

from e-waste to resources a recipe from Hewlett-Packard

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topics for today's presentation

- hp & the environment
- considerations on e-waste : hazardous ?
- from e-waste to resources: an opportunity !
- future is already today: lessons from emerging market - Africa
- final thoughts & recommendations



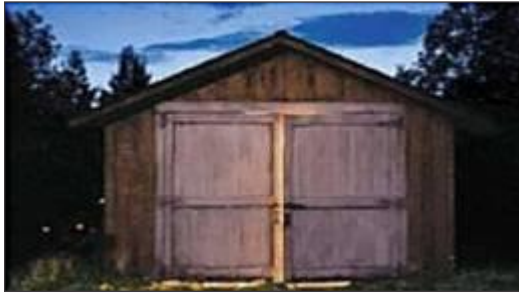
hp : the largest technology company in the world, committed to using its products & services to unleash new possibilities and have a meaningful impact on business & life

- Fortune 10 – U.S.
- Fortune 26 – Global
- Doing business in approximately 170 countries
- 304,000 employees
- 145,000 sales partners
- 210,000 service partners
- 88,000 retail locations



hp's social and environmental long record

Start 1930's



HP's deep-rooted legacy focused on corporate and social responsibility

- 1930's Commitment to the community
- 1950's Global Citizenship objective
- 1970 First environment control coordinator at HP
- 1971 Recycling computer print-outs and punch cards
- 1973 Environmental policy to reduce pollution
- 1975 Energy Conservation Guidelines
- 1976 Van pools in Bay Area

1980's–1990's



Incorporated environmental sustainability to drive change, action, leadership

- **1987 First IT company HW recycling**
- 1987 Computer product recycling
- 1988 Hazardous Waste Minimization Council
- 1989 PVC removed from DeskJet package
- 1991 Planet Partners Program
- 1992 Design For Environment Program; EPA Energy Star Partner
- 1993 Instant-On Technology

2000's–Today



Advancements to expand environmental responsibility in a rapidly changing digital world

- 2001 Bio plastics corn printer shell
- 2002 Supply Chain code of conduct
- 2006 Dynamic Smart Cooling
- 2006 International climate change initiative World Wildlife Fund
- 2007 Recycled 1 billions pounds—Planet Partners
- 2008 RPET from PP used in HP cartridges



recognized for environmental leadership



HP ranked first among 100 Best Corporate Citizens



HP named #1 in environmental ranking of America's 500 largest corporations

CARBON DISCLOSURE PROJECT



HP received Carbon Trust Standard 2009



HP improved its ranking in the Greenpeace Guide to Greener Electronics



HP named to *Fortune* magazine's list of 10 Green Giants



HP ranked #1 in Climate Counts Company Scorecard in Electronics sector
HP named to Supply Chain Top 25 for 2009



HP Wynyard won 2010 Green Enterprise IT Award



HP ranked fourth on 2009 Corporate Sustainability Index Benchmark Report



HP ranked second on the 2009 Top Green-IT Vendors list



HP China named to "50 Green Companies 2010" by *Business Watch* magazine



HP won the Environmental Printing Award from PrintAction for the past five years (2006-10)



HP among the top 50 Fortune 500 companies recognized for green power purchases



HP honored by the 2009 California Waste Reduction Awards Program (WRAP)



HP Clearvu recognized for reducing product packaging materials



hp's recycling leadership by the numbers

55+

Number of countries and territories served by hp's reuse and recycling programs

~ 1 million
tons

total volume of electronic products and supplies hp has recycled to date

300
million

number of inkjet and hp LaserJet cartridges collected through hp Planet Partners program

about e-waste....



40-50 million tonnes
produced WW annually

increasing 3 x faster than
other waste streams

what kind of products come to mind first when talking about e-waste ?



