

Microsoft

XELIBRI



VERTU



NOKIA  
诺基亚



BenQ  
享受快乐科技

SIEMENS  
西门子



AMOI 夏新

NEC手机  
NEC手机 知心你我

Panasonic



Haier  
海尔  
Haier 海尔

i-mate



CECT 中电手机  
中国 西 世界 西

SHARP

BlackBerry



Qtek

ASUS



Telit

PANTECH

MEIZU

maxon



Sagem

FUJITSU

emporia

doro



swissvoice  
a public company since 1993

OPSSON  
欧博信



sonim



AIRIS



MARTIN DAWES  
solutions



Acer



TOSHIBA

AMOI

htc  
quietly brilliant  
谦和 智慧

innostream

GIGABYTE



sendo

Poste  
mobile

Bento

amazon



*uleFone*

**CAT**



Google

**ZTE**

ramos

YOTAPHONE

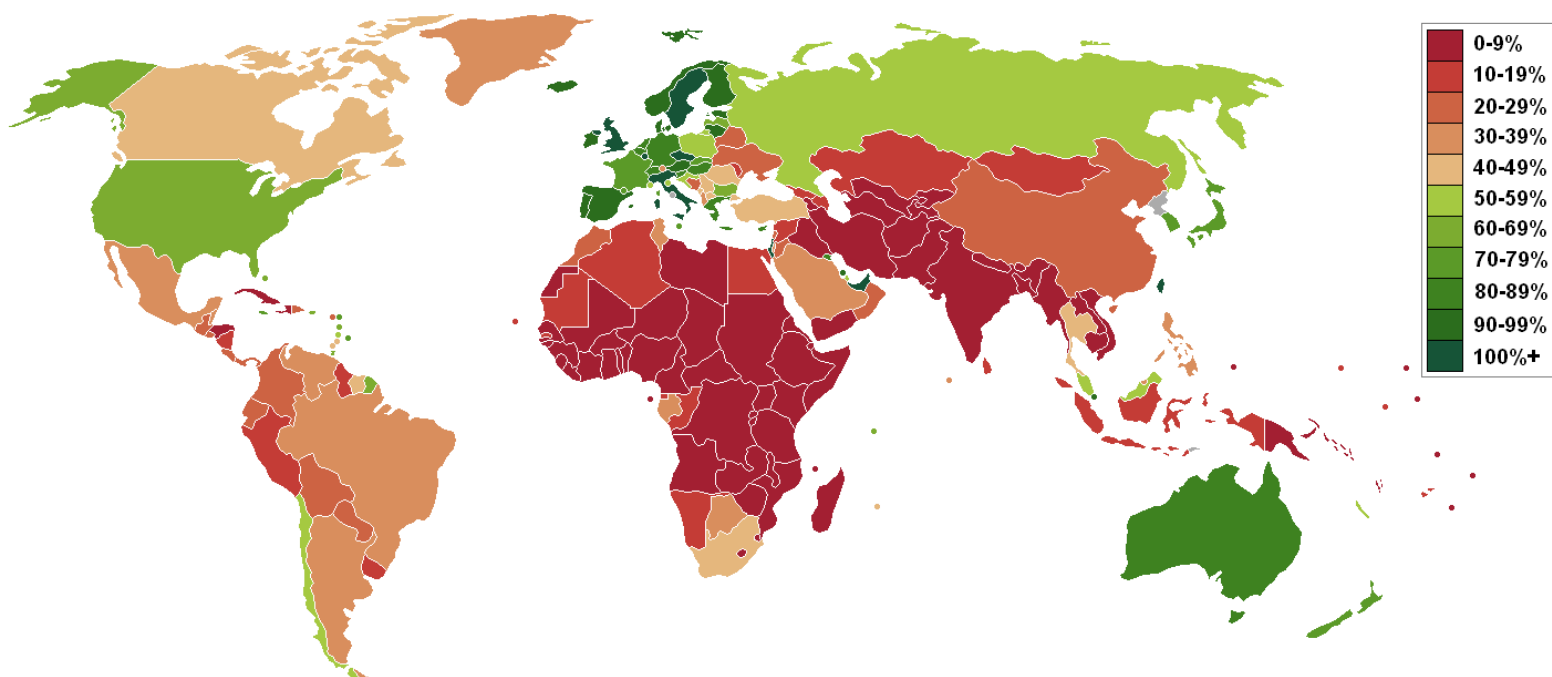
**U2RO**

**W** weimei

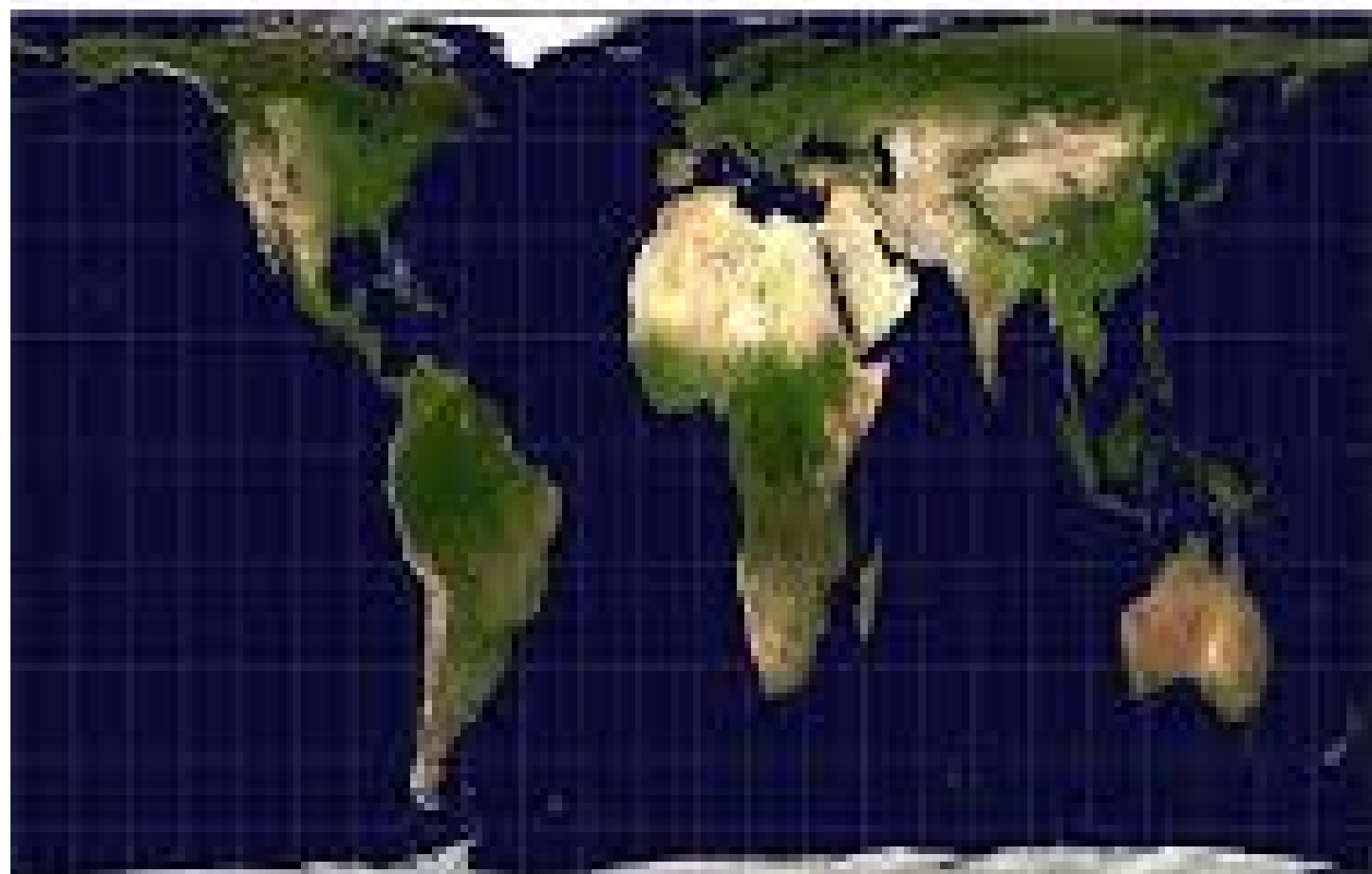
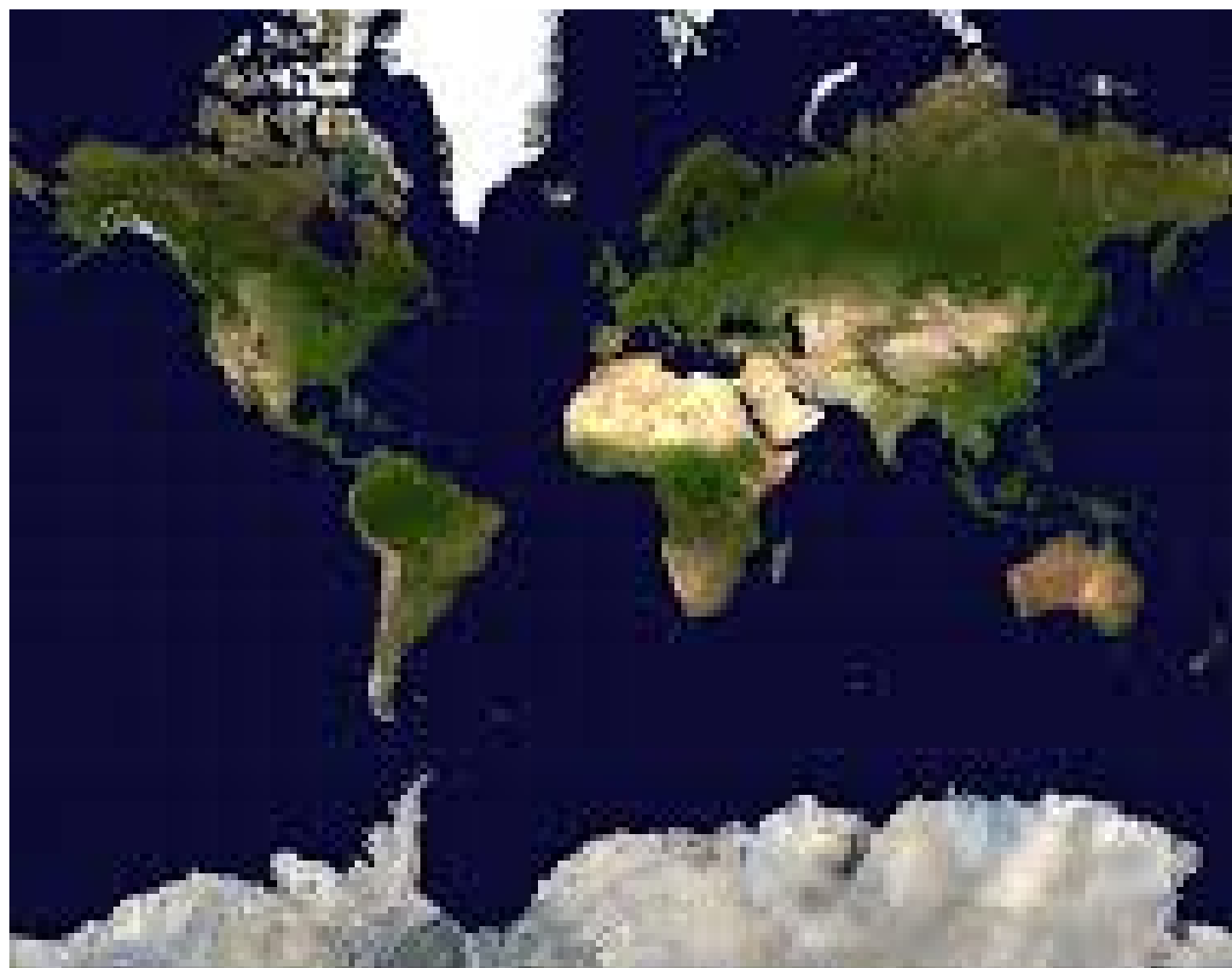
 **TIANHE**

