

Renewable Energy for Central America

Christopher Flavin

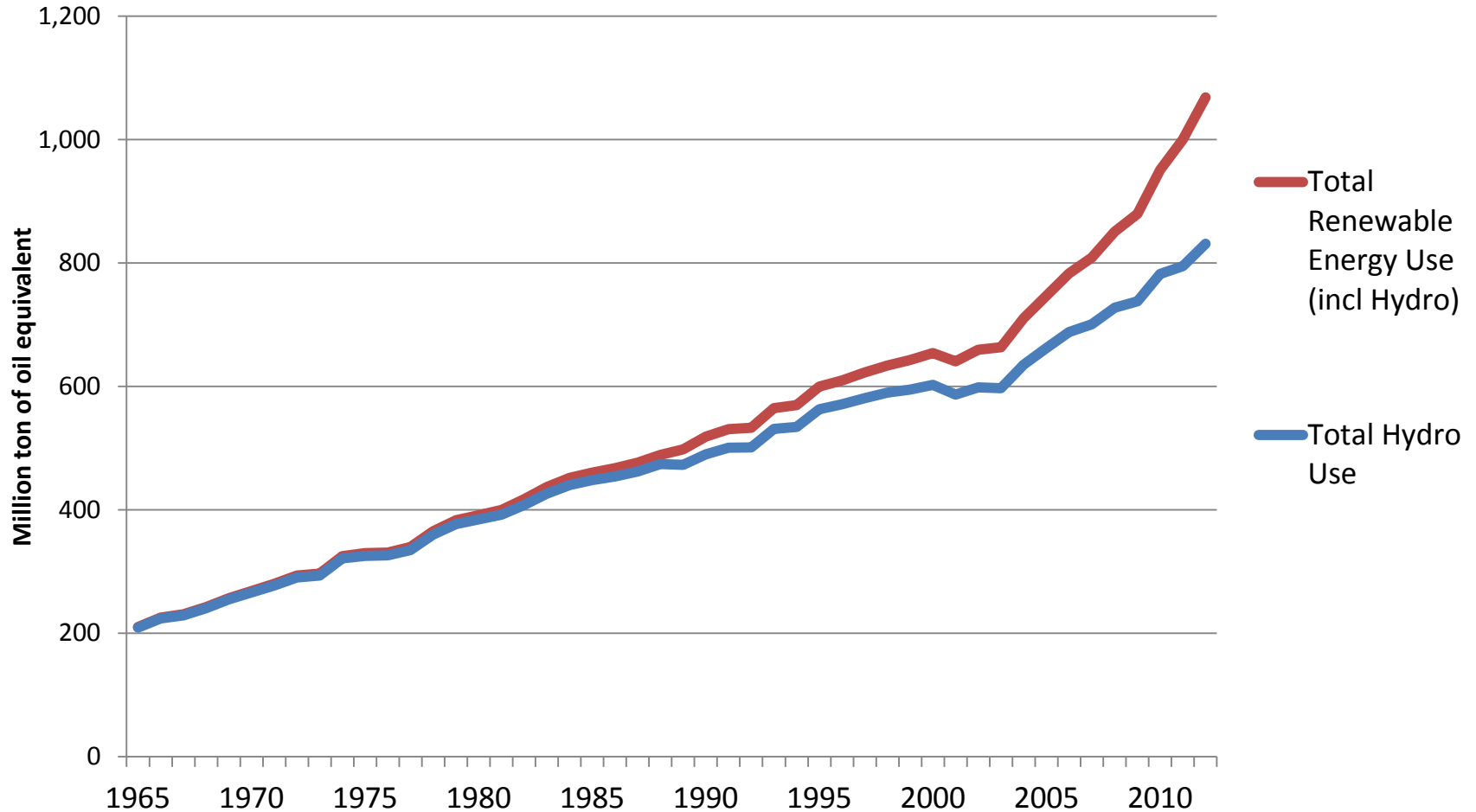


XXI Foro Regional AEA

