

Energia solar no mundo

COGEN

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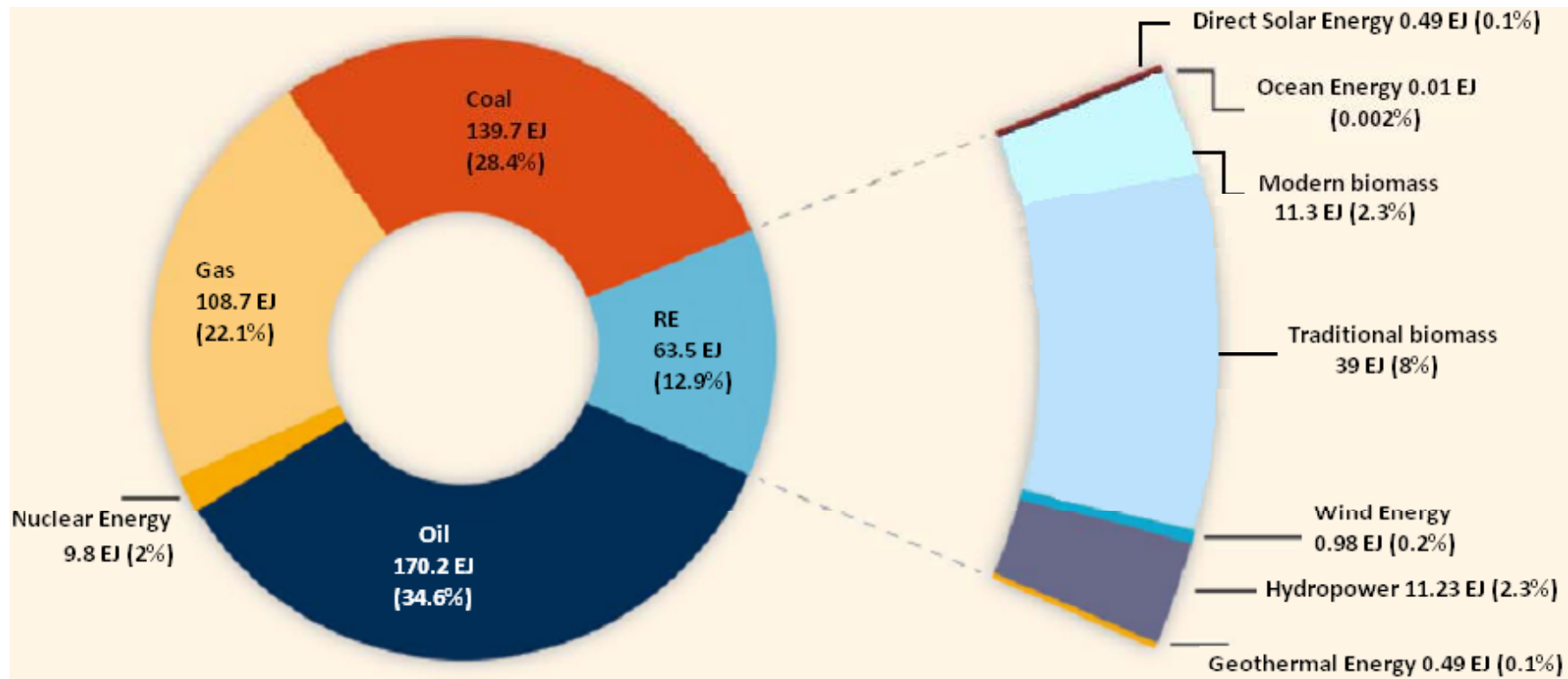