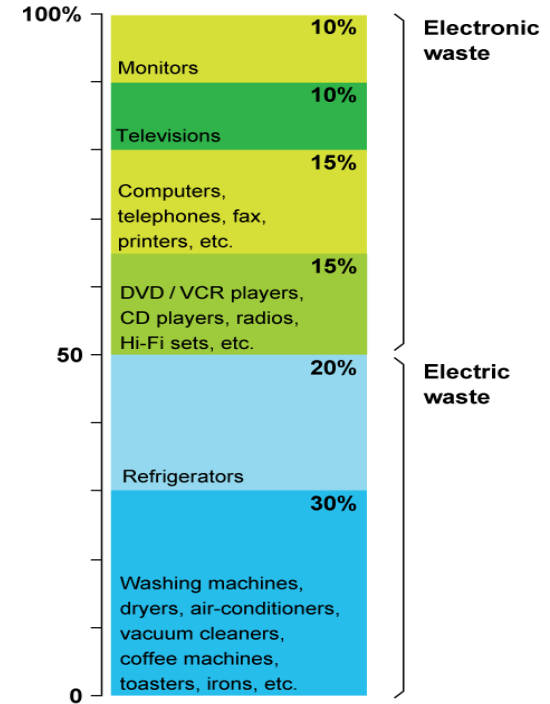
IT equipment

though reality is ...

IT is ~ 20% of the total e-waste stream
fridges, washing machines, TVs = main contributor !



What is e-waste?



Additional categories: lighting equipment (fluorescent tubes); toys, sports and recreational equipment; electric and electronic tools (drills, sewing machines, lawn mowers, etc); surveillance and control equipment; medical instruments; automatic ticket machines.

Source : EMPA Swiss Federal Laboratories for Materials Testing and Research (definition according to the European Union WEEE Directive).

e-waste impacts health & the environment...



... only IF not recycled properly !



hazardous substances in EEE : phasing out...



- RoHS = Restriction of Hazardous Substances in EEE
- regulated in EU since 2006, now becoming a world standard
- banned/ restricted substances
 - lead
 - cadmium
 - mercury
 - hexavalent chromium
 - polybrominated biphenyl (PBB)
 - polybrominated diphenyl ether (PBDE) flame retardants

e-waste as resources ? let's look in the near future





Henry Moore

- market value
- reward offer for returning stolen sculpture
- recycling value



\$ 4 500 000

\$ 7 000

\$ 15 000



and more in the news....



Latest reason for late trains? Stolen signal cable is on its way to China

30th October 2008

RAIL passengers in Scotland face growing disruption following a sudden rise in the theft of copper cables from railway lines.

Soaring global prices for metals, fuelled by growing demand from China, has triggered a surge in metal thefts from Scotland's railway lines.

theguardian

Deaths and disruption as price rise sees copper thefts soar

March 20 2008

With Chinese market fuelling demand, thieves target signal wire, piping in homes, and even bronze statues

Hundreds of trains are disrupted each year because of missing copper from signal cabling and tracks.

The demand for the metal is being driven, say analysts, by an explosion in the Chinese copper market ... consumption is expected to reach 5m tonnes this year. China accounts for more than 22% of world copper demand.



