

The Meaning of 2020 Tokyo Urban Mined Olympic Medals

Kohmei HALADA



Medals for 2020 Tokyo Olympics to be made of recycled metal

AP 2:06 a.m. ET April 1, 2017



(Photo: The Associated Press)

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TOKYO (AP) — Organizers of the 2020 Tokyo Olympics have begun collecting discarded electronic devices that will be used in the production of the medals to be awarded to athletes.

Japanese Olympic swimmer Takeshi Matsuda and Paralympian Takuro Yamada attended a ceremony in downtown Tokyo on Saturday to kick off the campaign.

Die Welt neu entde



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SPORTS NEWS | Wed Feb 1, 2017 | 5:28am EST

Tokyo Olympic medals to be made from recycled donated metal



FILE PHOTO: A woman is silhouetted against a monitor showing Tokyo 2020 Olympics and Paralympics emblems during the Olympic and Paralympic flag-raising ceremony at Tokyo Metropolitan Government Building in Tokyo, Japan, September 21, 2016. REUTERS/Toru Hanai/File Photo



Three mayors in Tohoku-area , Hachinohe, Ohdate, Ichinoseki, proposed JOC at first.

えっ！携帯電話から金メダル？

あなたの家に眠っている使用済小型家電の回収にご協力下さい。

最近多くの携帯電話やデジタルカメラ、ノートパソコンなどの小型家電には、金、銀、銅、レアメタルなどの有用金属が多く含まれています。東北地方で小型家電リサイクルの認定事業者がある青森県八戸市、秋田県大館市、岩手県一関市では、使用済小型家電から回収された金属を2020年東京オリンピック・パラリンピックのメダルに活用することや、環境技術大会経理委員会や関係者等に共同で提案しています。*金、銀、銅の金属を3つとして分けず、再作の資源回収にご協力いただき、市民の皆様と協力してこの提案を推進させ、日本のリサイクル技術の進歩と発展に貢献したい大会をPRしましょう！

使用済小型家電で金メダルを作ろう!!

八戸市 | 大館市 | 一関市

八戸、大館、一関の三市提案

「2020年東京オリンピック・パラリンピックのメダルに回収金属を活用することについての提案」

のフィージビリティに関する調査報告

Ecomaterial Forum

Followed the feasibility background.

2016年1月11日

未踏科学技術協会・エコマテリアルフォーラム(会長:原田幸明)

〒105-0003 東京都港区西新橋1-5-10 新橋アマノビル6F

(社)未踏科学技術協会

(窓口) 田口 Tel: 029-859-2668

メール: ecomaterial@sntt.or.jp



都市鉱山メダル連携促進委員会 発足式

小型家電リサイクル「みんなで集めて、メダルをつくろう！」



中村直也

原田幸明

黒田武志

岡村秀人

谷岡郁子

吉田沙保里

川井梨紗子

登坂絵莉

土性沙羅

栄和人

<https://goo.gl/yNn2Lp> を開いて、**賛同する** をクリック

そのあつまりが、史上初の「都市鉱山金メダル」の実現に!

わたしたちは、持続可能性の視点から、来る東京オリンピック・パラリンピックのメダルに日本のすぐれたリサイクルで得られた素材を使うことを働きかけ、インターネット署名でその賛同を呼びかけています。

More than 10,000
internet signatures in only three
month



都市鉱山で金メダル



The screenshot shows a petition on change.org. The title is 'オリンピックの金銀銅メダルを みんなで回収したリサイクル原料で作りましょう' (Let's make Olympic gold, silver, and bronze medals from recycled materials that everyone has collected). The page includes a progress bar for signatures, a list of signatories, and a form to add a signature. The text on the page explains that the medals will be made from recycled materials like gold from electronic devices. A red button at the bottom says '賛同!' (Sign!).