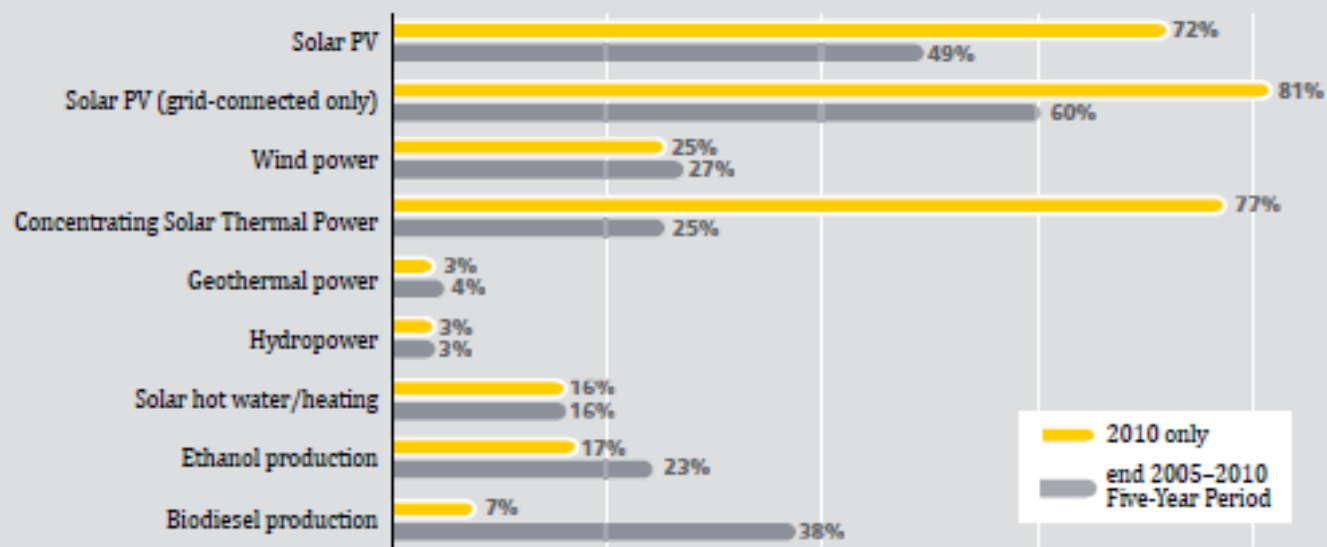
Table R4. Renewable Electric Power Capacity, Existing at End of 2010

	World Total	Developing Countries	EU-27	United States	China	Germany	Spain	India
Technology	GW							
Wind power	198	61	84	40	45	27	21	13
Biomass power	62	27	20	10	4	5	0.5	3
Solar PV	40	n/a	29	2.5	0.9	17.3	3.8	~ 0
Geothermal power	11	5	1	3.1	~ 0	0	0	0
Solar thermal power (CSP)	1.1	0	0.6	0.5	0	0	0.6	0
Ocean (tidal) power	0.3	0	0.3	0	0	0	0	0
Total renewable power capacity (not including hydropower)	312	94	135	56	50	49	26	16
Hydropower	1,010 <sup>1</sup>	n/a	130	78 <sup>2</sup>	213	5 <sup>2</sup>	16	40 <sup>2</sup>
Total renewable power capacity (including hydropower)	1,320 <sup>1</sup>	n/a	265	134	263	54	42	56

Table R3. Solar PV Additions and Existing Capacity, 2006–2010

	Added					Existing				
	2006	2007	2008	2009	2010	2006	2007	2008	2009	2010
	MW					GW				
Germany	845	1,270	1,950	3,795	7,405	2.9	4.2	6.1	9.9	17.3
Spain	90	560	2,600	145	370	0.2	0.7	3.3	3.4	3.8
Japan	290	210	230	480	990	1.7	1.9	2.1	2.6	3.6
Italy	10	70	340	715	2,320 <sup>1</sup>	0.05	0.1	0.5	1.2	3.5 <sup>1</sup>
United States	145	205	340	475	880	0.6	0.8	1.2	1.6	2.5
Czech Republic	-	3	60	400	1,490	-	-	0.07	0.5	2
France	10	10	45	220	720	0.03	0.04	0.09	0.3	1
China	10	20	40	160	550	0.08	0.1	0.2	0.3	0.9
Belgium	2	20	70	285	425	-	0.02	0.09	0.4	0.8
South Korea	25	45	275	170	130	0.03	0.08	0.4	0.5	0.7
Other EU	20	35	100	180	515	0.2	0.2	0.3	0.5	1
Other World	130	80	145	285	865	1.2	1.3	1.4	1.7	2.6
<b>Total Added</b>	<b>1,580</b>	<b>2,510</b>	<b>6,170</b>	<b>7,260</b>	<b>16,630</b>					
<b>World Total</b>						<b>7</b>	<b>9.5</b>	<b>16</b>	<b>23</b>	<b>40</b>

