

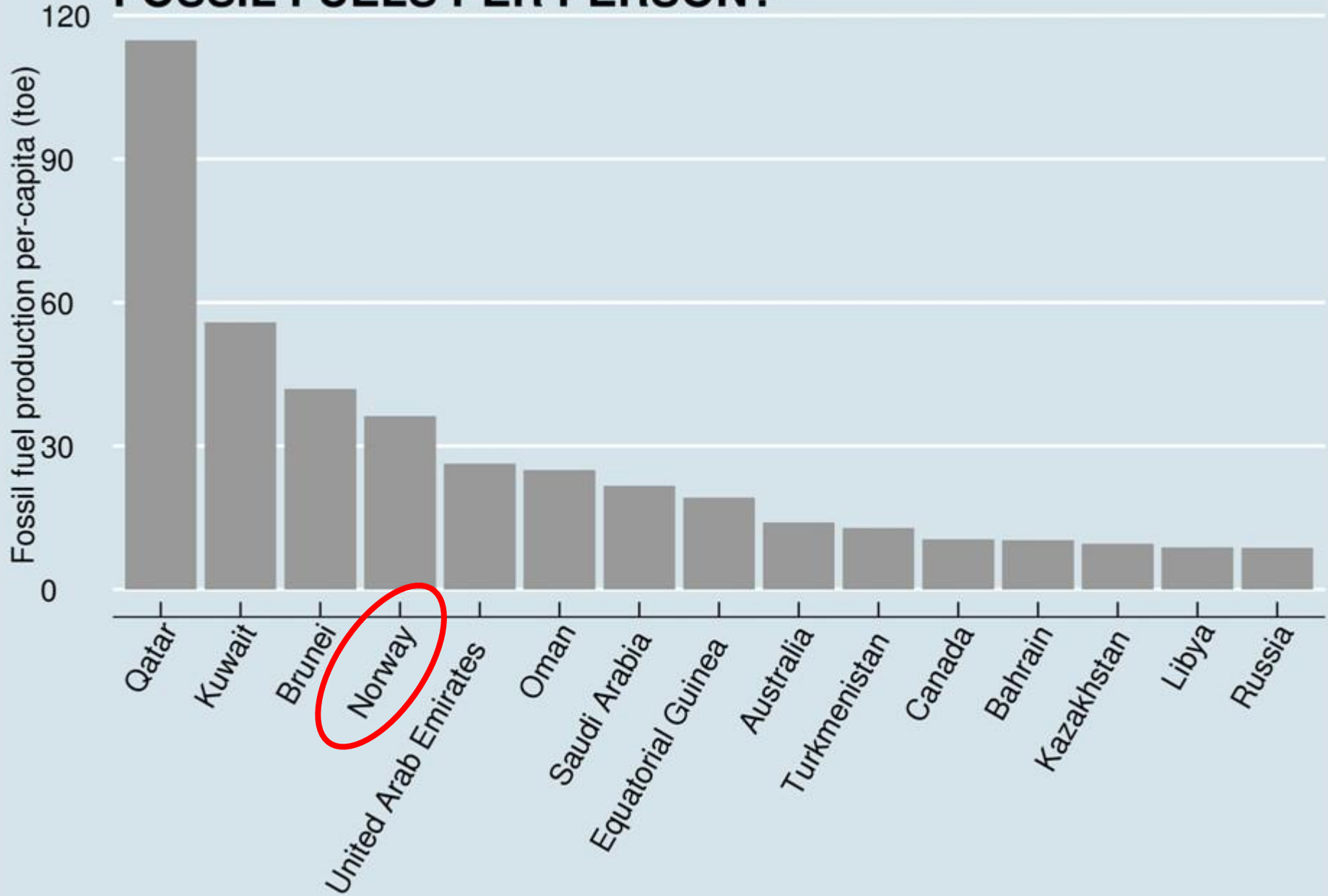
Supply-side

environmental policy

Slides – Part A - 22/3/19

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WHICH COUNTRY PRODUCES THE MOST FOSSIL FUELS PER PERSON?