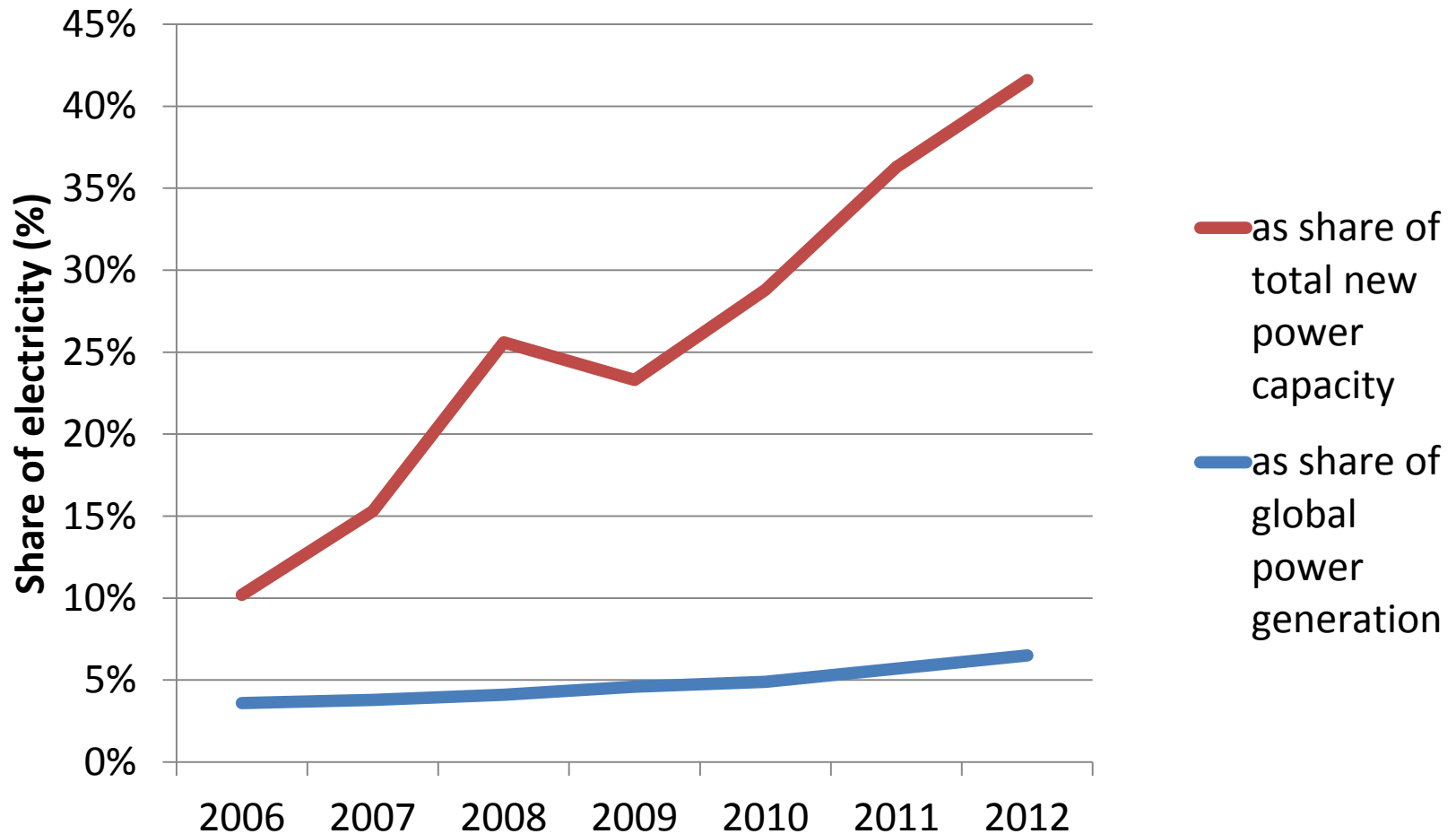
October 1, 2013



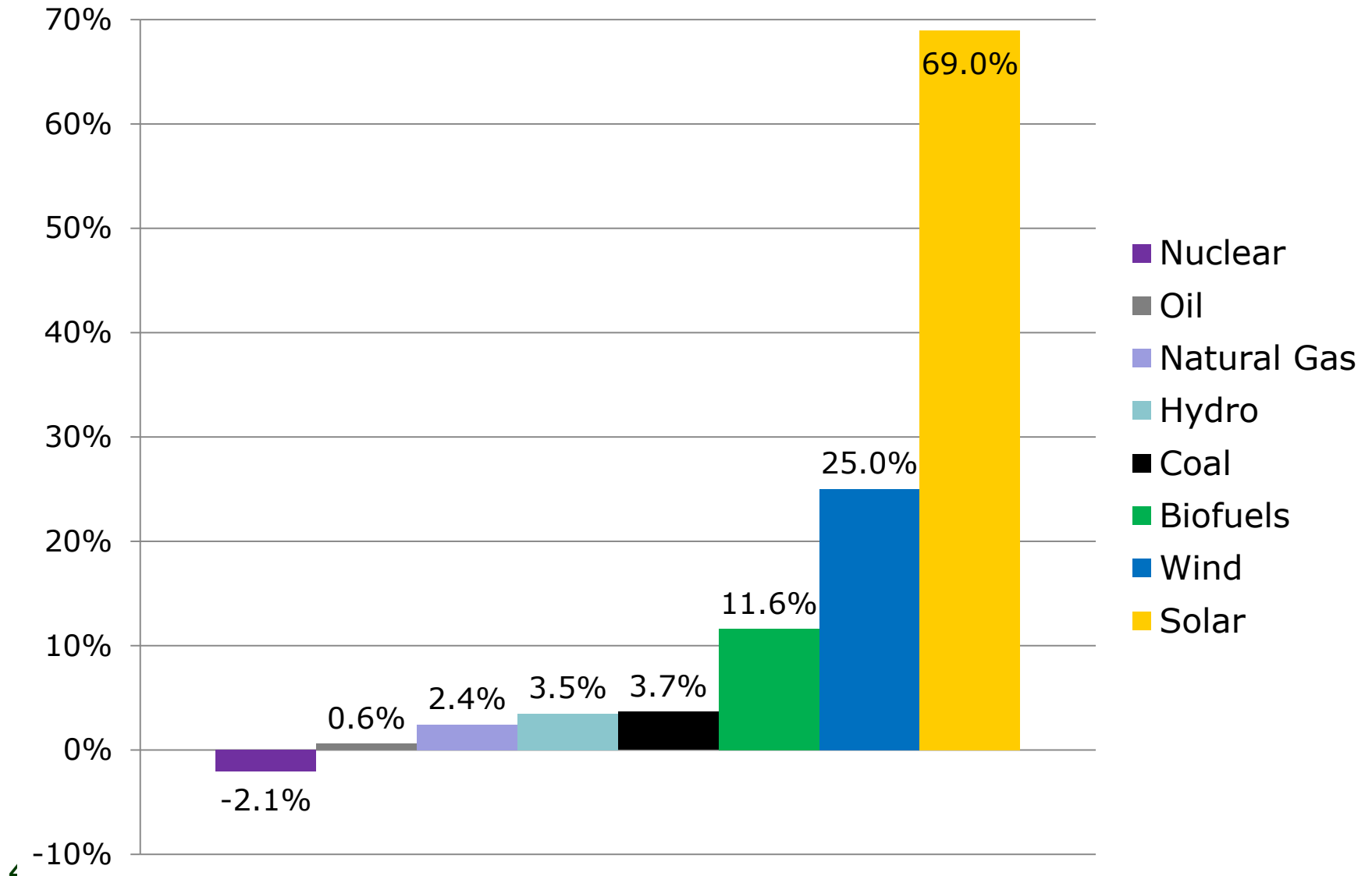
Global Renewable Energy Use (1965-2012)