Figure 2. Average Annual Growth Rates of Renewable Energy Capacity and Biofuels Production, 2005–2010



## SELECTED INDICATORS AND TOP FIVE COUNTRIES

SELECTED INDICATORS		2008	→	2009	→	2010
Global new investment in renewable energy (annual)	<i>billion USD</i>	130	→	160	→	211
Renewables power capacity (existing, not including hydro)	<i>GW</i>	200	→	250	→	312
Renewables power capacity (existing, including hydro)	<i>GW</i>	1,150	→	1,230	→	1,320
Hydropower capacity (existing)	<i>GW</i>	950	→	980	→	1,010
Wind power capacity (existing)	<i>GW</i>	121	→	159	→	198
Solar PV capacity (existing)	<i>GW</i>	16	→	23	→	40
Solar PV cell production (annual)	<i>GW</i>	6.9	→	11	→	24
Solar hot water capacity (existing)	<i>GW<sub>th</sub></i>	130	→	160	→	185
Ethanol production (annual)	<i>billion liters</i>	67	→	76	→	86
Biodiesel production (annual)	<i>billion liters</i>	12	→	17	→	19
Countries with policy targets	#	79	→	89	→	98
States/provinces/countries with feed-in policies <sup>1</sup>	#	71	→	82	→	87
States/provinces/countries with RPS/quota policies	#	60	→	61	→	63
States/provinces/countries with biofuels mandates	#	55	→	57	→	60