(data source: BP; Capminder)

Country or region	2 °C with CCS					
	Oil		Gas		Coal	
	Billions of barrels	%	Trillions of cubic metres	%	Gt	%
Africa	23	21 %	4,4	33 %	28	85 %
Canada	39	74 %	0,3	24 %	5,0	75 %
China and India	9,0	25 %	2,9	63 %	180	66 %
FSU	27	18 %	31	50 %	203,0	94 %
CSA	58	39 %	4,8	53 %	8,0	51 %
Europe	5,0	20 %	0,6	11 %	65,0	78 %
Middle East	263	38 %	46	61 %	3,4	99 %
OECD Pacific	2,1	37 %	2,2	56 %	83,0	93 %
ODA	2,0	9 %	2,2	24 %	10	34 %
USA	2,8	6 %	0,3	4 %	235,0	92 %
Global	431	33 %	95	49 %	819	82 %

FSU, the former Soviet Union countries

CSA, Central and South America

ODA, Other developing Asian countries

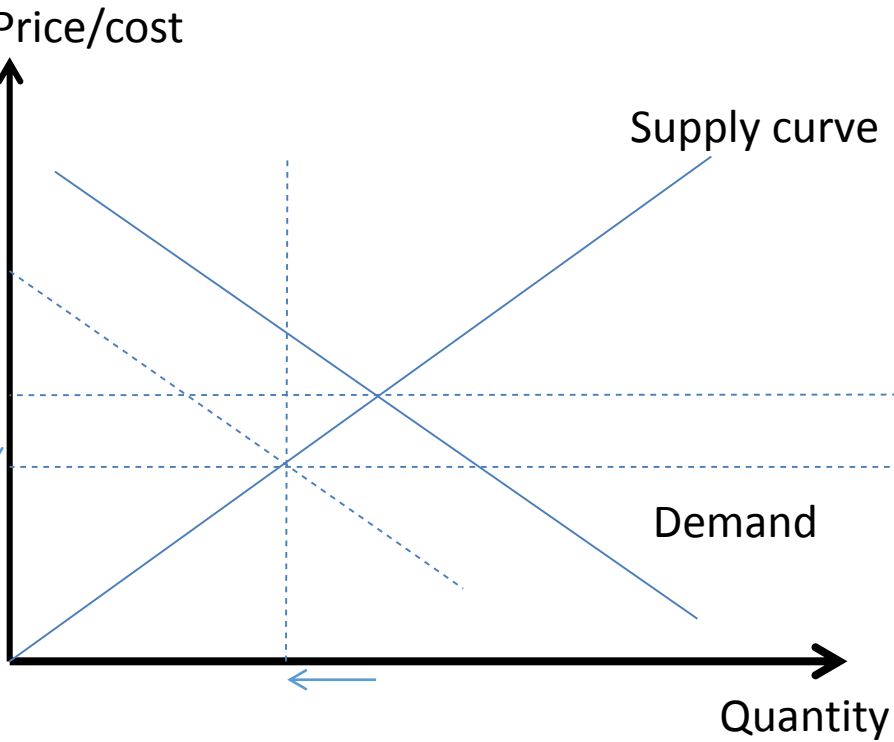
OECD, the Organisation for Economic Co-operation and Development.