ぜひ <https://goo.gl/yNn2Lp> を開いてください。 また、他の人にも呼びかけてください。

	Vancouver 2010	London 2012	Rio 2016
gold	Recycled content (1.11%)	Obtained from sustainable mining	extracted without the use of mercury
silver	Recycled content (0.12%)	Not mentioned	Recycled content 30%
broze	Recycled content (1.52%)	Zinc in bronze was partially recycled	Recycled content 30%



Olympic Charter (-2000)

BYE-LAW TO RULE 70

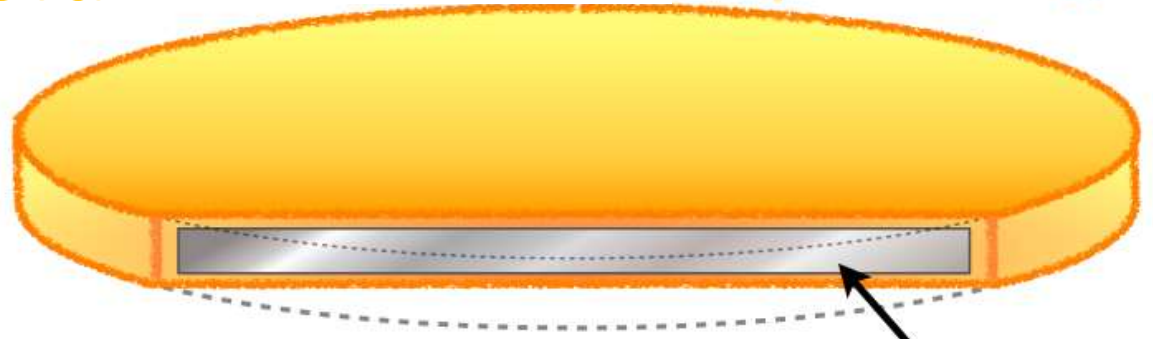
2- Medals and Diplomas

2.2 the medals shall be at least 60mm in diameter and 3mm thick. The medals for first and second places shall be of silver of at least 925-1000 grade; the medal for first place shall be gilded with at least 6g of pure gold.