Figure 8. Solar PV Capacity, Top 10 Countries, 2010

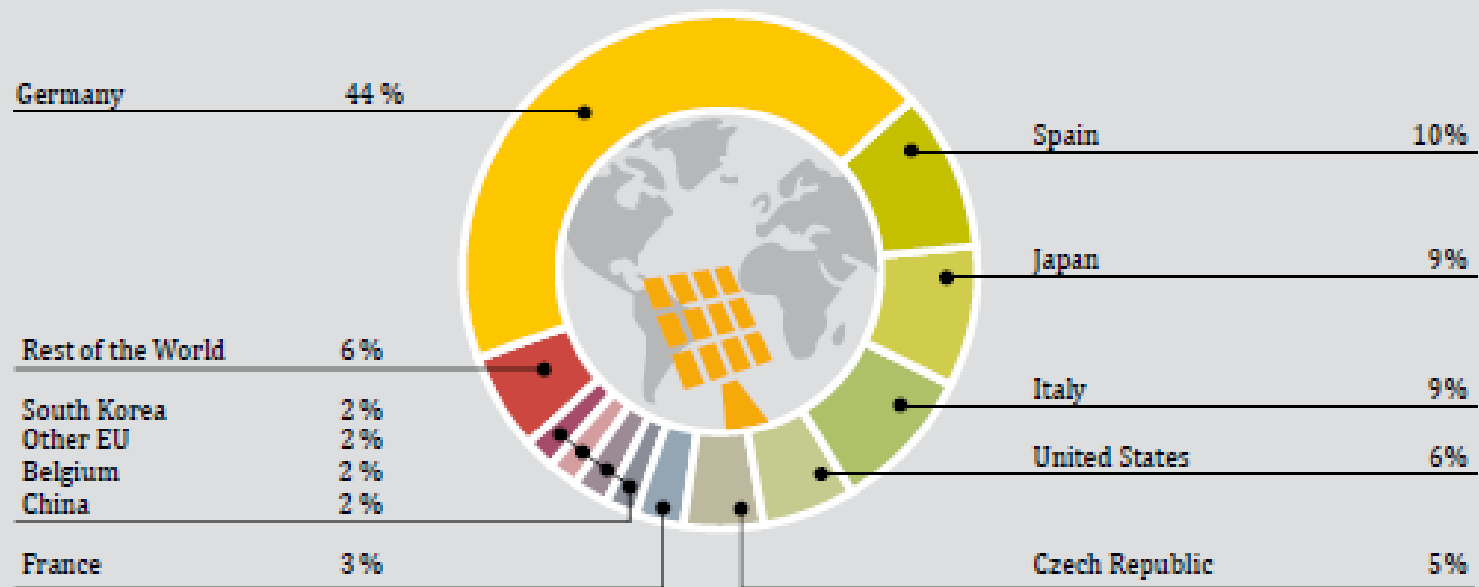