**OP**TV

**UINI**



Mobile subscriptions (millions)





MADE IN



# MADE IN



Workers at an Apple supplier facility in Shanghai assemble parts for the MacBook Pro.





# RISORSE

**Litio**



*Batteria*

**Fosforo**



*Display*

**Berillio**



**Oro**



**Argento**



**Tantalio**



**Piombo**



**Magnesio**



**Palladio**



**Bismuto**



*Circuiti*

**Nichel**



**Cobalto**



**Ferro**



**Rame**



**Alluminio**



**Magnesio**



**Manganese**



**Tungsteno**



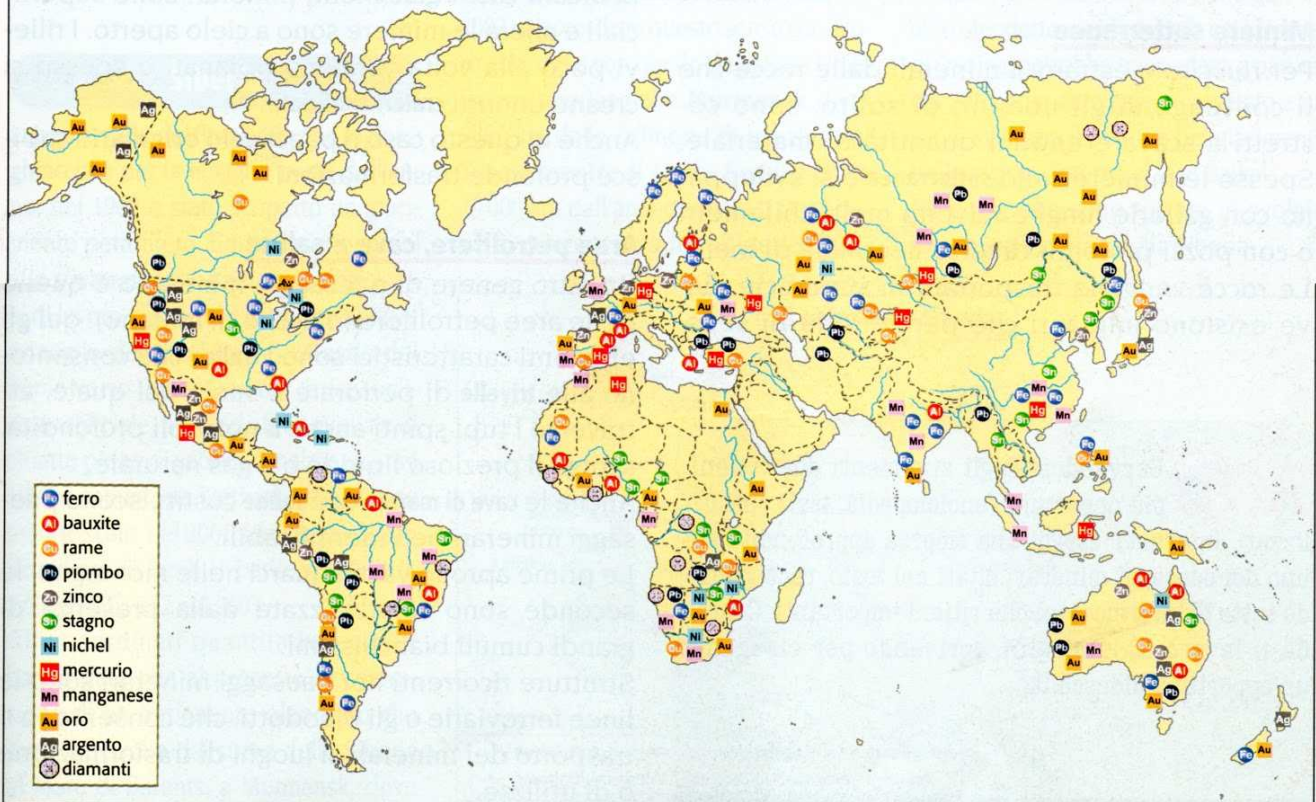