Global Electricity from Renewable Energy (Excluding hydro—2006-2012)

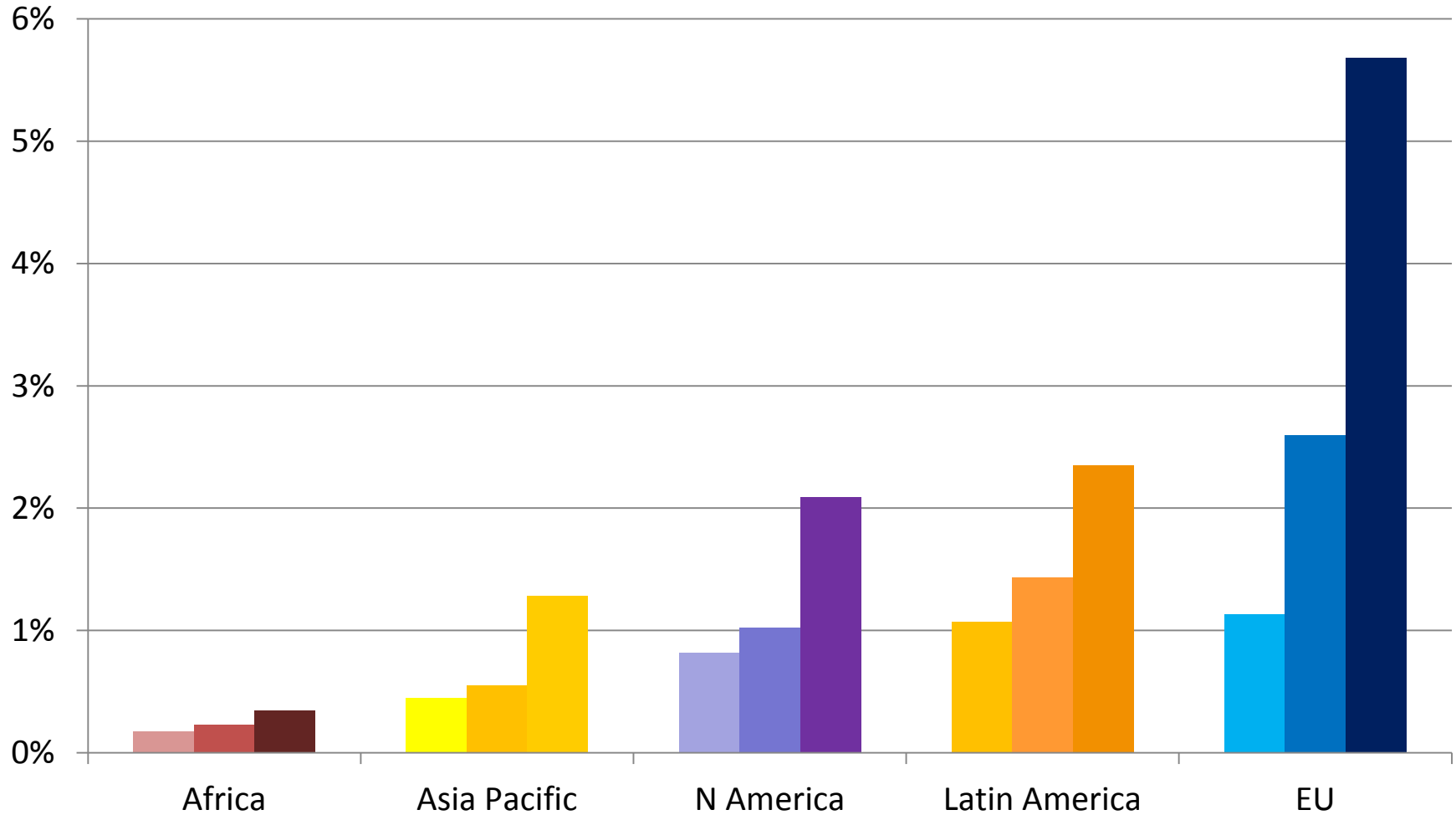


Global Growth Rates by Energy Source (2007-2012)