Weight
95 ~ 500g

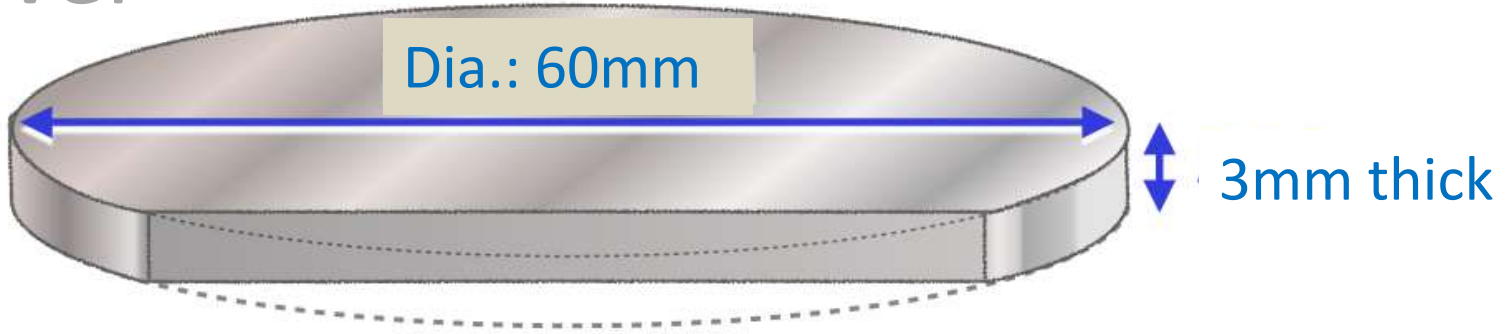
gold

Gold plated 50 μ m 6 g



Base consists of Silver

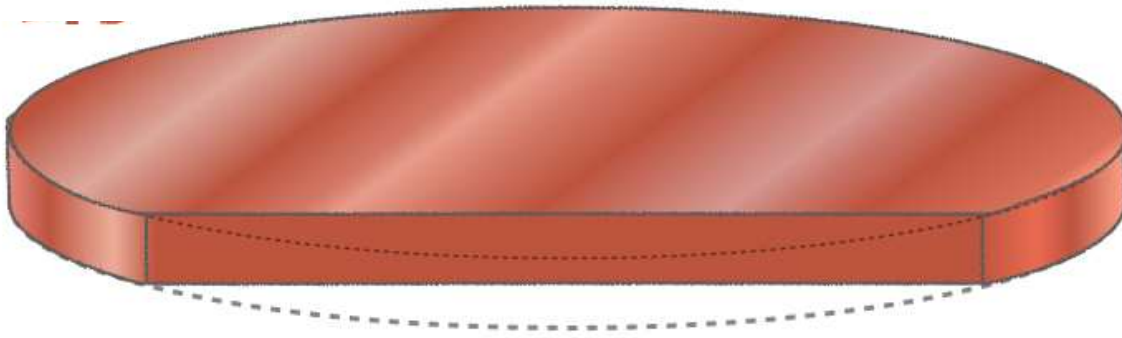
silver



Dia.: 60mm

3mm thick

bronze



How much metals are required for Olympic medals

	London 2012		Olympic Chartar 2000				
	Olympic	Paralympic	Au	Ag	Cu	Zn	Sn
Gold	659	675	6	379	25	0	0
Silver	649	670	0	381	29	0	0
Bronze	702	687	0	0	368.5	9.5	2
Total	2010	2032	9.6kg	1,210kg	700kg		

Urban mining in Japan

Recycled raw material percentage in Japan

	2014			2025		
	Recycled (t)	produced (t)	recycled %	Recycled (t)	produced (t)	recycled %
Au	29.2	106.8	27.3%	31.7	113.8	27.8%
Ag	731	1803	40.5%	817	1967	41.5%
Cu	254000	1538000	16.5%	253000	1509000	16.8%
Pb	114000	200000	57.0%			
Zn	125000	589000	21.2%			

Data from Japan Mining Association

Electric households contain a great amount of metals

	BD player	Cell phone	PC laptop	PC disctop
Per equipment	3.6kg	0.1kg	2.1kg	8.2kg
Discarded at 2011	60,000	40,000,000	6,700,000	5,000,000
Annual amount	211t	5600t	1400t	4000t
gols	3kg	1,900kg	2,000kg	2,500kg
silver	16kg	10,000kg	5.600kg	15,000kg
copper	4800t	510,000t	550t	2,200t

Amount of recycled metal by the law of small size electric households rcycling

	2013	2014	2015	Requisite for Olympic medals
Au	46kg	143kg	214kg	9.8kg
Ag	446kg	1566kg	2563kg	1210kg
Cu	381ton	1,112ton	1469ton	700kg

Regulations according to characteristics of individual articles

Law for the Promotion of Sorted Collection and Recycling of Containers and Packaging

Completely enforced in April 2000
Partially amended in June 2006

- Sorted collection of containers and packages by municipalities
- Recycling by container manufacturers and business operators who use containers and packages

e.g. bottles, PET bottles, paper or plastic containers and packages

Law for the Recycling of Specified Kinds of Home Appliances

Completely enforced in April 2001

- Retailers, etc. collect waste electric appliances from consumers
- Recycling by manufacturers, etc.

Air conditioners, refrigerators & freezers, TVs, washing machines

Law for the Promotion of the Utilization of Recyclable Food Resources

Completely enforced in May 2001
Partially amended in June 2007

- Recycling of commercial food waste by food manufacturers, processors, and retailers

Food residues

Construction Materials Recycling Law

Completely enforced in May 2002

- Sorted demolition, etc. of buildings
- Recycling of construction waste materials, etc., by contractors

Timber, concrete, asphalt

Law for the Recycling of End-of-Life Vehicles

Partially enforced in January 2003
Completely enforced in January 2005

- Collection of used vehicles, collection of CFC gas, demolition, and crushing by concerned business operators
- Recycling of airbag shredder dust, and destruction of CFCs by manufacturers

Vehicles

Completely enforced in April 2001

Law concerning the Promotion of Procurement of Eco-Friendly Goods and Services by the State and Other Entities
(The State and other entities take the initiative to promote the procurement of recycled items)

Recycling law for small size electric appliances starts from April 2013.

西園さそり

小型家電リサイクル法が 始まりです

E-Waste
小型家電
このロゴが目印!

