Breakthroughs in new technologies

What can we expect within the next decade?

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Target cost of PV electricity

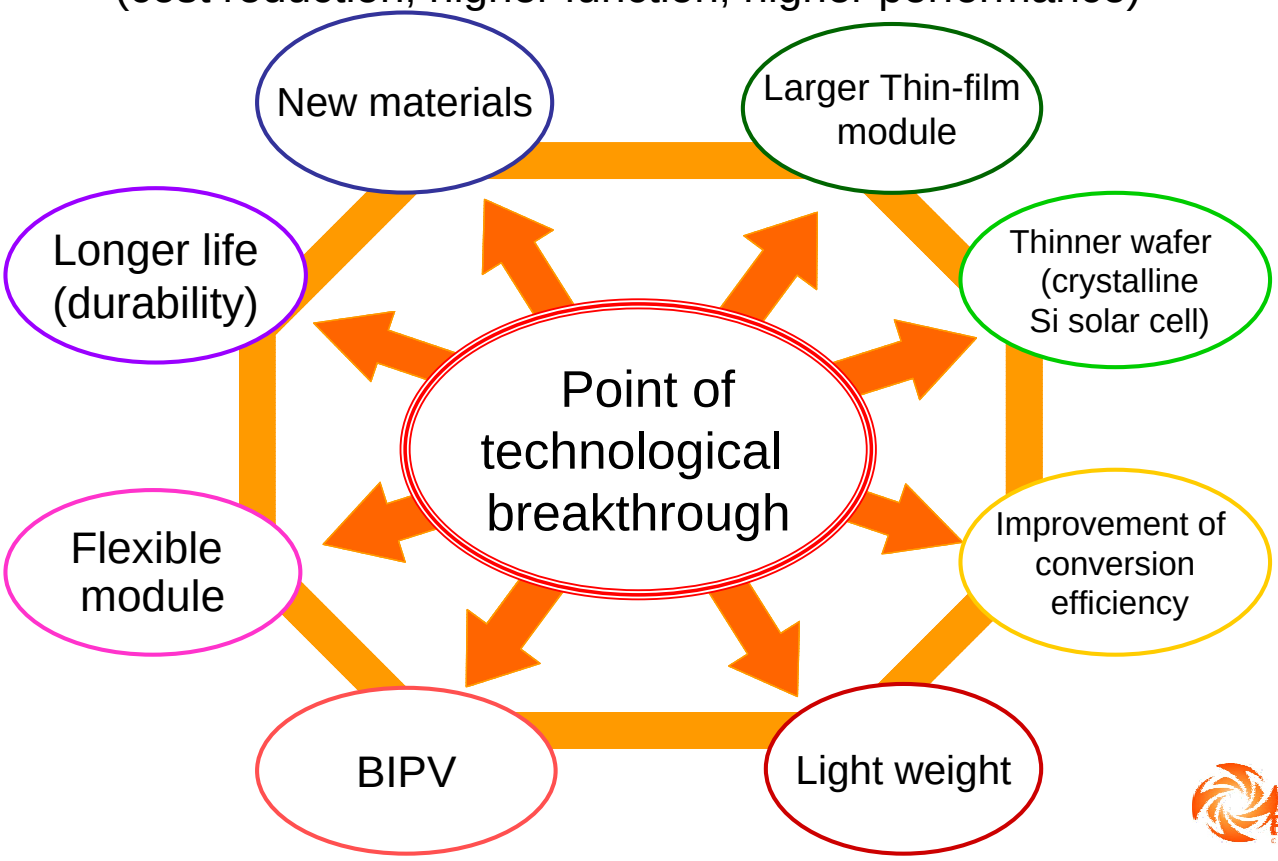
(Unit: Eurocent/kWh)

		2005	2010	2015	2020	2030	2050
		30.0		15.0		6.0	3.0
		45	30		10		
	Residential	18.0 - 25.1	10.2 - 14.1	6.3 - 7.8			
	Commercial	12.5 - 17.3	7.1 - 9.4	4.7 - 6.3			
	Utility	10.2 - 17.3	7.8 - 11.8	3.9 - 5.5			
		27.47	15.41		9.38	4.69	

Source:
EU: Strategic Research Agenda (SRA) for Photovoltaic Solar Energy Technology, PV-TRAC (July 2006)
Germany: PV R&D Roadmap, developed during the 9th BMU strategy meeting of representatives from German industry and research institutes (November 2005) (in Southern Europe)
USA: The Solar America Initiative, NREL (February 2006)
Japan: PV Roadmap Toward 2030 (PV2030), NEDO (June 2004)

Conversion Rate: 1 USD = 78.4191 EUR, 1 JPY = 0.67 EUR *(as of November 1, 2006)*

Point of technological break through (cost reduction, higher function, higher performance)



Technology	Issues to achieve the target
Crystalline Silicon	***Still has a room for improvement and cost reduction*** - Lower cost Si refining for solar cell - Improvement in crystal growth technology: slicing (thinner), cell process - Manufacturing scale toward 1GW/year line - New structure
Thin-films (Si, CIS, CdTe)	***Si shortage is opportunity, higher cost reduction potential, but needs further improvement*** - Higher conversion efficiency - Large area deposition process - Higher throughput - Lower process temperature - Lower cost substrate (glass, steel, polymer)
PV System	***Important for cost reduction of PV electricity*** - Better installation and integration technologies - Performance Monitoring and fault diagnosis technology - Network management and combination with other energy system - Application of better electric storage system - Concentrators
Other new technology (DSC, organic, new concept)	***Lot of things to do toward commercialization*** - Higher performance by optimization of structure, materials. etc., improvement of stability, durability, etc. Structure of module, Larger module, R&D for process technology for cell and modules, etc.