E-waste: Annual gold, silver 'deposits' in new high-tech goods worth $21B; less than 15% recovered

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A staggering 320 tons of gold and more than 7,500 tons of silver are now used annually to make PCs, cell phones, tablet computers and other new electronic and electrical products worldwide, adding more than $21 billion in value each year to the rich fortunes in metals eventually available through "urban mining" of e-waste, experts say.

Manufacturing these high-tech products requires more than $16 billion in gold and $5 billion in silver: a total of $21 billion -- equal to the GDP of El Salvador -- locked away annually in e-products. Most of those valuable metals will be squandered, however; just 15% or less is recovered from e-waste today in developed and developing countries alike.

Electronic waste now contains precious metal "deposits" 40 to 50 times richer than ores mined from the ground, experts told participants from 12 countries at last week's first-ever GeSI and StEP e-Waste Academy for policymakers and small businesses, co-organized in Accra, Ghana by the United Nations University and the Global e-Sustainability Initiative (GeSI).

Quantities of gold, silver and other precious metals available for recovery are rising in tandem with the fast-growing sales of electronic and electrical goods, including the new category of tablet computers (with 100 million in estimated unit sales this year, a figure expected to almost double in 2014).

With respect to gold alone, electronic and electrical products consumed 5.3% (197 tons) of the world's supply in 2001 and 7.7% last year (320 tons -- equal to 2.5% of the US gold reserves in the vaults of both Fort Knox, Kentucky, and the Federal Reserve Bank of New York).

In that same decade, even as the world's annual gold supply rose 15% -- from about 3,900 tons in 2001 to 4,500 tons in 2011 -- the price per ounce leapt from under $300 to more than $1,500.

Thanks to the volume and value of precious metals it contains, the percentage of e-waste collected in developing countries is estimated to be as high as 80-90% in countries with an active informal recycling sector.

However, some 50% of the gold in e-waste is lost in crude dismantling processes in developing countries (compared with 25% in developed countries); just 25% of what remains is recovered using backyard recycling processes (compared with 95% at a modern high-tech recycling facility).

The bottom line in rich and poor countries alike: just 10-15% of the gold in e-waste is recovered; at least 85% is lost.

"Efforts such as the GeSI and StEP e-Waste Academy help create networks among policy-makers and other relevant stakeholders for sharing information, ideas and best practices to foster real e-waste solutions and enable the transition to a closed loop and green economy," said Luis Neves, Chairman of GeSI.

"More sustainable consumption patterns and material recycling are essential if consumers continue to enjoy high-tech devices that support everything from modern communications to smart transport, intelligent buildings and more."

"Rather than looking at e-waste as a burden, we need to see it as an opportunity," Alexis Vandendaelen of Belgium-based Umicore Precious Metals Refining told the participants.

He recommended replacing notions of "waste management" with "resource management," to enlarge a focus on the mass and volume of used materials to include the quality of certain waste fractions, and to use solutions appropriate to local circumstances combined with internationally available strengths to pursue efficient, environmentally-sound recycling.

A "best of two worlds" approach is needed for domestically-generated e-waste in developing countries: efficient local pre-processing followed by maximum recovery of materials and proper treatment of residual waste in countries with the best technologies for the job, with proceeds shared fairly and equitably.

Chris Slijkhuis of MBA Polymers, a global firm specialised in recycling plastics, noted that a ton of plastic created through recycling requires one tenth as much water and energy as new plastic, and produces one to three fewer tons of carbon dioxide (CO2), the greenhouse gas largely blamed for climate change.

Recycling just half the plastics in e-waste from the European Union alone would save 5 million kilowatt hours of energy, over 3 million barrels of oil in feedstock and nearly 2 million tons of CO2 emissions.

"One day -- likely sooner than later -- people will look back on such costly inefficiencies and wonder how we could be so short sighted and wasteful of natural resources," said Ruediger Kuehr, Executive Secretary of the Solving the E-Waste Problem (StEP) Initiative.

"We need to recover rare elements to continue manufacturing IT products, batteries for electric cars, solar panels, flat-screen televisions and other increasingly popular products," said Dr. Kuehr who is also head of the responsible Operating Unit of United Nations University, based in Bonn, Germany.

Beyond the lost opportunity to recover valuable resources -- which also include copper, tin, cobalt, and palladium -- discarded consumer electronics that end up in

landfills or are exported to developing countries create potential health and environmental hazards, he added.

Said André Habets, head of research and development at the NVMP Association in the Netherlands, a sponsor of the academy: "We commit a lot of effort to trying to ensure that the e-waste generated in our country remains here and is recycled here, and we advocate tough measures against the illegal export of e-waste. Each of the parties involved needs to take its responsibility to solve the e-waste problem. If an actor doesn't do this voluntarily, the relevant responsibility needs to be established by law."

About the GeSI and StEP e-Waste Academy

The e-Waste Academy for policymakers and small and medium enterprises is a pioneering event that aims to foster and sustain multi-stakeholder partnerships and collaboration on e-waste policy and management, looking at the e-waste issue in its entirety, rather than through the lens of a specific discipline.

In addition to expert lectures and presentations on topics ranging from e-waste related policy and sociology issues to technology and economics, the week-long academy program includes group projects and site visits.

Participants included representatives from small and medium enterprises in West Africa and Latin America -- mostly recyclers and refurbishers -- as well as policymakers and government officials.

Co-organized by the UNU-hosted Solving the E-waste Problem (StEP) initiative and the Global e-Sustainability Initiative (GeSI), the academy was also sponsored by the Netherlands-based NVMP Association, representing six organizations directly involved in e-waste regulation and legislation in the EU, and the UN Industrial Development Organization (UNIDO). UNU's Institute for Natural Resources in Africa (UNU-INRA) hosted the event June 25-29 in Accra, Ghana. For more information: www.ewasteacademy.org.

To build on this year's event, organizers plan to conduct an e-waste academy in a different world region in 2013. Several national governments have expressed interest in hosting the event.

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