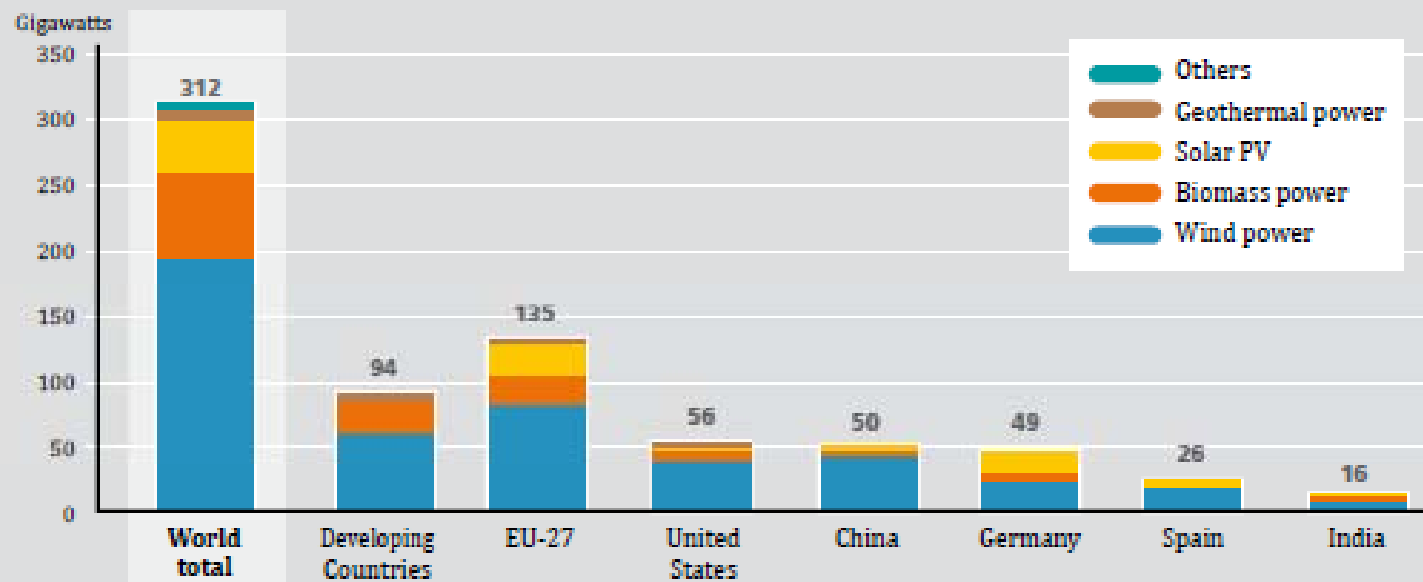
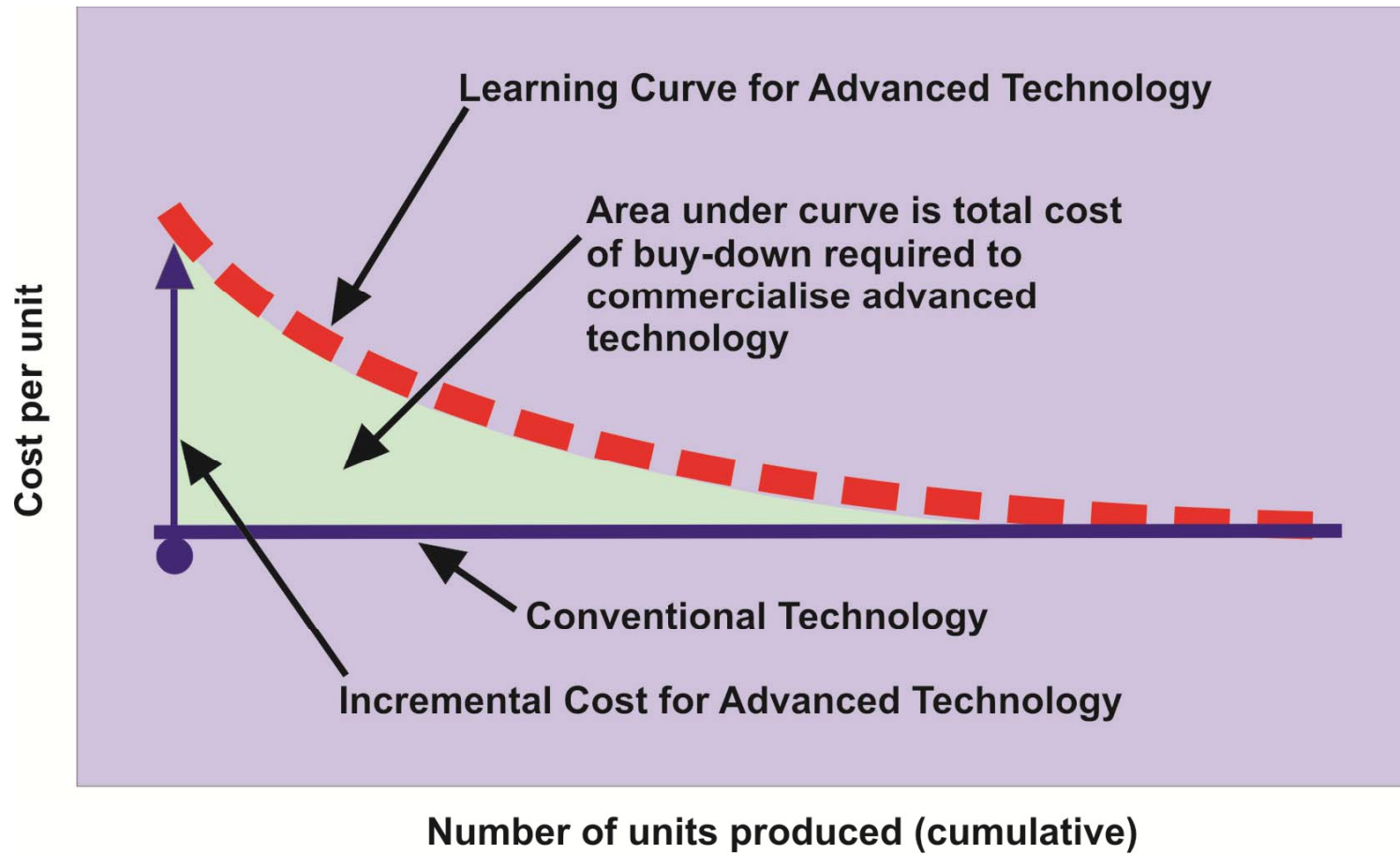