Source: BP 2013

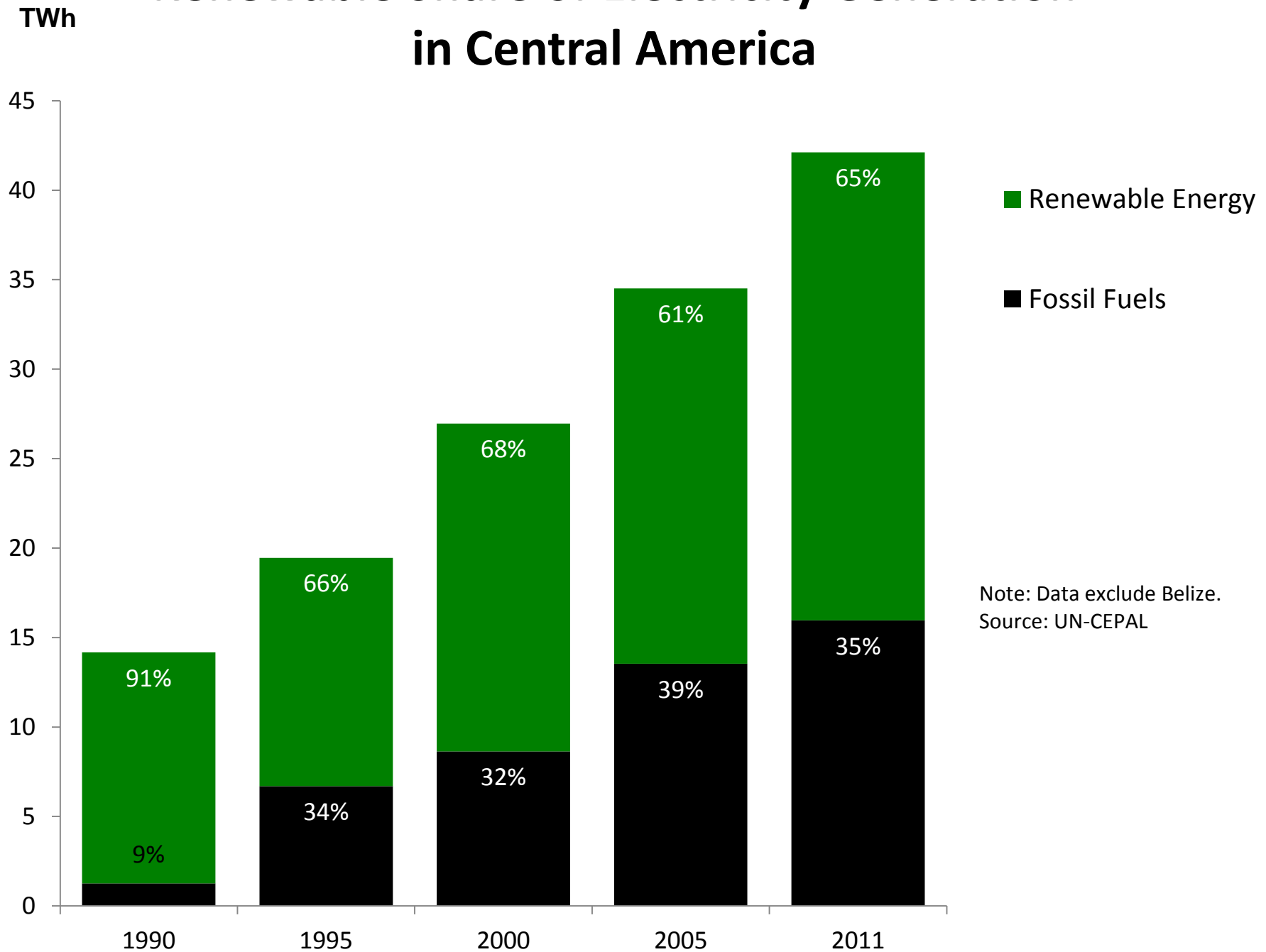
New Renewable Energy Use as Share of Total * (2002, 2007, 2012)



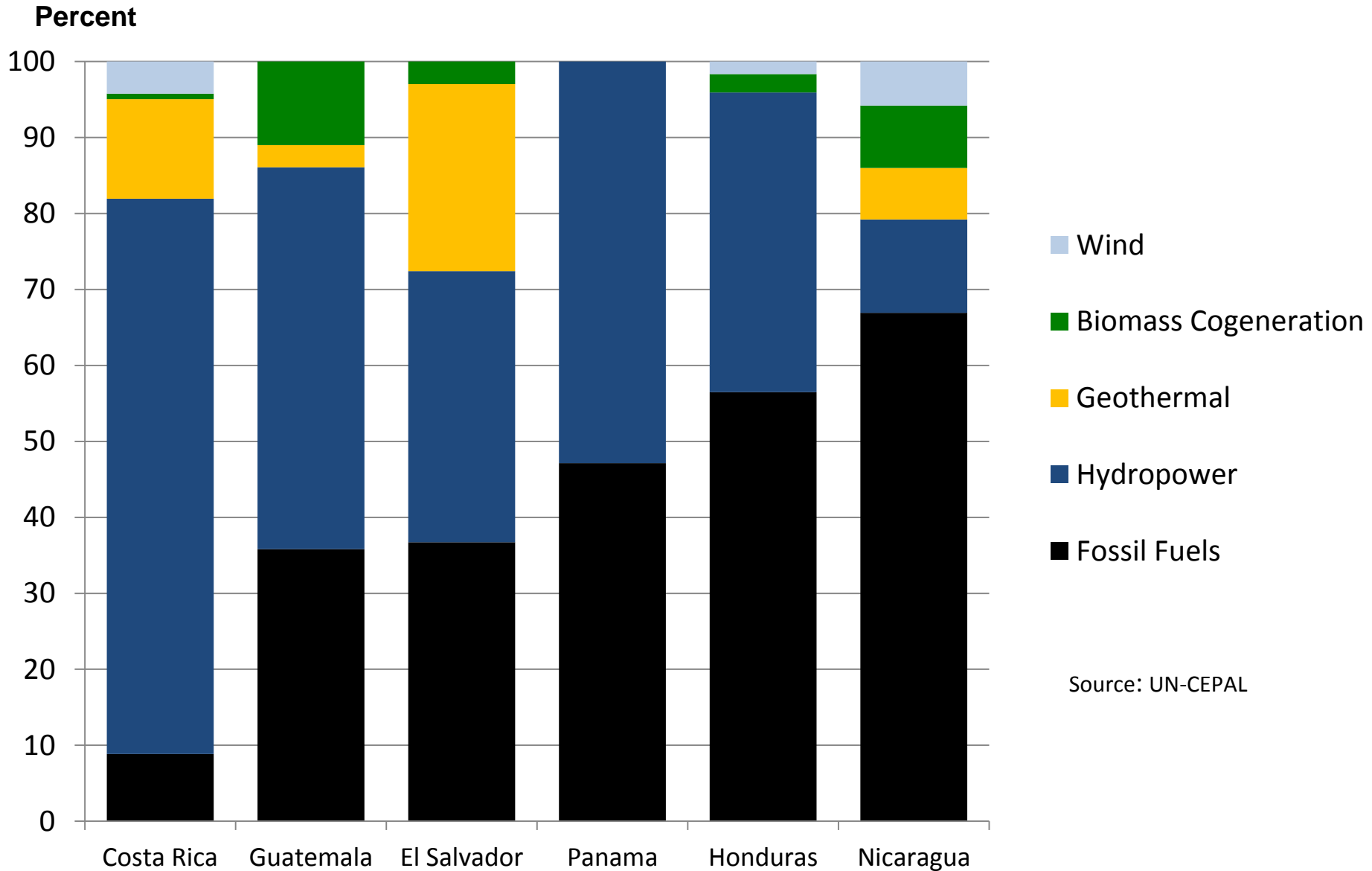
Renewable Electricity in Central America