A barrel of oil is 0.159 m³

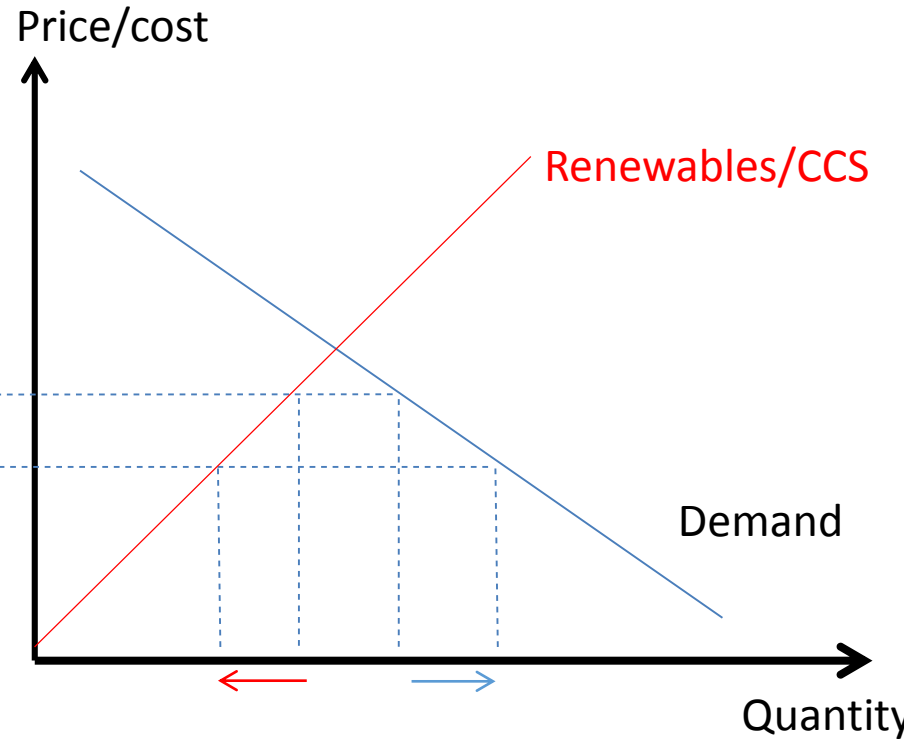
%, Reserves unburnable before 2050 as a percentage of current reserves.

Source: McGlade and Ekins (*Nature* '15)