The Daily Telegraph

Lead stolen from church roofs to ship to China

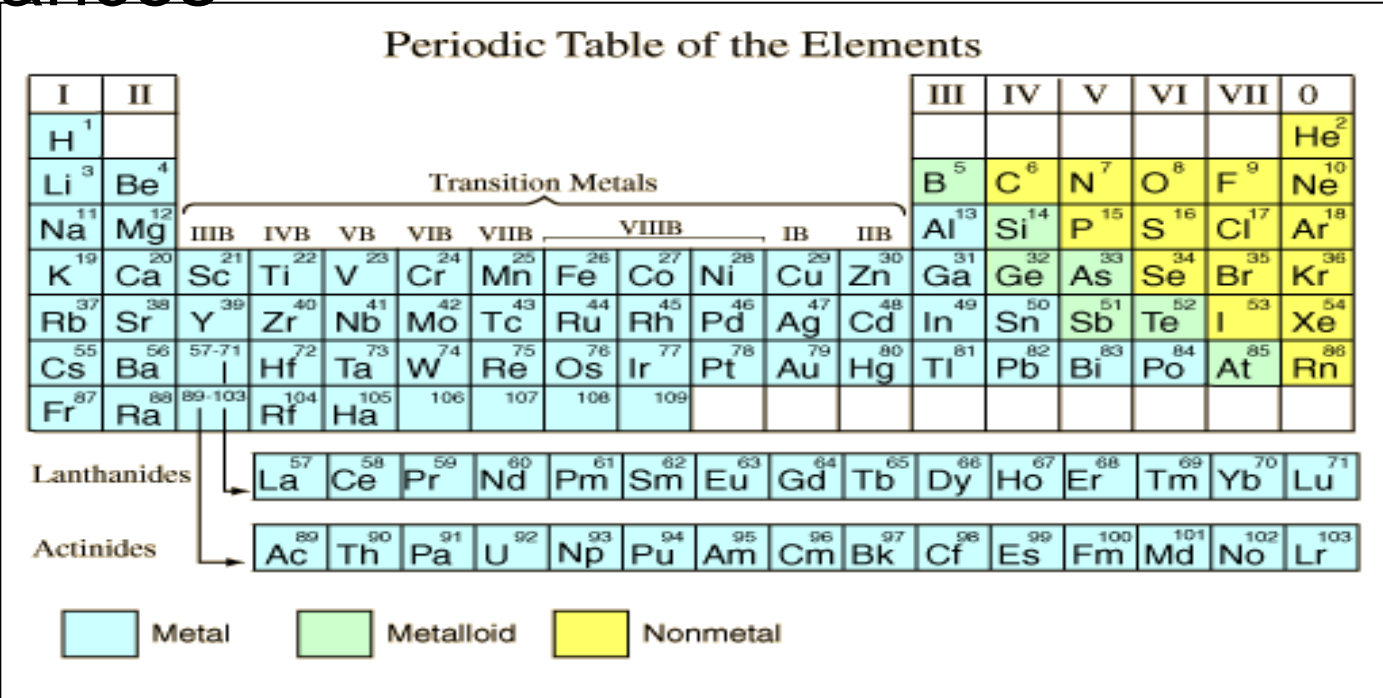
06 Aug 2007

Costly: The damaged roof of the Ragged School Museum, which was left with a repair bill of £20,000

Police have warned of a bizarre crime wave sweeping Britain as thieves strip millions of pounds' worth of metal off buildings to ship to China and other countries where demand is soaring.