	Total Electricity Generation	Increase in Electricity Use	Share of Renewables in Electricity Sector
	(2011)	(2000–2011)	(2011)
	gigawatt-hours	percent	percent
Belize	483	-	60
Costa Rica	9,760	42	91
El Salvador	5,813	72	63
Guatemala	8,147	35	64
Honduras	7,127	91	44
Nicaragua	3,567	70	33
Panama	7,703	61	53

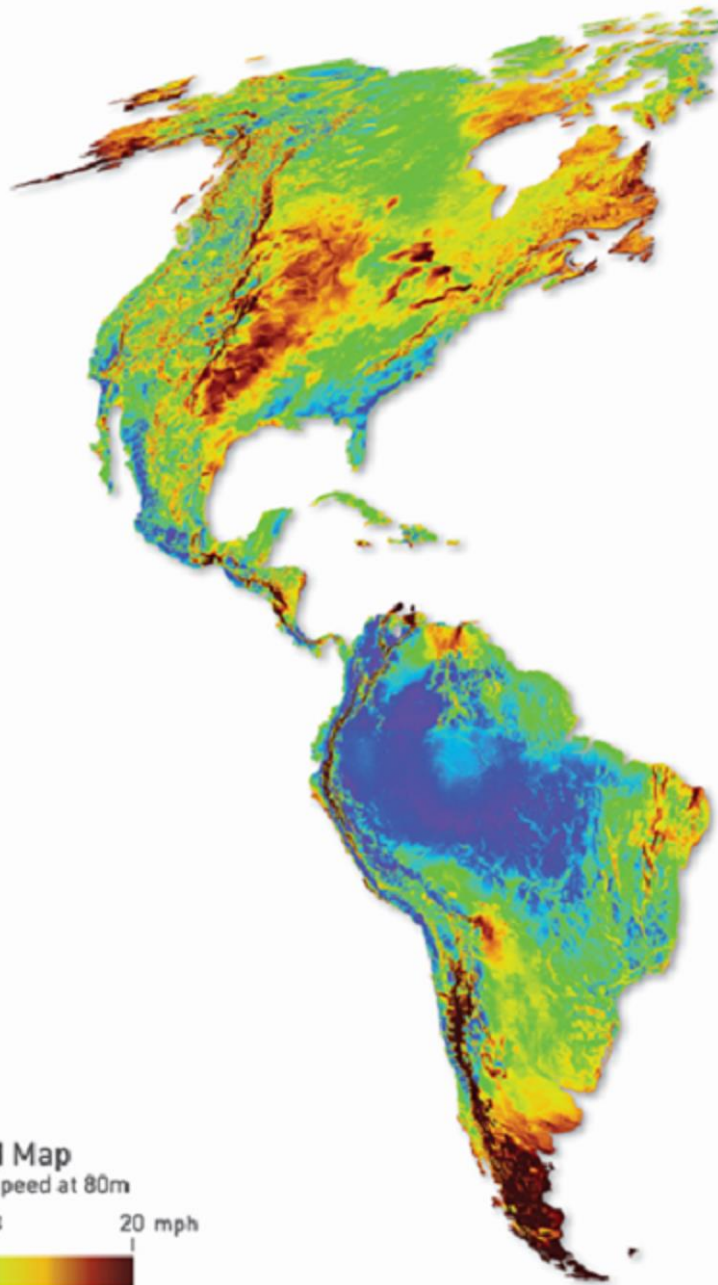
Renewable Share of Electricity Generation in Central America



Shares of Electricity Generation in Central America by Source, 2011



Western Hemisphere Wind Resources



5km Wind Map
Mean Wind Speed at 80m

7	13	20 mph
3	6	9 m/s

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Western Hemisphere Solar Resources