Carbon Leakage

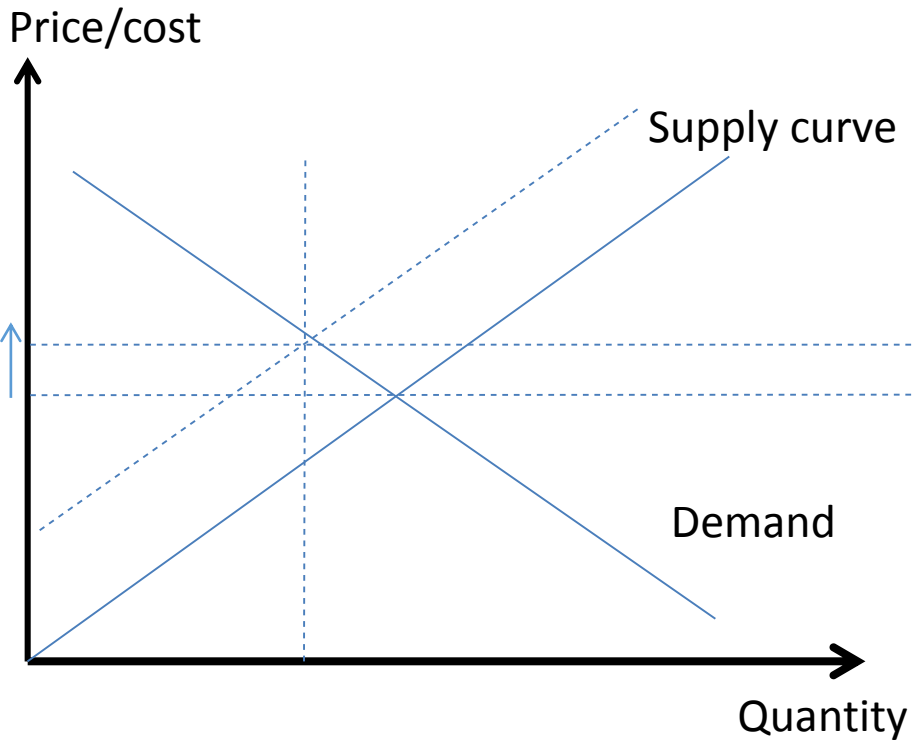


Climate cooperators

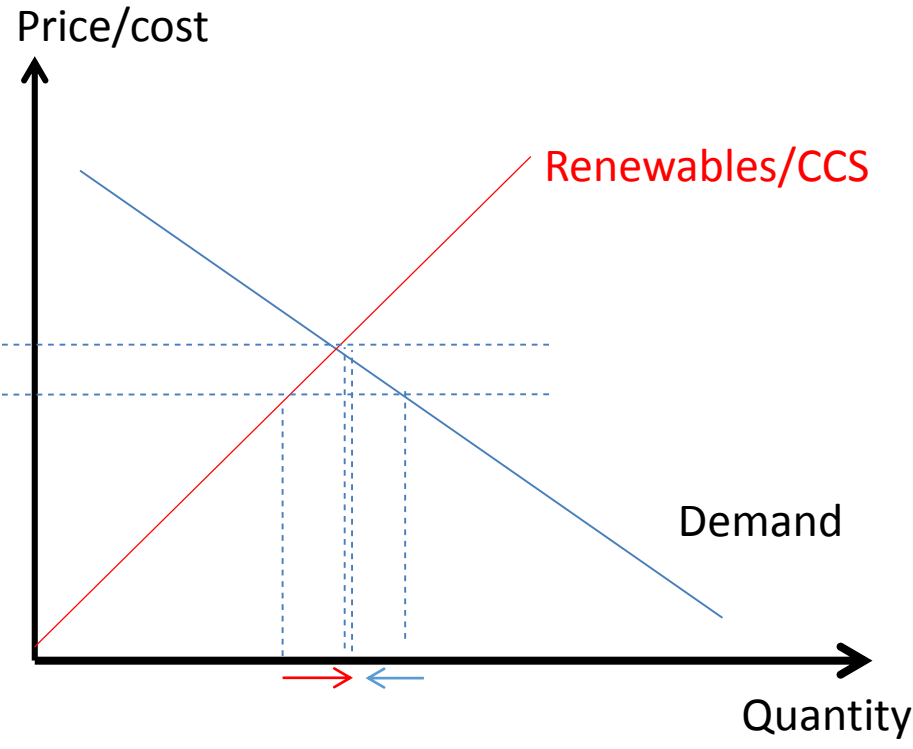