electronics use ~ 50% of chemicals base substances

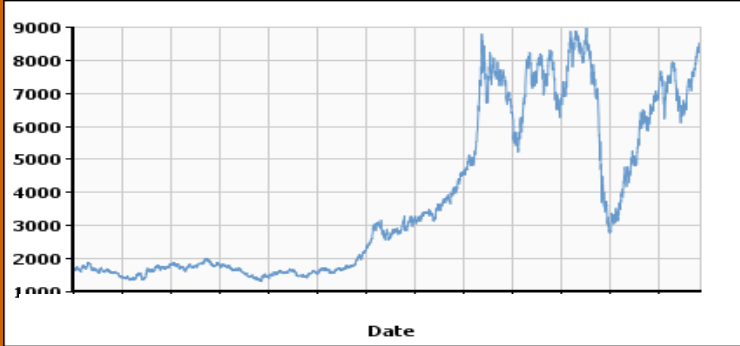


some of them (technology metals) are rare and key to functionality

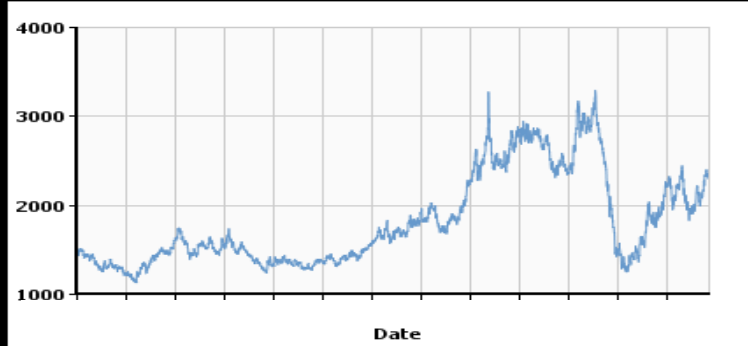


price of raw materials are increasing

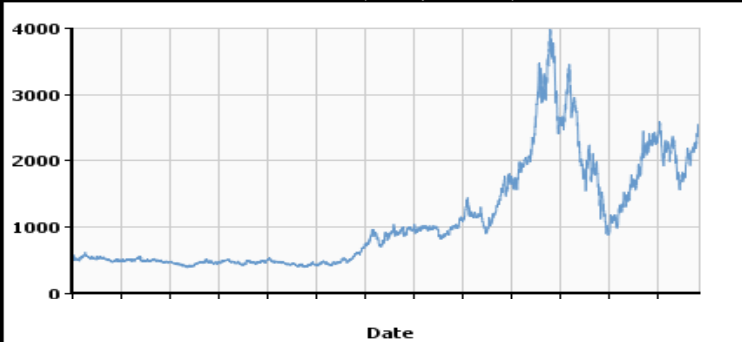
Copper | 1998-2010 (US \$ per tonne)



Aluminium | 1998-2010 (US \$ per tonne)



Steel | 1998-2010 (US \$ per tonne)

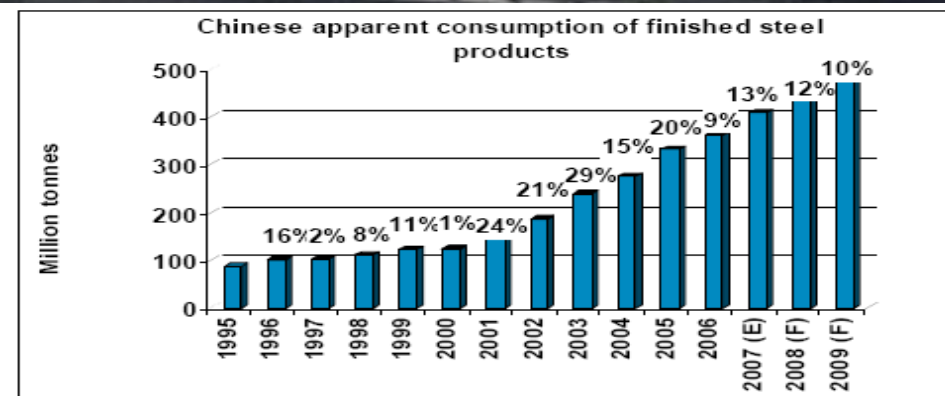
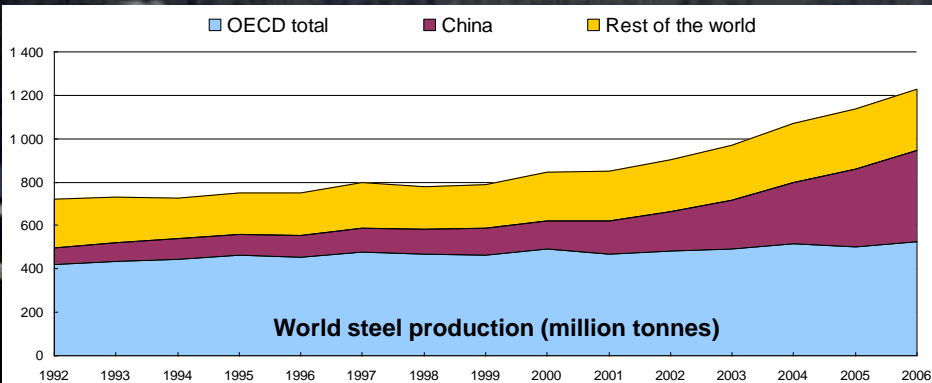


Gold | 2000-2010 (US \$ per ounce)



because demand increases...

