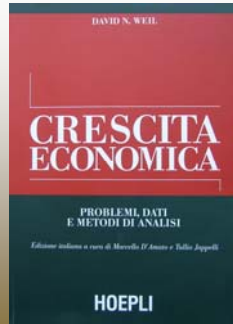


## Capitolo 16

### Risorse e ambiente a livello globale



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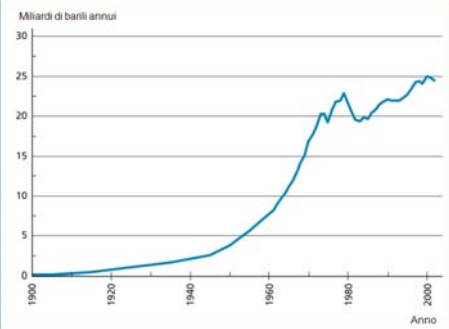
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**Figura 16.1**  
Produzione mondiale di petrolio grezzo, 1900-2002



Fonte: Jenkins (1977), p. 85 e tavola 2, U.S. Department of Energy, Energy Information Administration, cap. 11, 2003.

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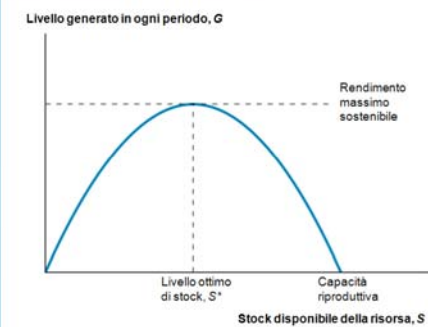
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**Figura 16.2**  
La crescita di una risorsa rinnovabile



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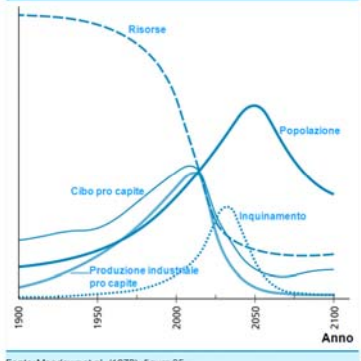
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**Figura 16.3**  
Previsioni di crescita tratte da *The Limits to Growth*



Fonte: Meadows et al. (1972), figura 35

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**Figura 16.4**  
Prezzi delle risorse naturali, 1862-1999



Fonte: Cachin e Mc Dermott, 2002. I dati originali sono tratti dal *The Economist Industrial commodity price index*.

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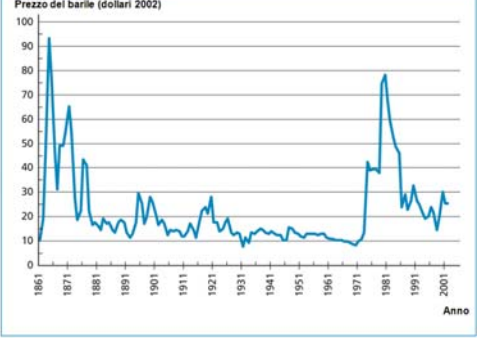
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**Figura 16.5**  
Prezzo del petrolio, 1861-2002



Fonte: BP (2003)

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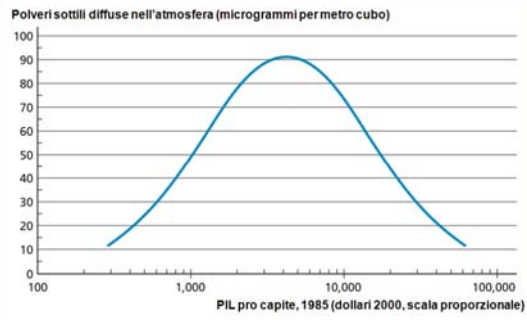
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**Figura 16.6**  
Una curva ambientale di Kuznets



Fonte: Shafik (1994)

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**Figura 16.7**  
Concentrazione di fumo a Londra