Free riders

Regulating Extraction

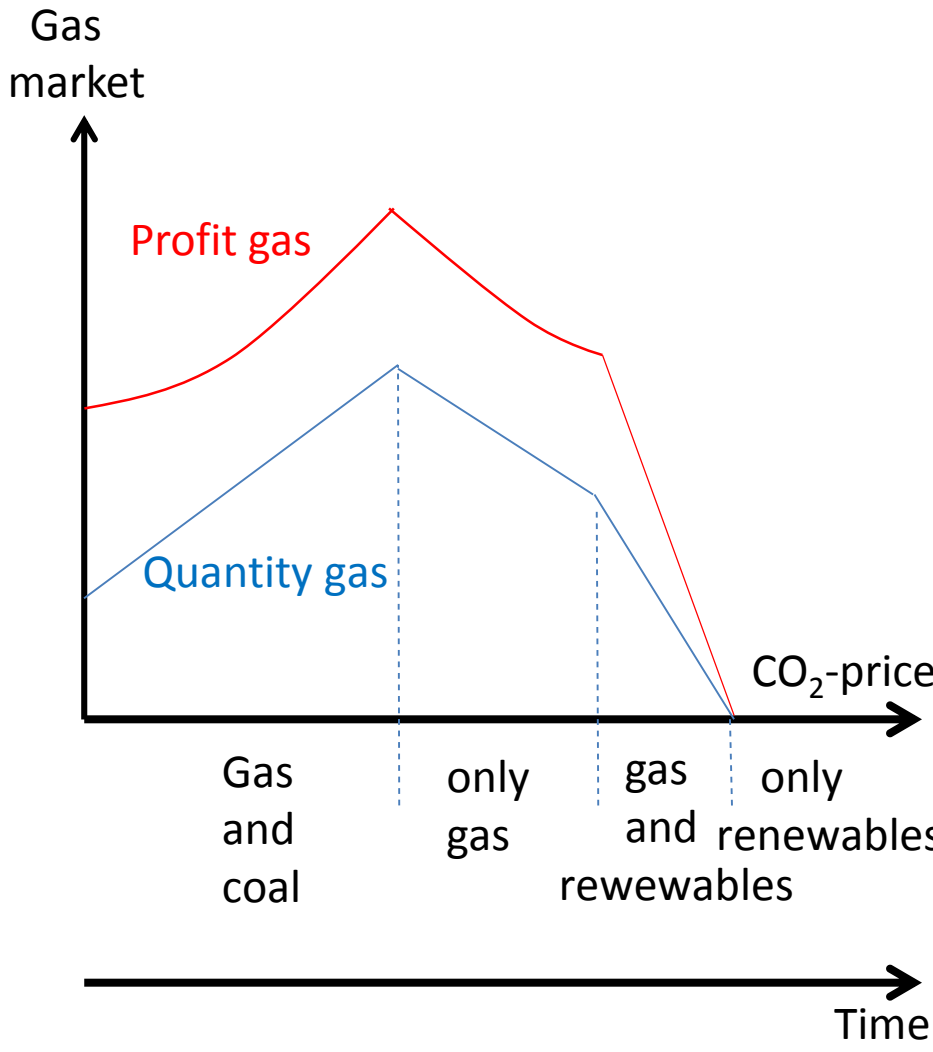
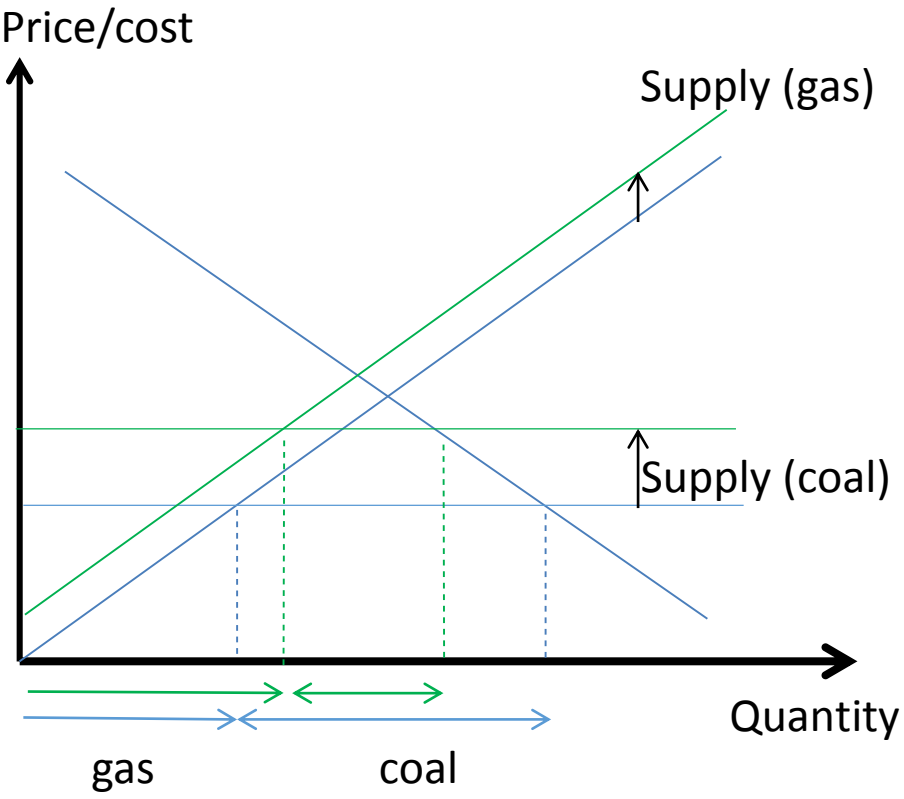