小型家電を処分するときは、市町村のごみ分別ルールに従って出しましょう

※小売店が回収に協力している場合もあります。

小型家電リサイクル法の対象品目

小型家電はレアメタル等の有用金属を含む一方、鉛などの有害物質を含むものもあることから、法律に基づく適切なリサイクルが必要です。

※ご家庭の電気でおくものが幅広く制度の対象になりますが、市町村ごとに回収品目や回収の開始時期が異なります。
※大型の家電4品目（テレビ・エアコン、冷蔵庫・冷凍庫、洗濯機・衣類乾燥機）については処分方法が異なります。詳しくは家電小売店又は市町村へお問い合わせください。

小型家電リサイクル



【小型電気電子機器の例】

2013.4.1

環境省
Ministry of the Environment

経済産業省
Ministry of Economy, Trade and Industry

<http://www.universe-corp.jp/article/14864904.html>

Collection methods

box



回収ボックスを公共施設や商業施設等に常設し、排出者が直接投入した物を定期的に回収する手法

station



ステーション(ごみ・資源回収場所)ごとに定期的に行っている資源回収に加えて、使用済小型電子機器等専用のコンテナを新たに設置し、回収する手法

event



集客力の高い各種イベント会場や家電量販店にボックスを設置し、イベント開催の期間に限定してボックス回収を行う手法

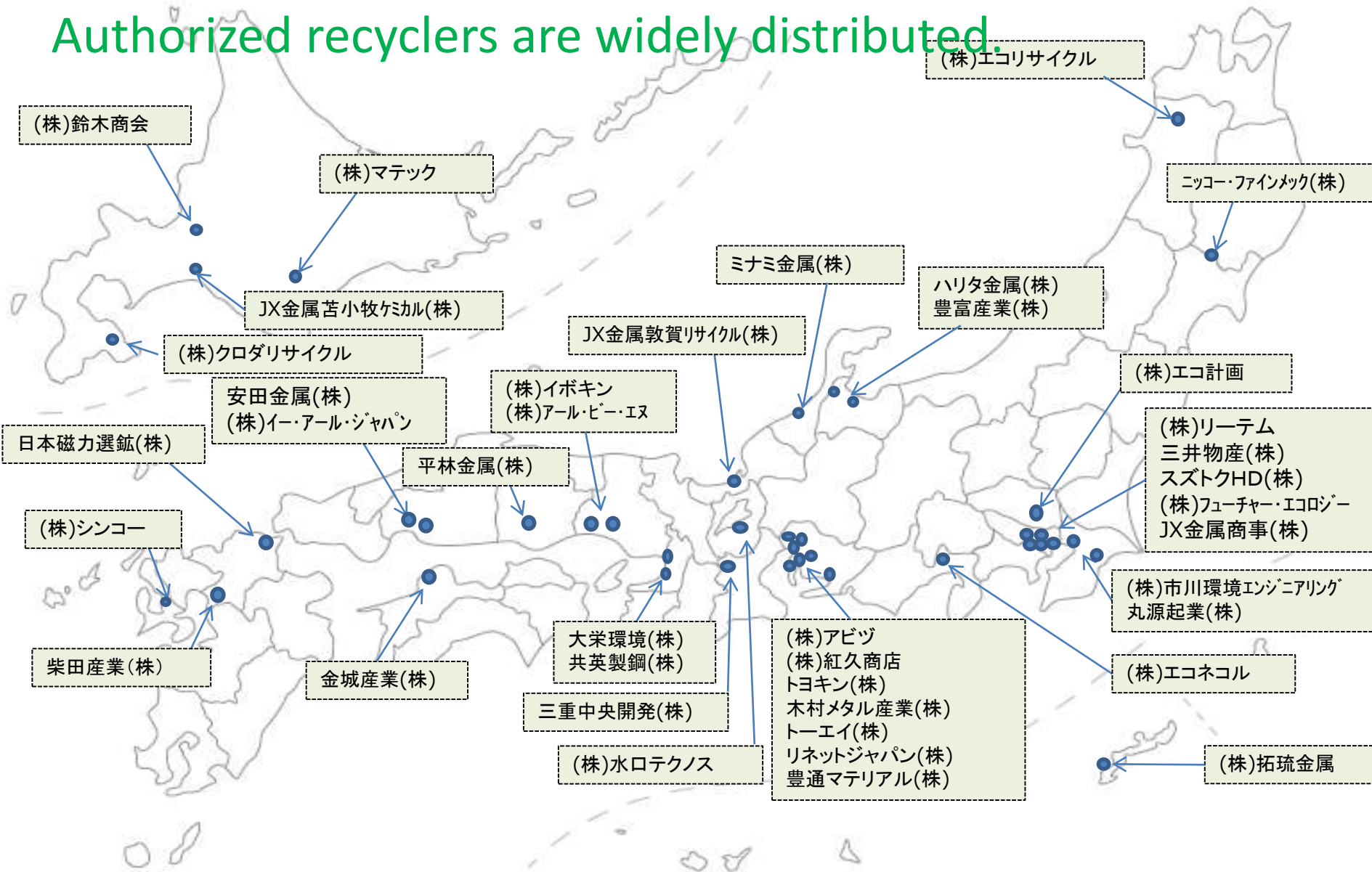
pick-up

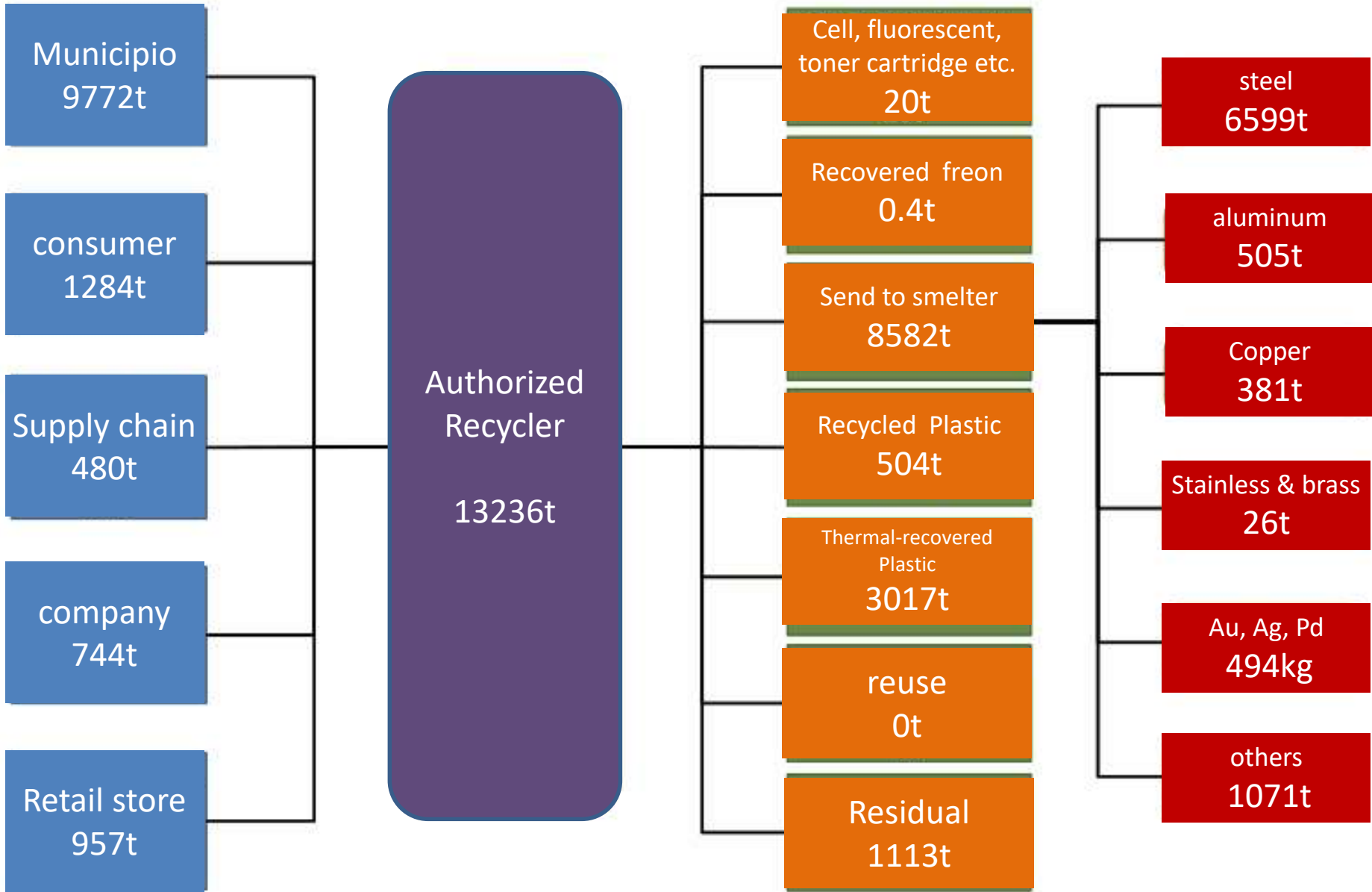


各自治体等の従来の分別区分に従って排出されたごみや資源から、使用済小型電子機器等をリサイクルセンター等で抜き取る手法

認定事業者の分布状況（平成27年6月末現在）

Authorized recyclers are widely distributed.