China's steel production is now running at 220 million tons per annum, more than the United States and Japan combined.



and population is growing fast

in billion

	World Population	Population with income to buy electronic products / cars
1950	2.2	0.3
2010	6.7	3.0
2040	9.0	6- 7.5

pulling the demand for raw materials...



higher costs to extract raw material ...

copper

year	Minimum M Con
1900	%
	2 %
2010	<1 %

7 times the amount of ore to be processed to produce
1 ton of copper compared to 100 years ago

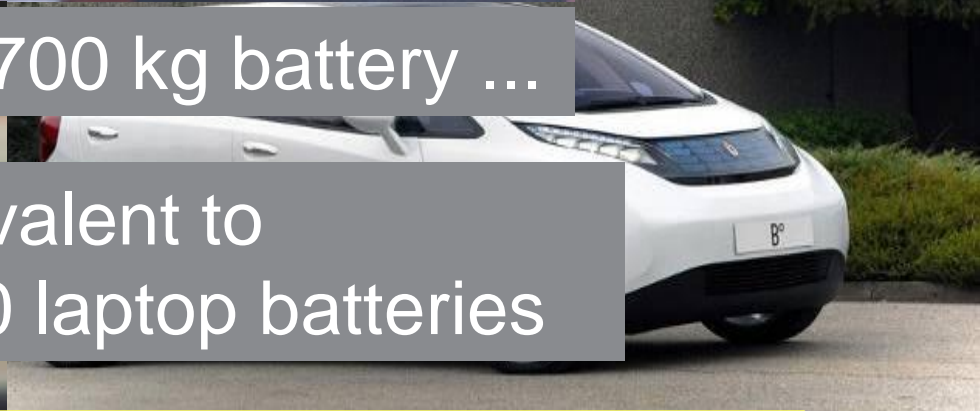
* for profitable mining

Energy Cost are a major element now....





what do all these cars have in common ?



... a 400 - 700 kg battery ...

equivalent to 2,000 – 3,500 laptop batteries

→ competition between industry sectors



1st global landfill mining

CONFERENCE & EXHIBITION 2008

www.landfill-mining.co.uk

From its origins in the 1950s, landfill mining is an idea whose time has come. Even aside from their valuable methane resources, landfills should now be seen as valuable repositories for a wealth of higher value materials. Attendance at this event will help landfill operators to extend their business models, and to extract the maximum value from their assets. Networking opportunities at the event will be superb, and the adjacent exhibition will allow operators to source the most cost-effective equipment and advice for landfill mining and monetisation.

Treasure from trash

Who should attend?

- International delegates
- local authorities
- landfill operators
- legislators
- stakeholders
- equipment producers
- academics
- hydrologists

Resource users include:

- cement and lime producers
- power producers



Landfill Reclamation

This fact sheet describes new and innovative technologies and products that meet the performance standards of the Criteria for Municipal Solid Waste Landfills (40 CFR Part 258).

