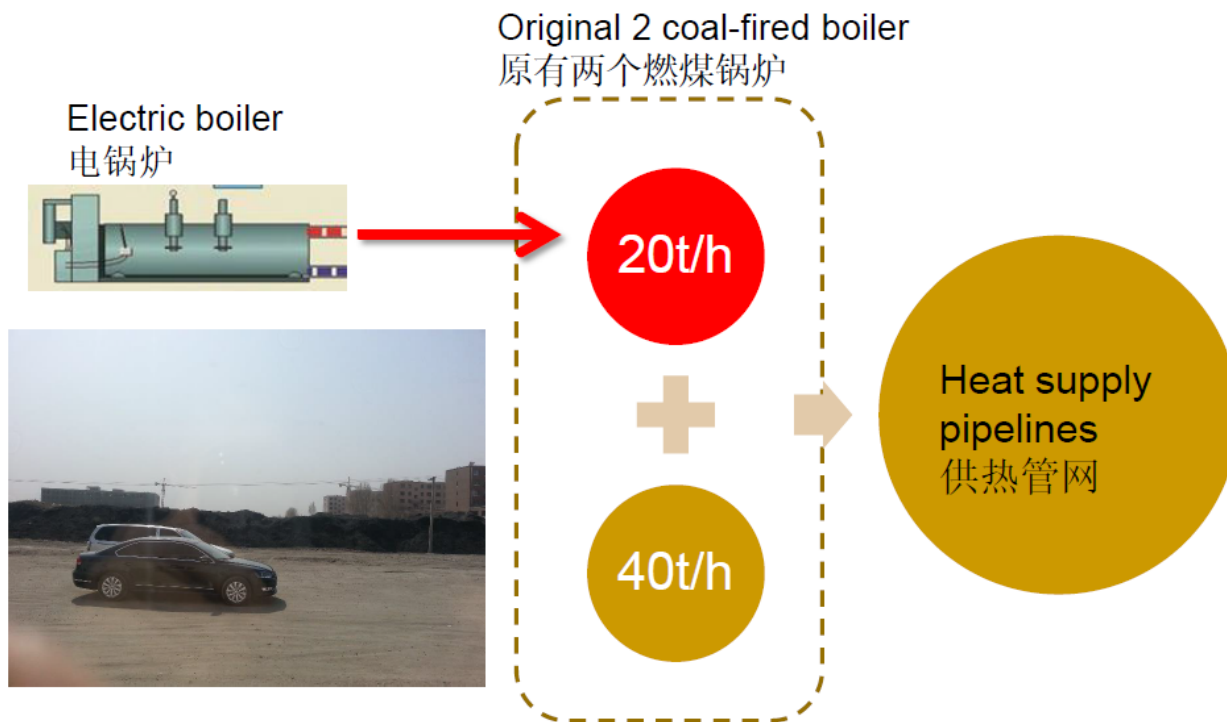


\* 1 Euro = 7.5 Yuan

# Challenges

- Serious wind and PV power curtailment of grid lead to issue renewable energy heating policy.
- It's not solar thermal, it's power to heat.

## Power to heat 电供暖



Source: GEI 2016

# Opportunities

Potential space heating demand for nearly 400 million people.

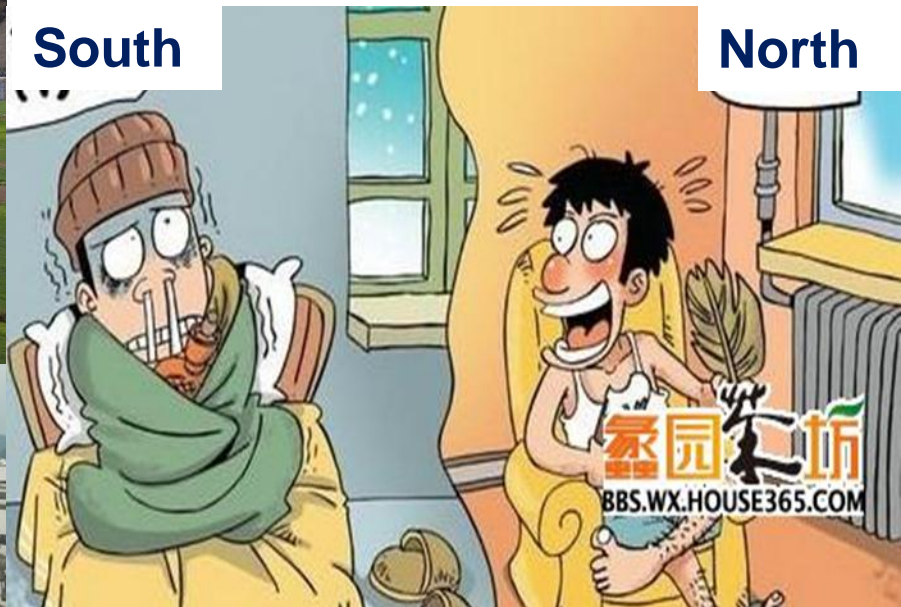


Most developed region with no space heating yet. Lack of fossil energy.