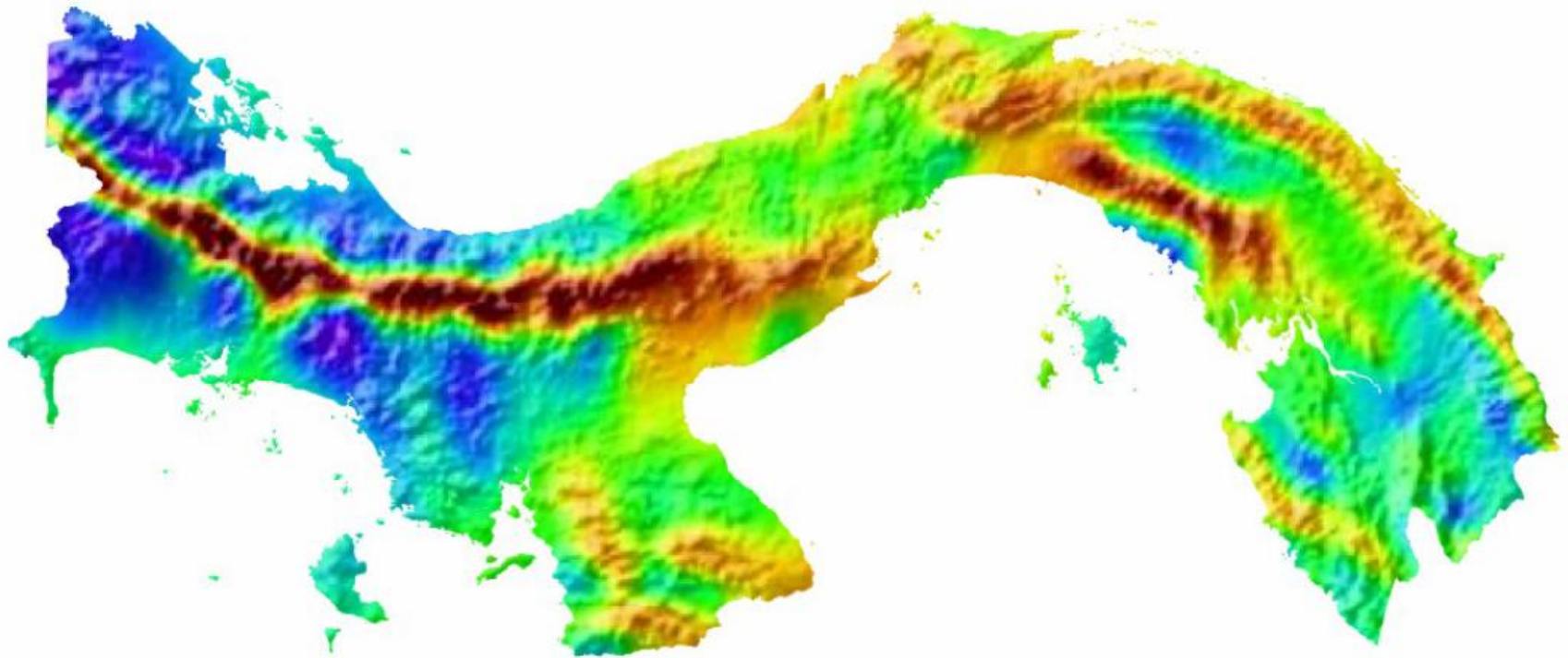
Global Horizontal Irradiance



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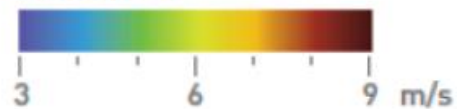


Panama Wind Resources



5km Wind Map at 80m

Wind speed

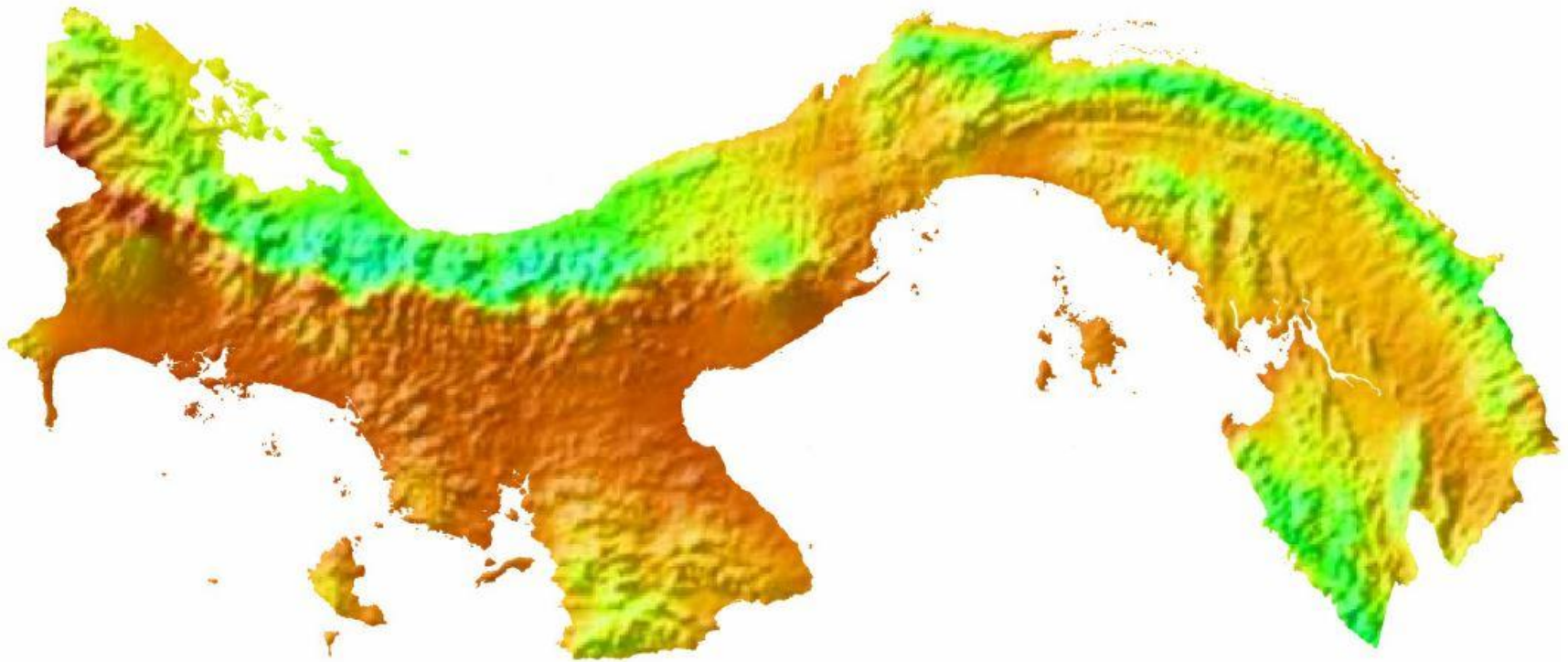


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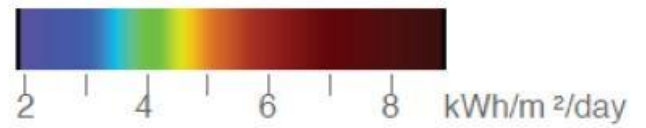