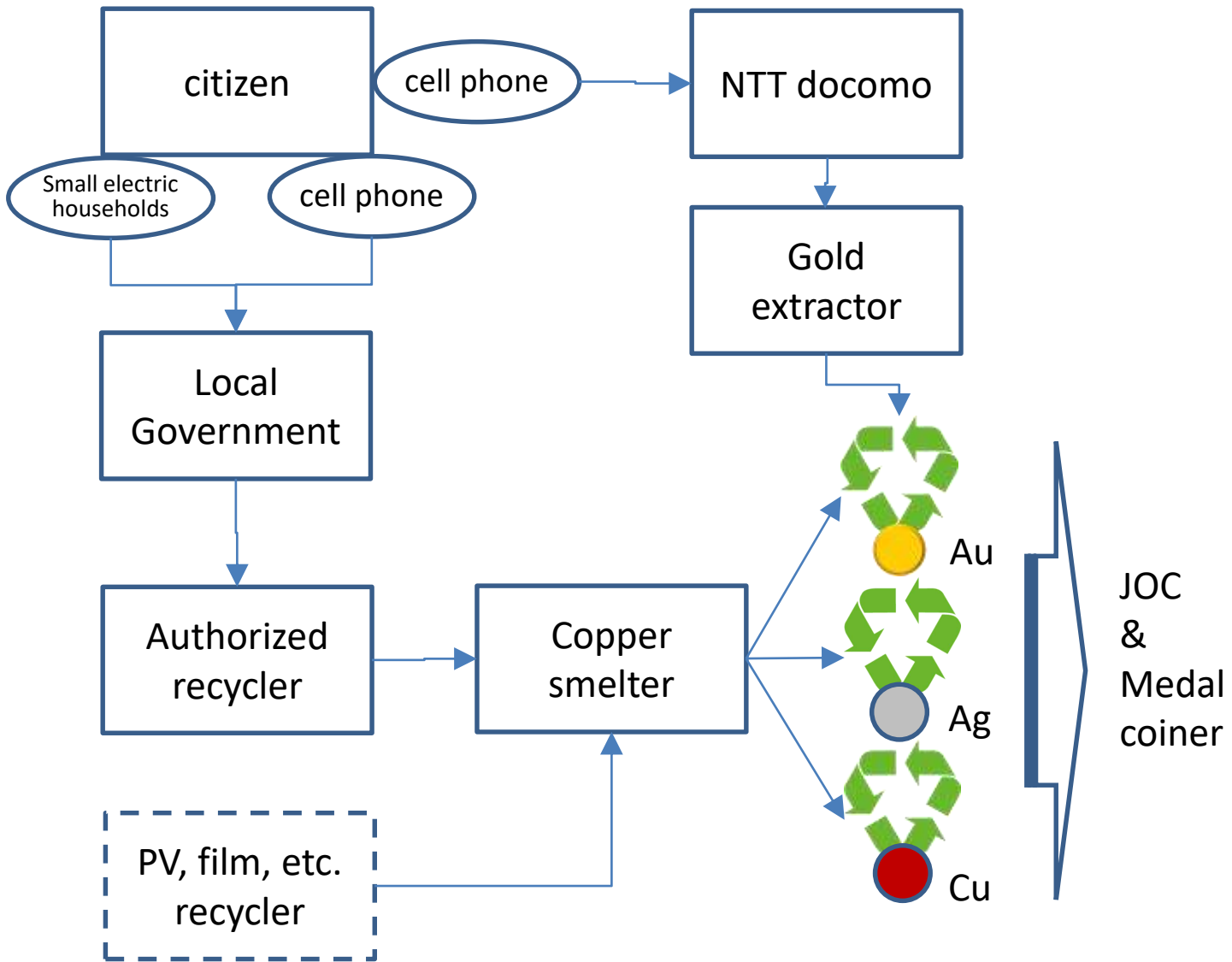




Recovery of Gold from Urban mine



コンピュータなどの電子基板です



3 roles of Urban mining from the viewpoint of sustainability

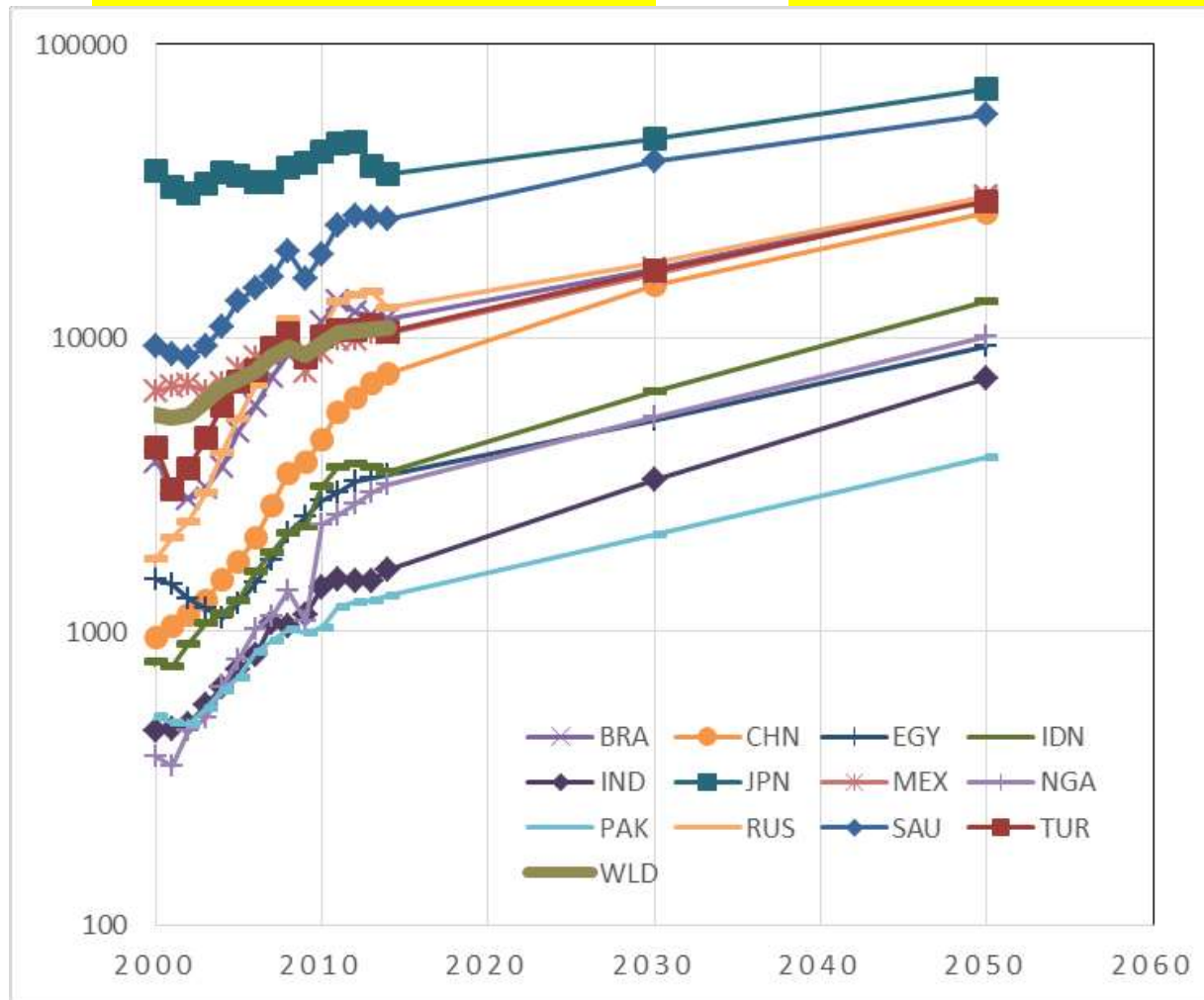