**Stagno**



*Struttura*



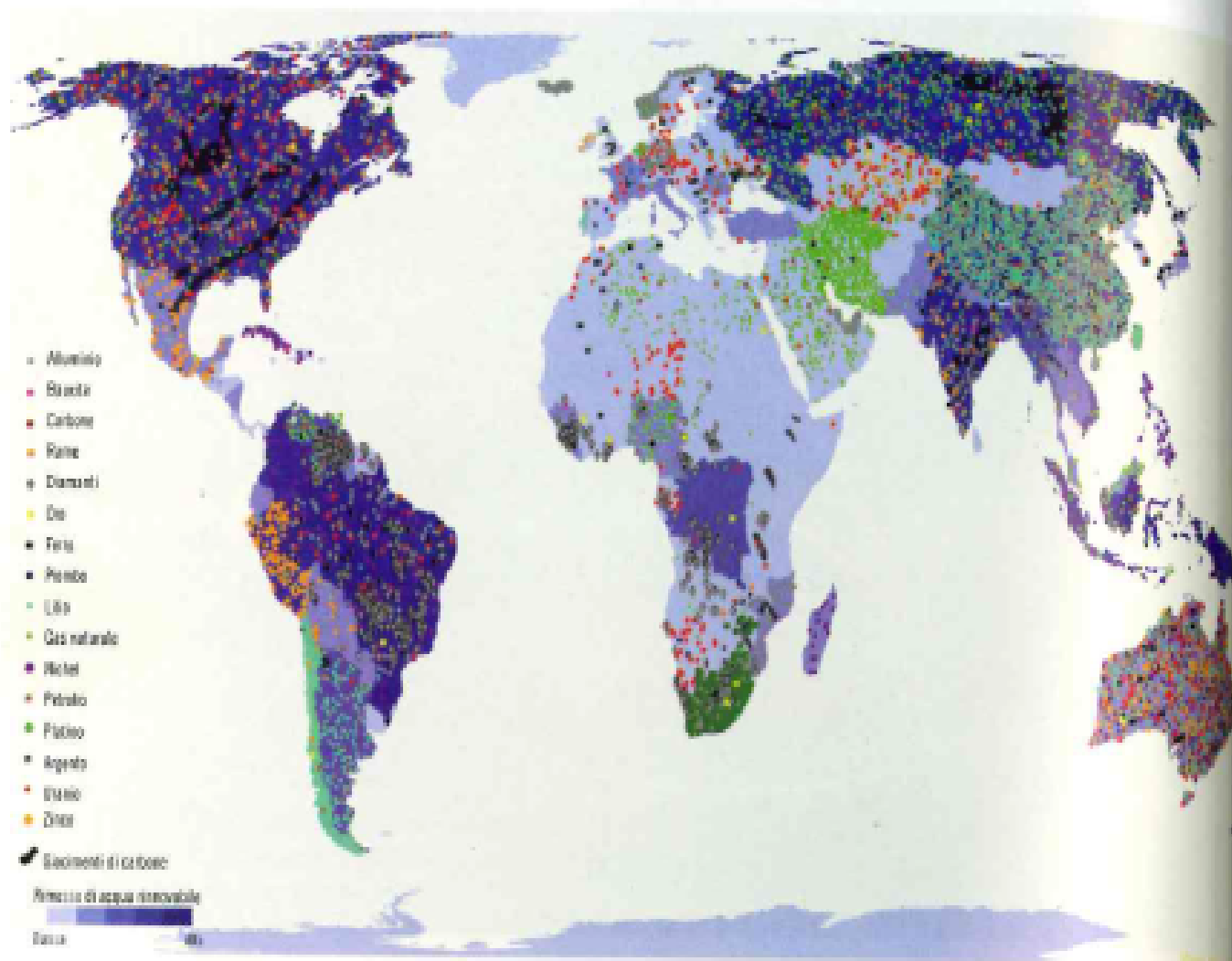
## Minerali metallici e diamanti



## Il mondo del litio



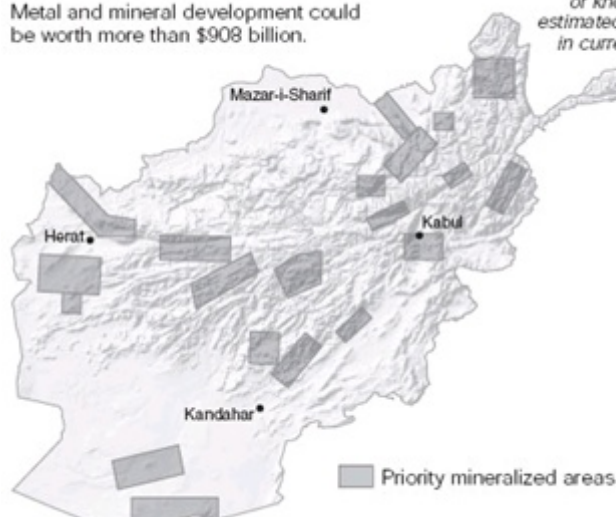
## 28. Il planisfero dei minerali



Le risorse minerali di idrocarburi e minerali trascendono i confini politici. Infrastrutture, mer supply chain le muovono dai luoghi d'estrazione e quelli di consumo.

### Minerals in Afghanistan

Metal and mineral development could be worth more than \$908 billion.