Fonte: Biblecomb, 1977, figura 5

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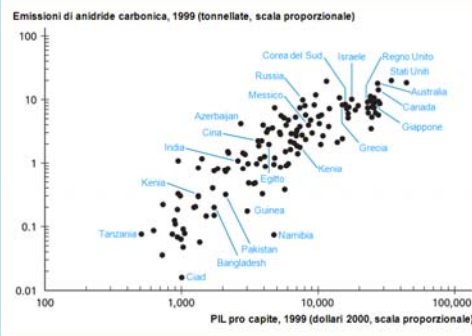
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**Figura 16.8**  
PIL pro capite ed emissioni di anidride carbonica pro capite



Fonte: World Bank, 2003b; Heston et al. 2002

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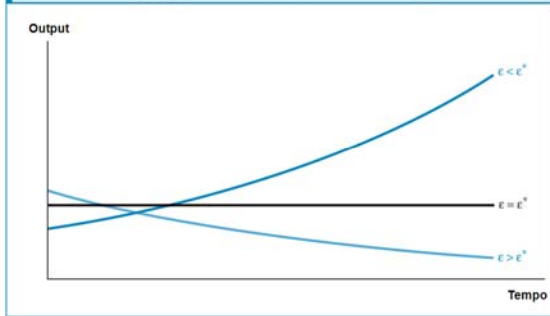
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**Figura 16.9**  
Relazione tra l'impiego delle risorse e la crescita della produzione




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**Tabella 16.1**  
Produzione mondiale di petrolio grezzo e riserve (miliardi di barili)

	1945-1960	1961-1970	1971-1980	1981-1990	1991-2002
Riserve all'inizio del periodo	51	291	611	649	1,009
- Produzione	77	119	205	217	307
+ incrementi di riserve	318	439	242	577	346
=riserve alla fine del periodo	291	611	648	1,009	1,048

Fonte: Adelman, 1995, tabella 2.2; BP (2003)

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**Tabella 16.2**  
Energia impiegata dai diversi gruppi di paesi

Gruppi di paesi	Popolazione (milioni di abitanti)	PIL pro capite (\$)	Utilizzo commerciale energia in termini pro capite (Kg di combustibile equivalente petrolio)	Intensità dell'energia (Kg di combustibile equivalente al petrolio per dollari di PIL)
Reddito basso	2,462	2,110	569	0.27
Reddito medio basso	2,144	4,500	1,206	0.27
Reddito medio alto	497	8,500	1,805	0.21
Reddito alto	950	26,480	5,430	0.21

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**Tabella 16.3**  
Calcolo della riduzione di valore per i 14 minerali di maggiore importanza

Mineral	Consumo mondiale (migliaia)	Prezzo unitario (\$)	Costo produttivo per unità (\$)	Costo al netto dell'estrazione (prezzo-costi di produzione)	Valore delle risorse consumate (consumo per costo al netto dell'estrazione) (mil. di \$)
<b>Petrolio grezzo</b>	3,012,984	113	56.6	56.4	169,932
<b>Gas Naturale</b>	95,925	2,133	958.3	1,174.7	112,683
<b>Carbone</b>	3,967,054	40	32.6	7.4	29,356
<b>Lignite</b>	1,119,937	11	9.4	1.6	1,792
<b>Bauxite</b>	132,315	33.8	14.5	19.3	2,554
<b>Rame</b>	9,539	2,330	1,385.2	944.8	9,012
<b>Minerali ferrosi</b>	604,679	40	23.9	16.1	9,735
<b>Piombo</b>	2,718	679	658.1	20.9	56.8
<b>Nichel</b>	783	6,278	5,239.9	1,038.1	812.8
<b>Fosfato</b>	136,482	38	31.7	6.3	859.8
<b>Stagno</b>	166	5,428	4,209	1,219	202.4
<b>Zinco</b>	6,964	1,033	894.4	138.6	965.2
<b>Oro</b>	1.74	12,346,000	10,822,700	1,523,300	2,652
<b>Argento</b>	10	169,872	129,763.5	40,108.5	401.0
<b>Totale</b>					341,015

Fonte: Weitzman, 1999. Le quantità sono espresse in tonnellate fatta eccezione per il gas naturale misurato in miliardi di piedi. I prezzi corrispondono all'unità della quantità impiegata. I dati si riferiscono al 1994

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