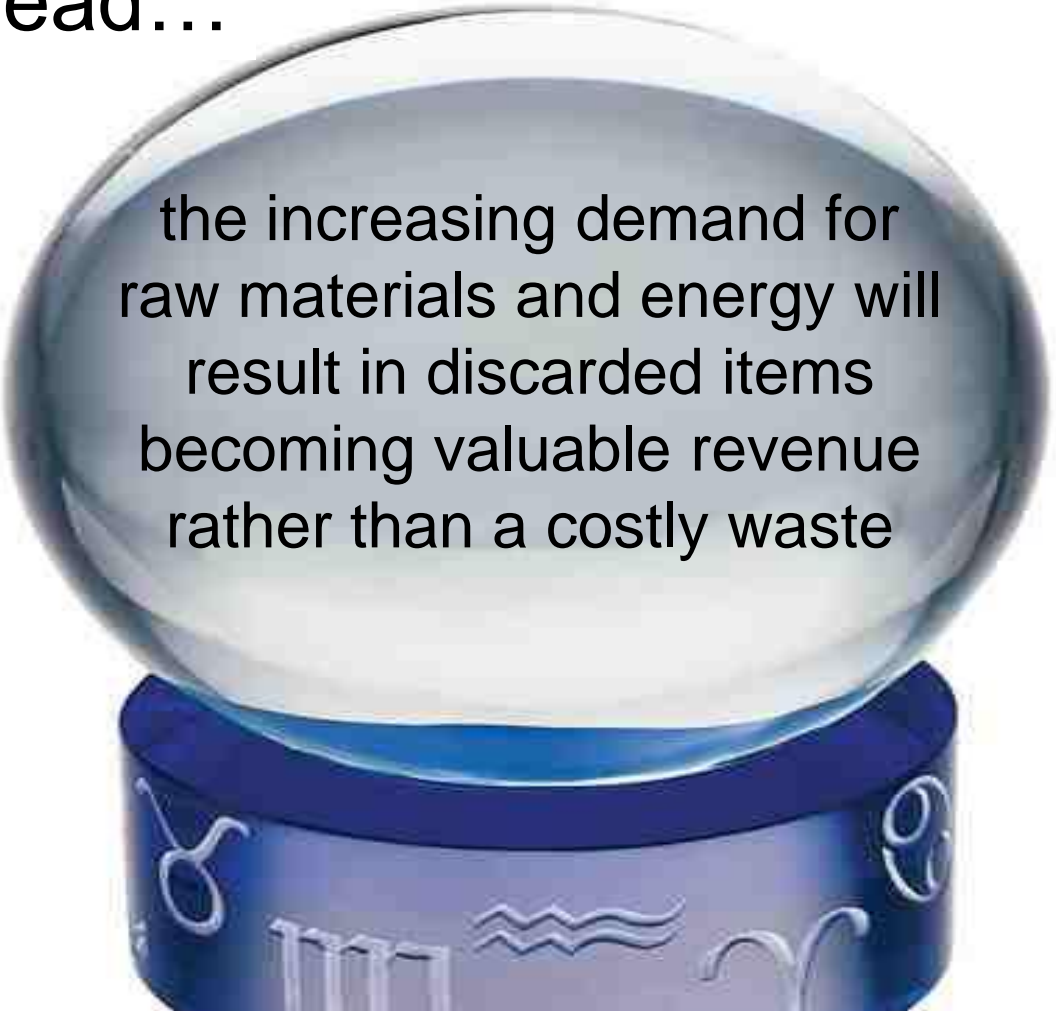
Landfill reclamation is a relatively new approach used to expand municipal solid waste (MSW) landfill capacity and avoid the high cost of acquiring additional land. Reclamation costs are often offset by the sale or use of recovered materials, such as recyclables, soil, and waste, which can be burned as fuel. Other important benefits may include avoided liability through site remediation, reductions in closure costs, and reclamation of land for other uses.

Despite its many benefits, some potential drawbacks exist to landfill reclamation. This technology may release methane and other gases, for example, that result from decomposing wastes. It may also unearth hazardous materials, which can be costly to manage. In addition, the excavation work involved in reclamation may cause adjacent landfill areas to sink or collapse. Finally, the dense, abrasive nature of reclaimed waste may shorten the life of excavation equipment. To identify potential problems, landfill operators considering reclamation activities should conduct a site characterization study.

Landfill reclamation projects have been successfully implemented at MSW facilities across the country since the 1980s. This fact sheet provides information on this technology and presents case studies of successful reclamation projects.

Project	Operation Start	Mined Area	Use of Recovered Material	Main Objectives
Naples Landfill (Collier County, Florida)	April 1986 (ongoing).	10 acres	Cover material.	Decrease liability. Recover soil.
Edinburg Landfill (Edinburg, New York)	Dec. 1990 and June 1991 (both completed).	1 acre		Alternative to landfill closure.
	Aug. - Sept. 1992 (completed).	1.6 acre	Construction fill.	Reduce landfill footprint.
Frey Farm Landfill (Lancaster County, Pennsylvania)	Jan. 1991 - July 1996 (completed).	300,000 to 400,000 cubic yards	Waste-to-energy fuel. Cover material.	Recover fuel. Reuse of landfill capacity.

looking ahead...