Potential value of known and estimated resources, in current prices	
Iron	\$420.9 bil.
Copper	274.0
Niobium	81.2
Cobalt	50.8
Gold	25.0
Molybdenum	23.9
Rare earth elements	7.4
Asbestos	6.3
Silver	5.3
Potash	5.1
Aluminum	4.4
Graphite	0.7
Lapis lazuli	0.7
Fluorite	0.6
Phosphorus	0.6
Lead and zinc	0.5
Mercury	0.5
Strontium	0.4
Sulfur	0.2
Talc	0.2
Magnesite	0.2
Kaolin	0.1

Sources: U.S.G.S; Afghanistan Geologic Survey; Department of Defense

THE NEW YORK TIMES

## COSA C'E' DENTRO UNO SMARTPHONE



La batteria a ioni di litio racchiude circa 3.5 g cobalto  
1.0 g terre rare (Nd, Eu, Ce e Tb)

Se si potenziassero le tecnologie arrivando ad un tasso di recupero pari a 100% e si considerasse il rifiuto generabile pari al 60% del venduto, si potrebbe raggiungere un valore pari a 117 milioni di euro.  
Se si recuperassero tutti i cellulari venduti in un anno, pari 35 milioni di pezzi, il valore economico salirebbe a 195 milioni di euro.

Fonte: Remedia-Politecnico











# SMALTIMENTO











## CLASSIFICA DEGLI OTTO CELLULARI PIÙ RICICLATI NEGLI USA

● classifica di mercato ● valore di riciclo in dollari

**1** Apple iPhone  
3G 8GB



**2** Apple iPhone  
3GS 16GB



**3** Apple iPhone  
4 16GB



**4** HTC EVO  
4G



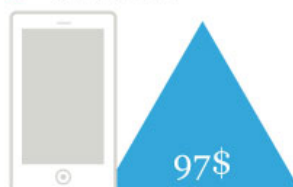
**5** Apple iPhone  
3GS 8GB



**6** Motorola  
DROID X



**7** RIM BlackBerry  
TORCH 9800



**8** RIM BlackBerry  
BOLD 9700



Fonte: 911metallurgist.com



**mazuma**<sup>TM</sup>  
mobile.com



**★**  
***FAIRPHONE***



© 2011 LG Electronics



II Reclaim SPH-M560  
LG Remarq.  
Evergreen SGH-A667



Espresso foto 2015

[http://erbertozani.photoshelter.com/#!/index/G00004fJe\\_IAE164/I0000mW35YosKWUs](http://erbertozani.photoshelter.com/#!/index/G00004fJe_IAE164/I0000mW35YosKWUs)

FOXCONN

<https://www.youtube.com/watch?v=TZhimLYFStk>

<https://www.youtube.com/watch?v=leFuF-zoVzA>

Blood in mobile

<https://www.youtube.com/watch?v=wQhILuBwOtE>

<http://buenobuonogood.com/6597/minerali-in-cambio-darmi-giovane-europeo-acquista-iphone-e-finanzia-stu-pri-in-congo/>

<http://www.e-rifiuti.it/>

Cina e India

<http://www.e-rifiuti.it/rassegna-stampa/rifiuti-elettronici-allarme-rosso-rischiano-anche-cina-ed-india>

Messico

<http://www.bloglobal.net/2012/08/messico-una-potenza-emergente-sullorlo-del-collasso.html>

Guiyu, la città dei rifiuti informatici

<https://www.youtube.com/watch?v=s8pXUrXpj7I>

Rifiuti elettronici RAEE

<https://www.youtube.com/watch?v=zIY2FBumFwc>

Accra-Agbogbloshie

<https://www.youtube.com/watch?v=A1wacY5sMh8>

Destinazione rifiuti

<http://www.tuttogreen.it/dove-vanno-rifiuti-elettronici-di-tutto-il-mondo/>

Africa

<http://www.tuttogreen.it/scandaloso-lafrica-e-usata-come-discardica-per-i-rifiuti-pericolosi-e-per-lelettronica/>

Faiphone derivazione componenti

<http://www.gogreen-lab.com/2017/01/21/metalli-componenti-misteriosi-filiera-cellulari-smartphone/>

<https://open.sourcemap.com/maps/57bd640851c05c0a5b5a8be1>

fairiphone

<https://shop.fairphone.com/en/>