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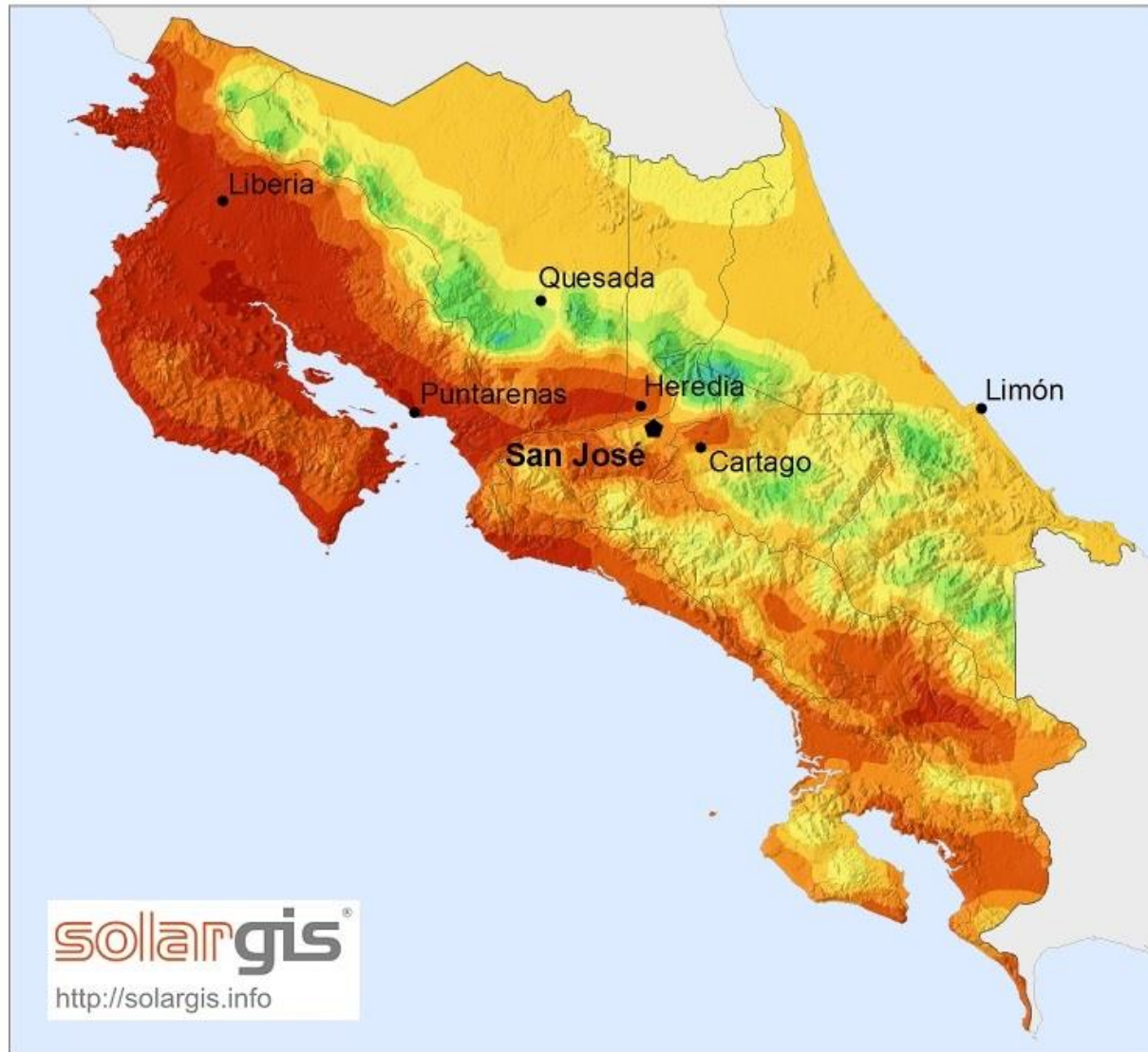
Panama Solar Resources



Global Horizontal Irradiance



Costa Rica Solar Resources



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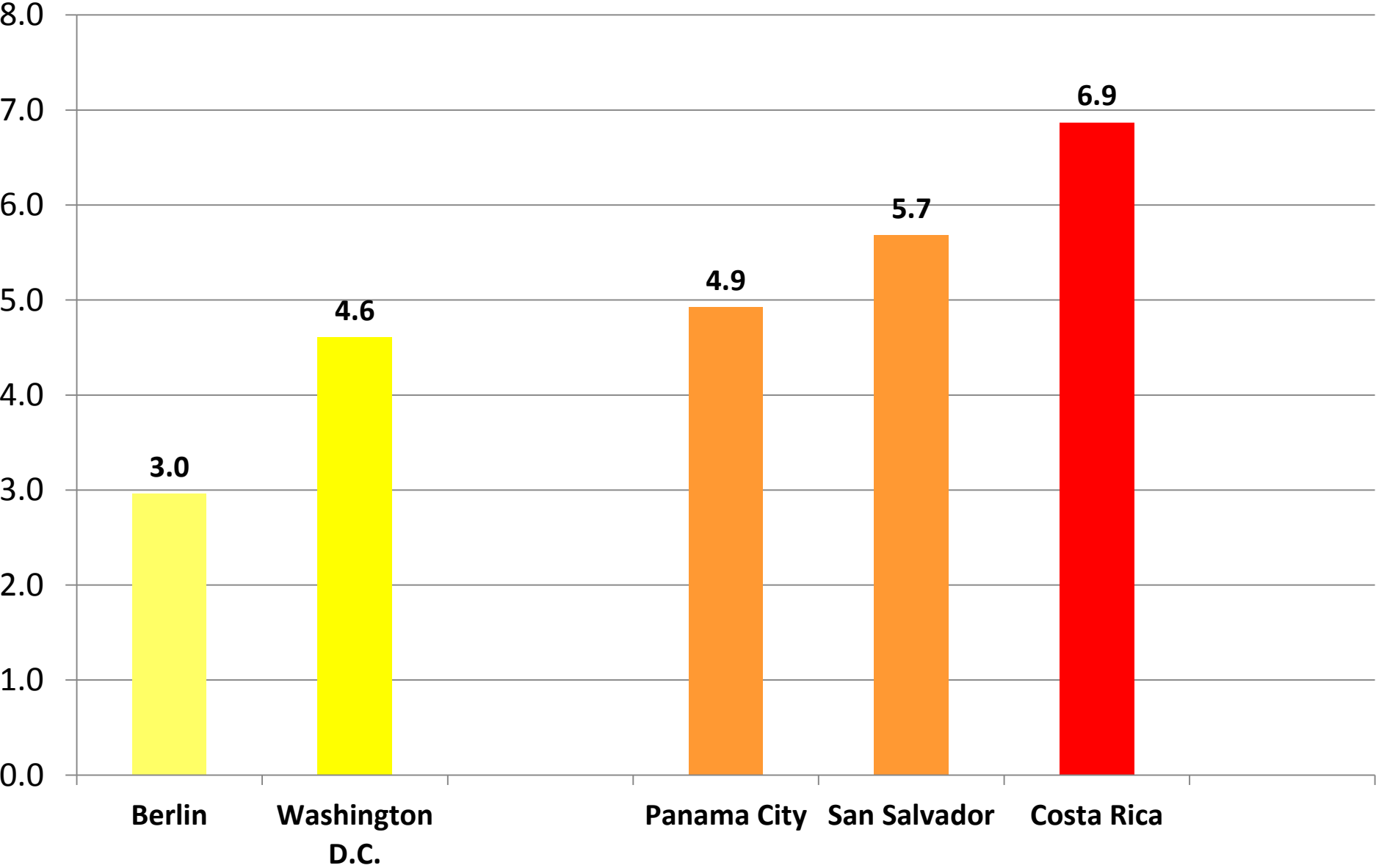
Yearly sum of global horizontal irradiation, average 1999-2012