A crystal ball on a blue base with zodiac signs. The text inside the crystal ball reads: "the increasing demand for raw materials and energy will result in discarded items becoming valuable revenue rather than a costly waste".

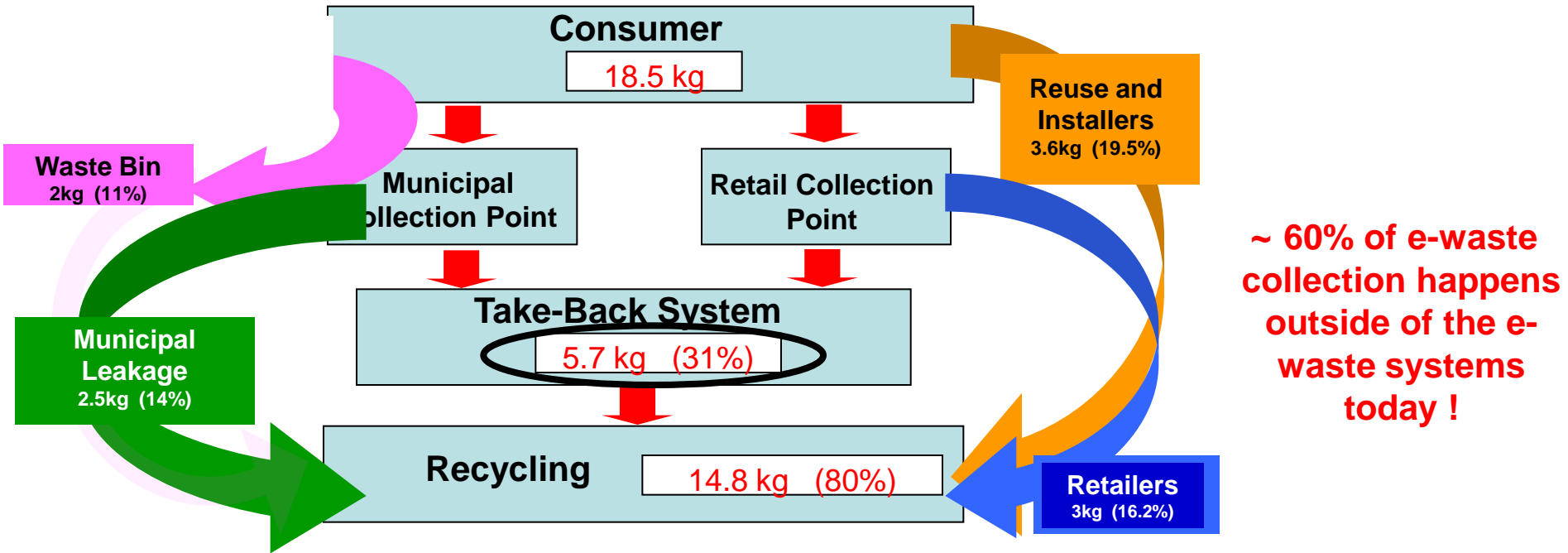
the increasing demand for
raw materials and energy will
result in discarded items
becoming valuable revenue
rather than a costly waste

e-waste : horizon 2020...



all e-waste will be collected and treated
by 3rd parties as a profitable business

e-waste flows in the EU (example from the NL)



Source: Witteveen+Bos, Onderzoek naar complementaire afvalstromen voor e-waste in Nederland, 10 April 2008



e-waste : horizon 2020...