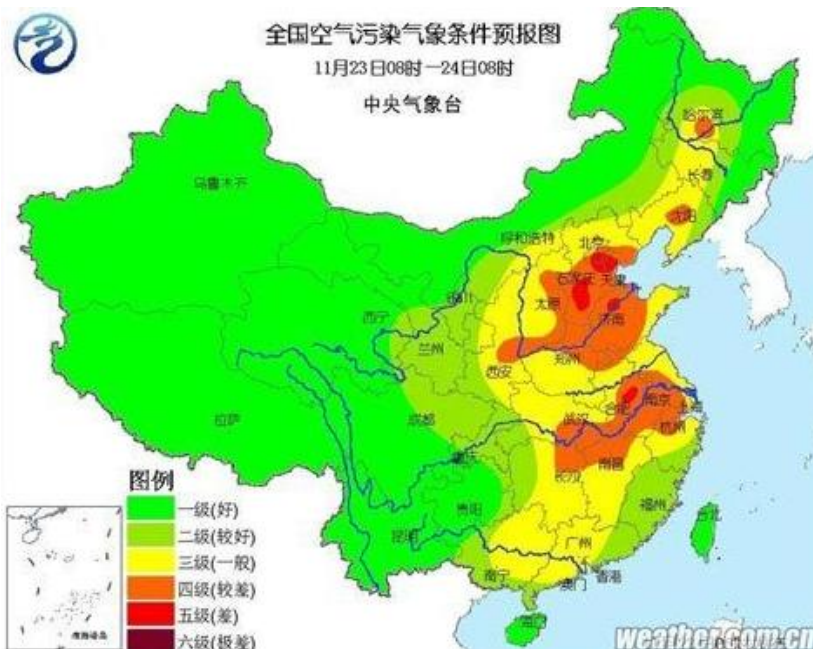
# Opportunities

- Space heating demand is arising in remote rural areas, such as Tibet, Northwest plateau area, and hot-summer and cold-winter zone as well as the most developed areas.
- Space heating is not established in these areas yet. Fossil energy is absent and expensive.



# Opportunities

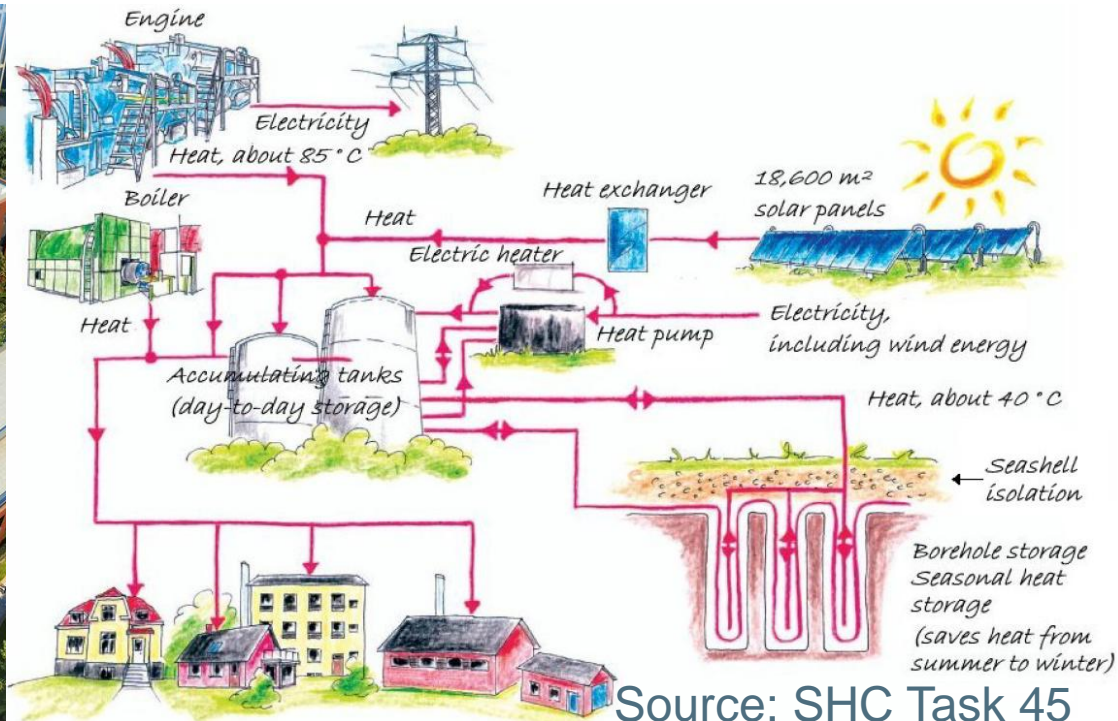
- Smog has become a barrier for China's development.
- Coal-fired furnace for space heating of rural areas is one of the main smog sources.
- Heibei, Beijing and Tianjin issued subsidy policies for solar and heatpump space heating.





# Opportunities

- The Government is promoting the Net-zero energy building, solar heating and cooling will be the main heating and cooling source.
- The heating management system including solar thermal system, power to heating system can be integrated to resolve the curtailment and the lack of fossil energy.



Source: SHC Task 45

# Trend

## ➤ Upgrade of key products

- Sunrain and Arcon decided to manufacture large scale flat plate collectors in China.
- Parabolic solar collectors are introduced into solar heating and cooling system.

## ➤ Upgrade of system

- Sunrain and Arcon will also promote large scale systems in China.
- Solar combi system will be a key equipment for the space heating of remote rural areas.

## ➤ Upgrade of Services

- Technology consulting, design, installation and system commissioning
- \* System design and installation are carried out by the manufacturers now

## ➤ Upgrade of Quality assurance system

- Updating the national standard according to new ISO 9806
- Join the global certification mutual recognition system



# Conclusion

- Due to economic slowdown, cost reduction of other renewable energy and lacking of support policy, solar heating and cooling's growth is slowing down.
- Comparing with electrical or heatpump heating system, the complication and high initial cost will be a main barrier for the promotion of solar thermal technology.
- With the development of the country, solar thermal is still the key solution for the tremendous demand for space heating and cooling without excessive fossil energy consumption.
- High performance solar collector, solar combisystem and system optimizing technology will be the key technologies in the future.

**Thank you for your attention!**