Climate cooperators

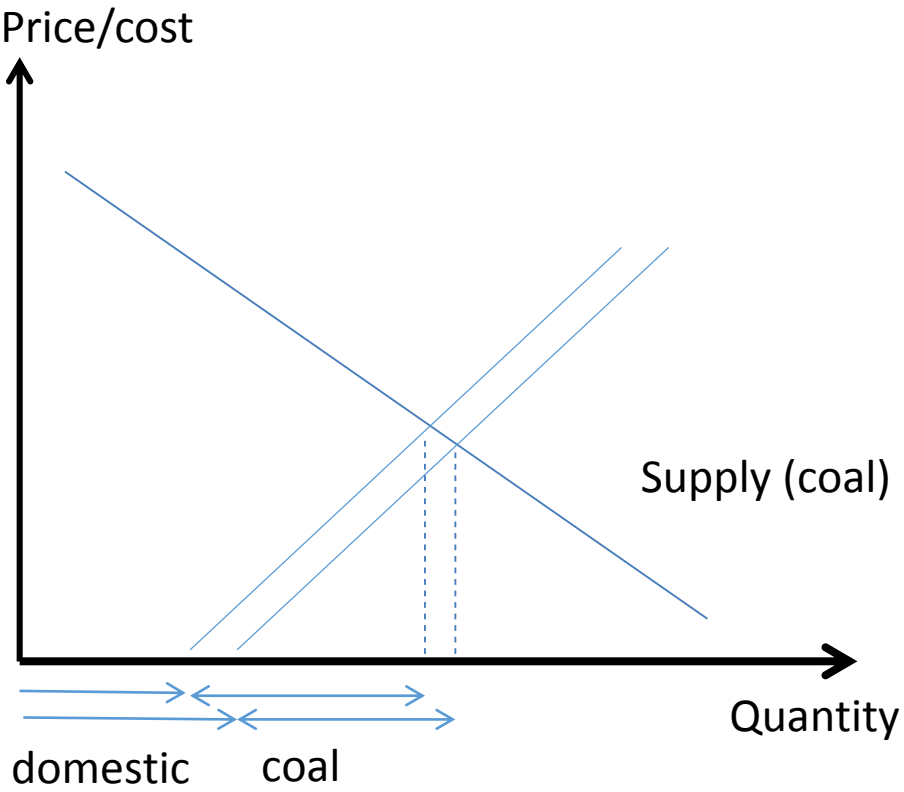


Free riders

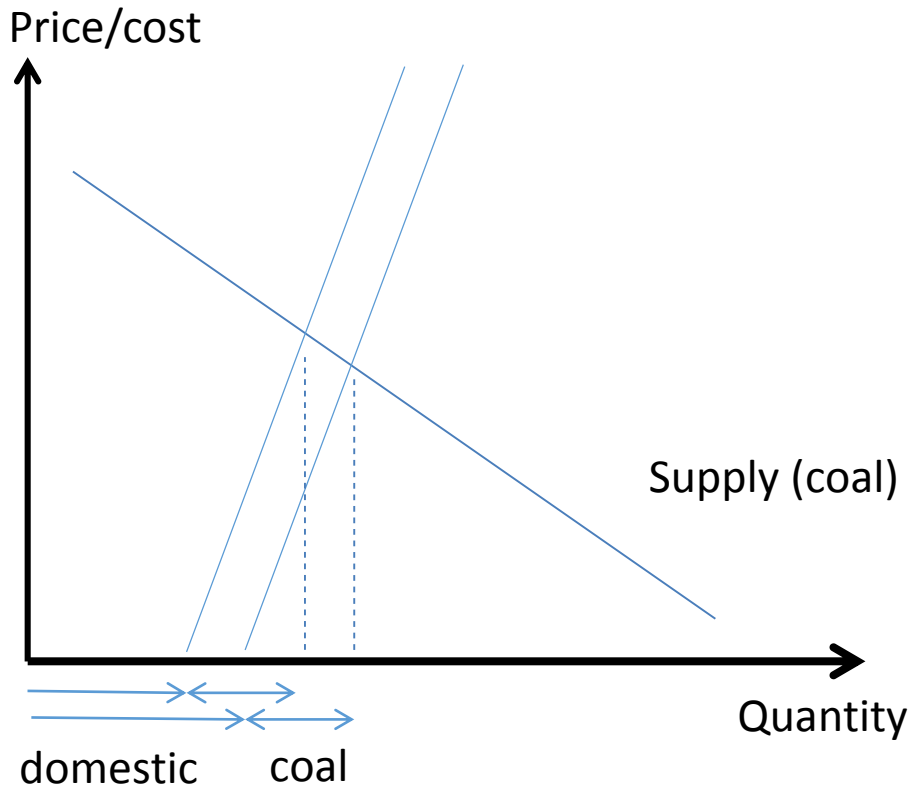
Gas and coal in the same market: With carbon price



Carbon leakage on the supply side



Carbon leakage on the supply side



- There is carbon leakage at supply- as well as the demand side
- Total carbon leakage is minimized by regulating both supply and demand
- The steeper is the supply curve, the more efficient it is to focus on regulating supply (Hoel, 1994)
- The optimal combination should also take into account different emission intensities across various types of fossil fuels (Golombek, Hagem, Hoel, 1995)