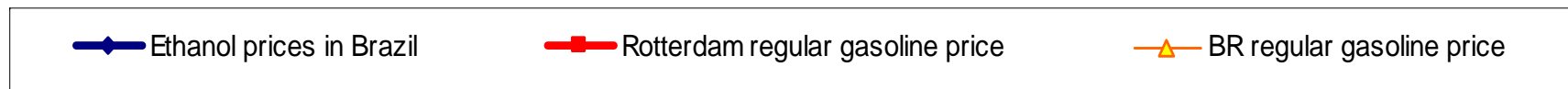
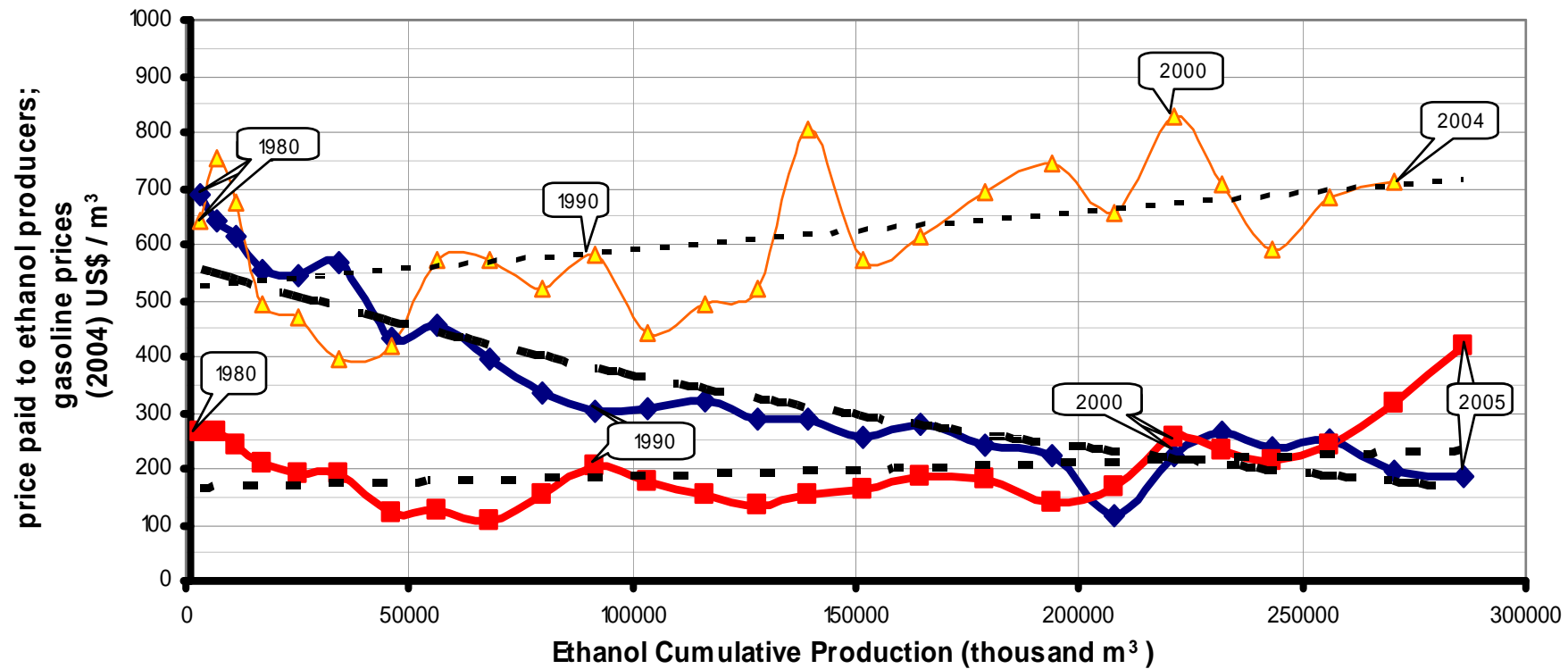
Figure 4. Renewable Power Capacities\*, Developing World, EU, and Top Five Countries, 2010