0 50 km

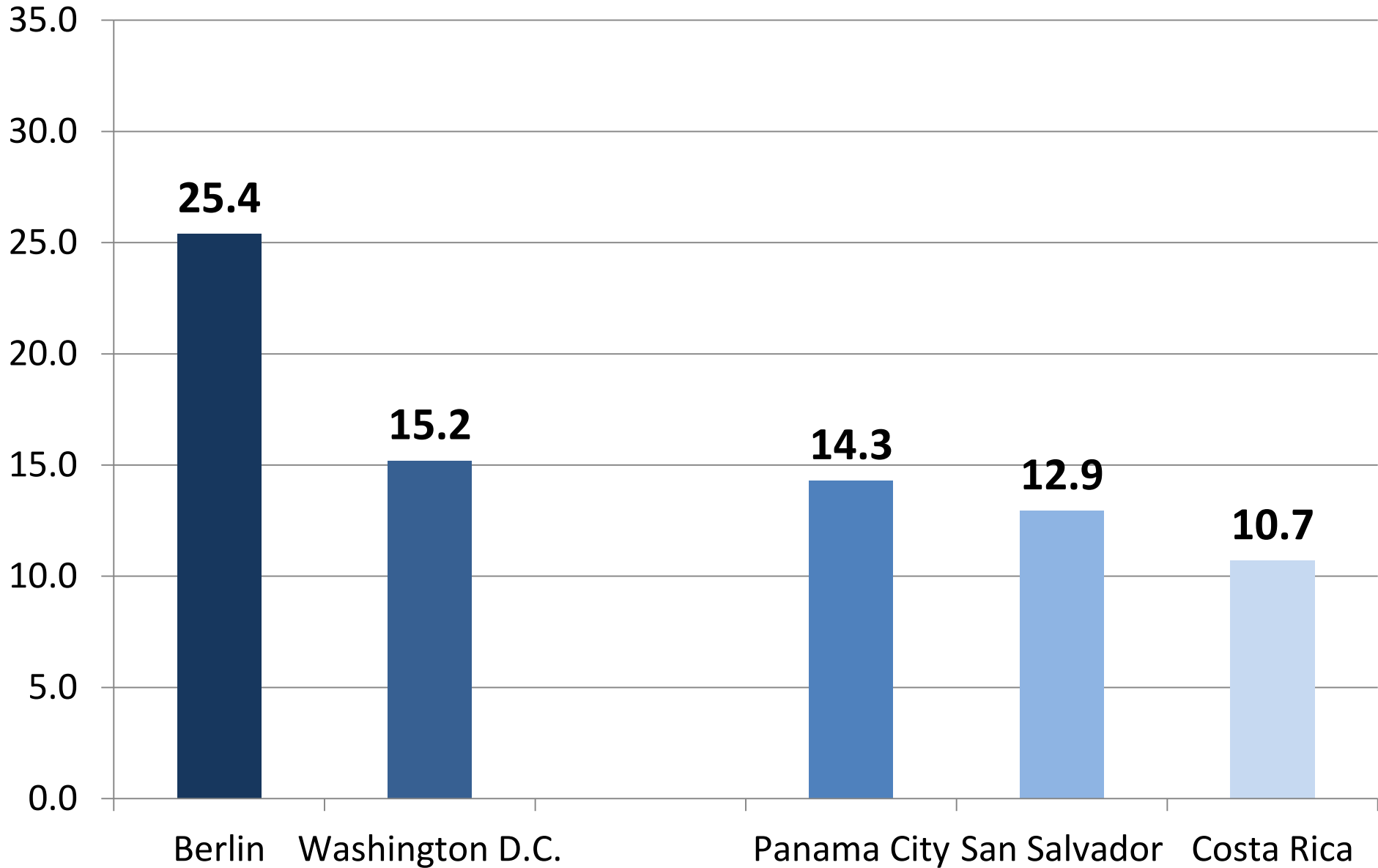
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Average Annual Solar Radiation (kWh/m²/day)



Cost of Solar Power

US¢/kWh



Solar Electricity Costs in Panama City

US¢/kWh