upcoming legislation need to be based on
completely different models than the
present EU 'WEEE' Directive



facts about e-waste today in Africa

... hp's view



- sources: legal imports of 2nd hand products **and** new products, donation...and illegal import of e-waste
- imports of 2nd hand products help bridge the 'digital divide' (~ 30 to 50% 'market share' in Lagos/Nigeria)
- e-waste is mainly handled by the informal sector
 - collection is OK
 - backyard recycling creates health & environmental hazards
- recycling industry is fragmented & under-developed
- no specific legislation framework yet; weak enforcement



hp's vision



- collection & recycling of e-waste, based on international standards can/will be a profitable business
- already the case in countries with low labour rates today



how to tackle the “issue” - hp’s recipe



1. develop business models for financial self sustainable e-waste structure including the informal sector
2. drive collection of complete products as much as possible
3. create adequate dismantling facilities
 - apply health & environmental treatment standards ← THE issue
 - dismantle into basic fractions to be treated in industrial entities
4. provide input/support to national authorities (regulator)
 - focus on core requirements only : producer responsibility, health & environmental standards, awareness & education



hp's engagement in e-waste projects in Africa

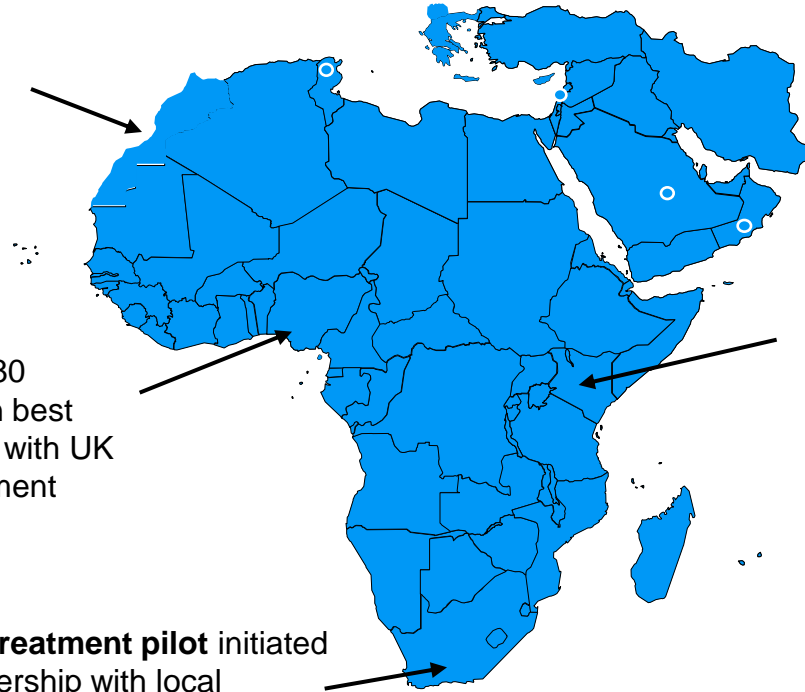
Morocco : hp-GTZ partnership to develop a **country wide** e-waste take back and **recycling system**. Phase 1 feasibility study results / end 2010



Nigeria : **training workshop** for 80 delegates from in formal sector on best practice for recycling. Partnership with UK and Nigerian universities, government agencies and industry.



RSA : **e-waste treatment pilot** initiated in 2008, in partnership with local recycling businesses. Results /1st year: various revenue streams analysed



Kenya : **recycling facility** in Mombassa in partnership with Camara by end of 2010



hp demonstration project - Kenya, Nov 2010

- launch of the **EAST AFRICAN COMPUTER RECYCLING** 
- a collaboration project  
- operated by CAMARA in Mombasa/Kenya
- objective: capture 20% of Kenya e-waste, be self-sustainable



a major issue : enforcement authorities have little/no knowledge on the topic...



resulting in ...

- ban of e-waste 'export' & 'import' : may limit the ability to play a continent / global play to develop the e-waste recycling industry
- tax/ban imports of 2nd hand products: may result in killing a real market demand, WITHOUT solving the issue of e-waste arising locally





as a summary

- e-waste is a valuable resource
- treatment of local e-waste can/will generate sustainable jobs in Africa while protecting health & environment
- EU WEEE directive is not the solution
- running research & practical studies in // is key to success & credibility
- hp willing to help !



thank you for your attention

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