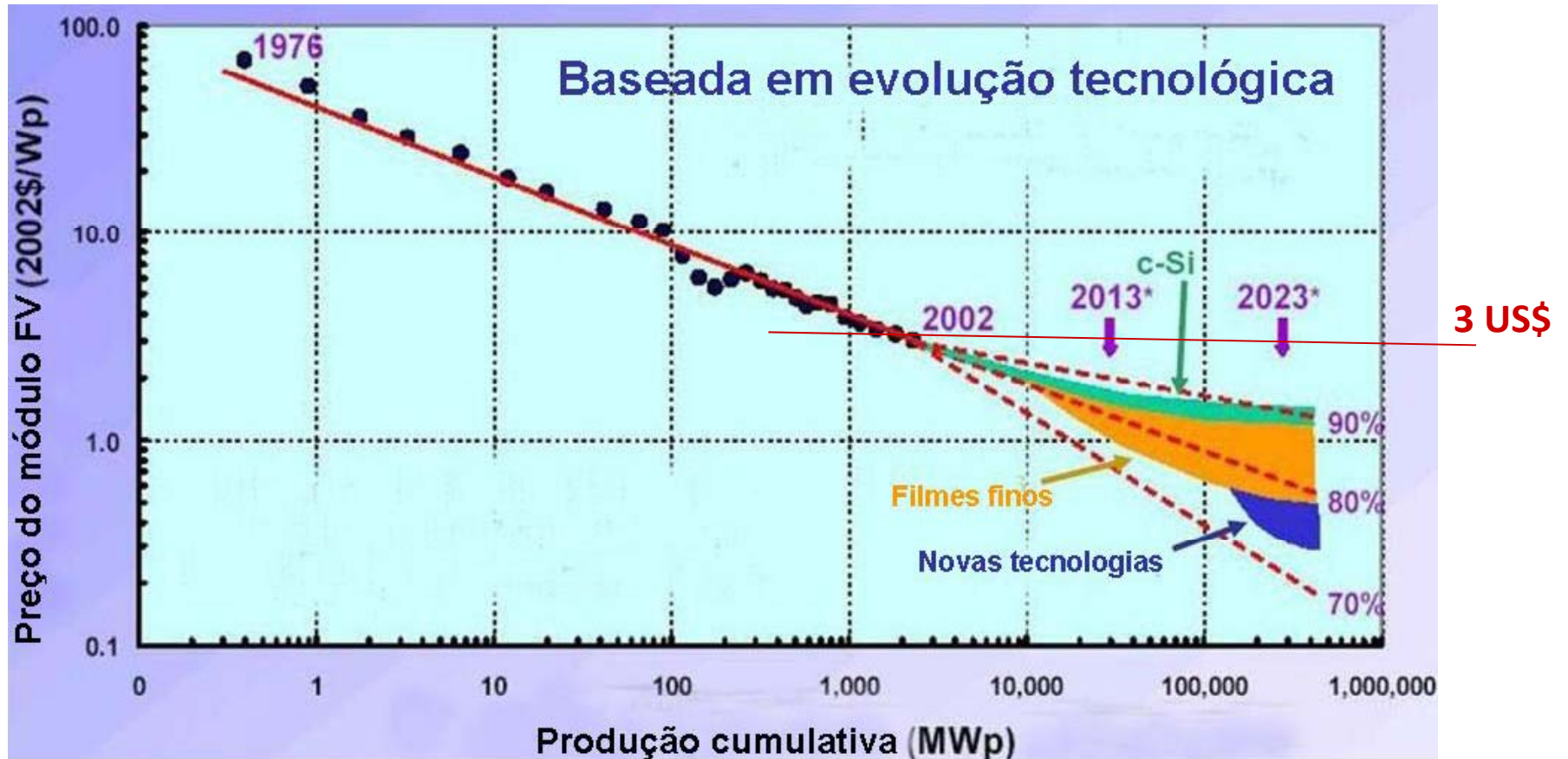




# THE ECONOMIC COMPETITIVENESS OF ALCOHOL FUEL COMPARED WITH GASOLINE

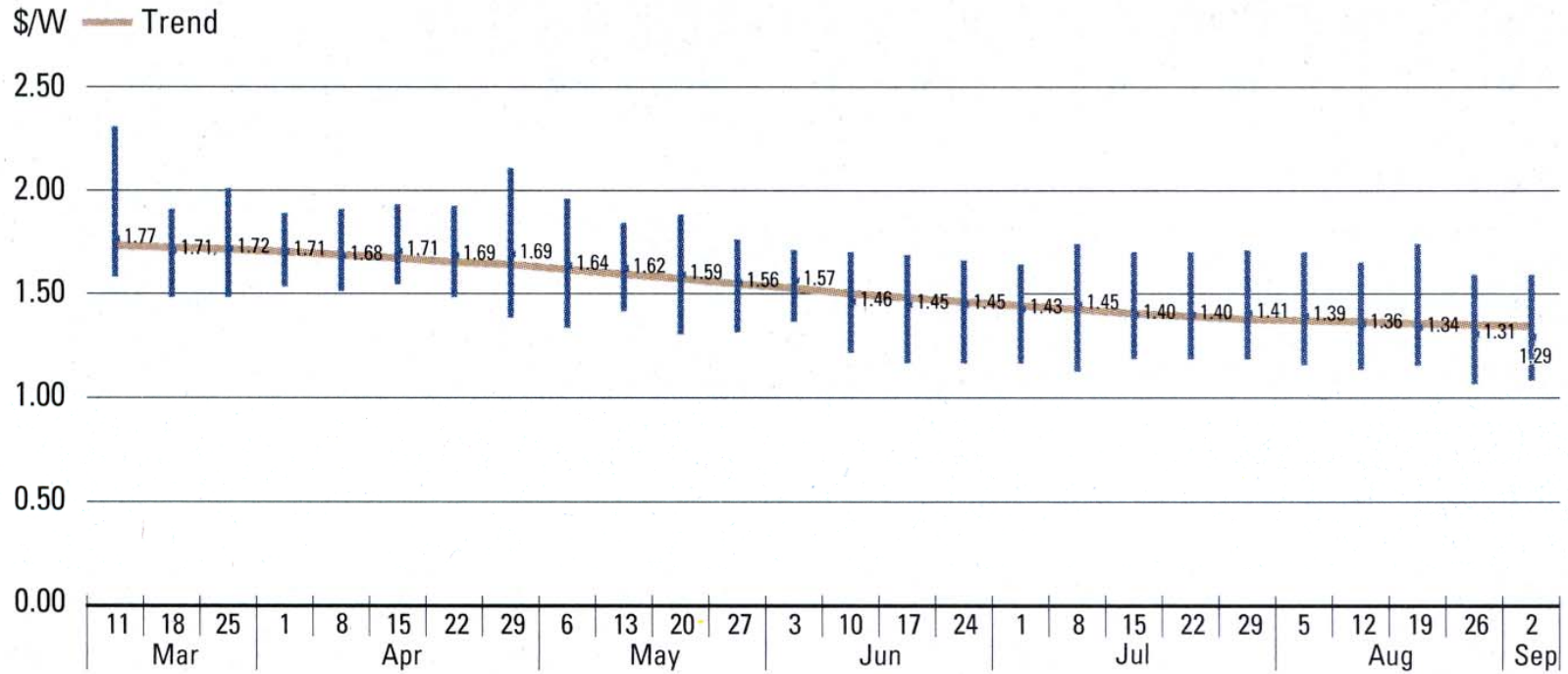


Learning curve para a energia solar fotovoltaica. Uma *learning curve* de 80% corresponde a uma redução de custos de 20% para cada duplicação da produção acumulada.



Fonte: Adaptada de SUREK, T. *Crystal growth and materials research in photovoltaics: progress and challenges*. Journal of Crystal , 2005

## Factory-gate c-Si module prices



No. of data points: —; source: PHOTON Consulting, further information: [www.photonconsulting.com/solarupdates](http://www.photonconsulting.com/solarupdates)