Sustainable Resource management

Sustainable Supply Chain management

Sustainable Waste management

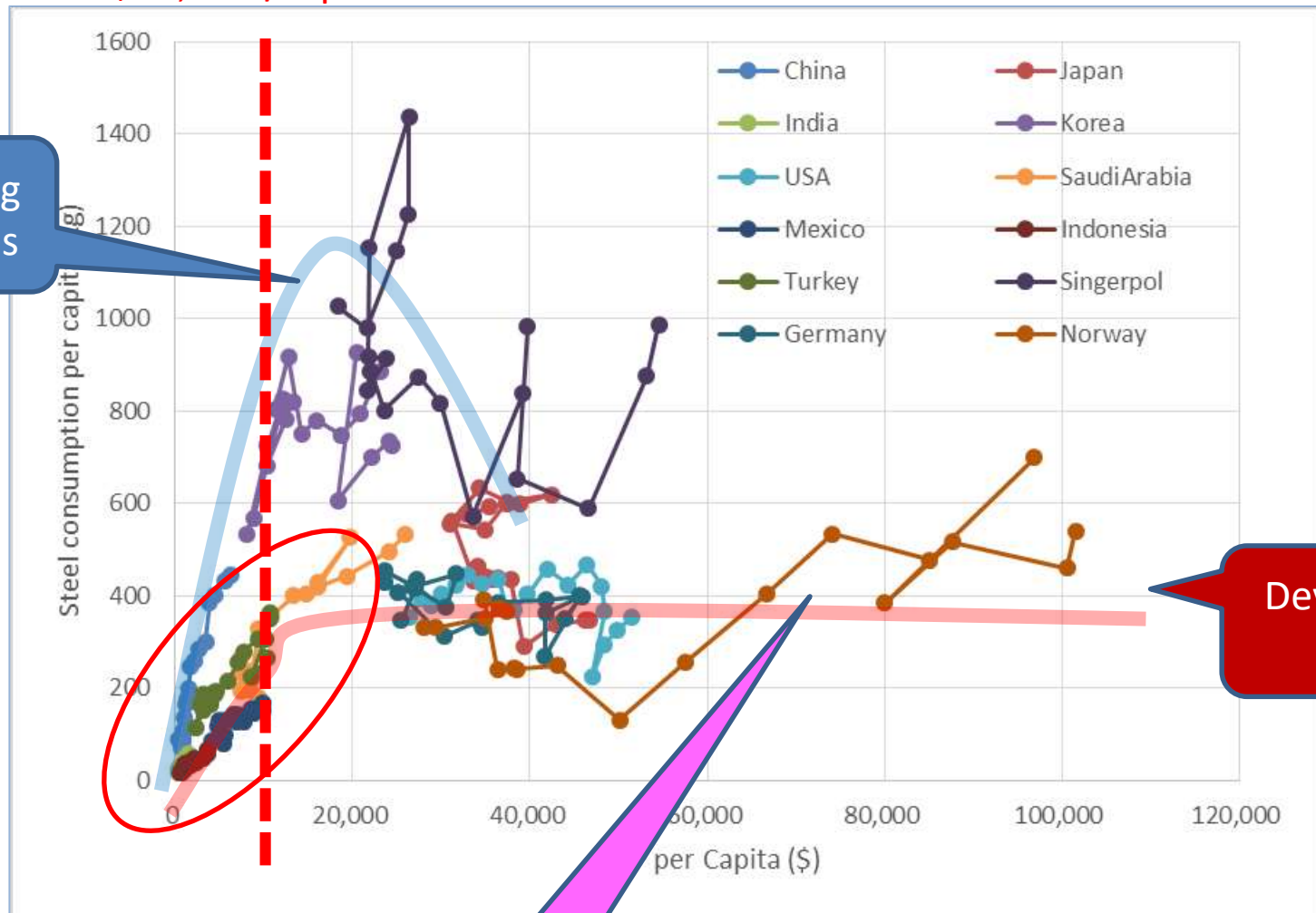
Almost of potent countries will go beyond \$10,000 / capita in 2030

All countries will go beyond \$10,000 / capita in 2100



We will reach 100 billions' universal economy in this century,.

\$10,000 /capita



Exporting countries

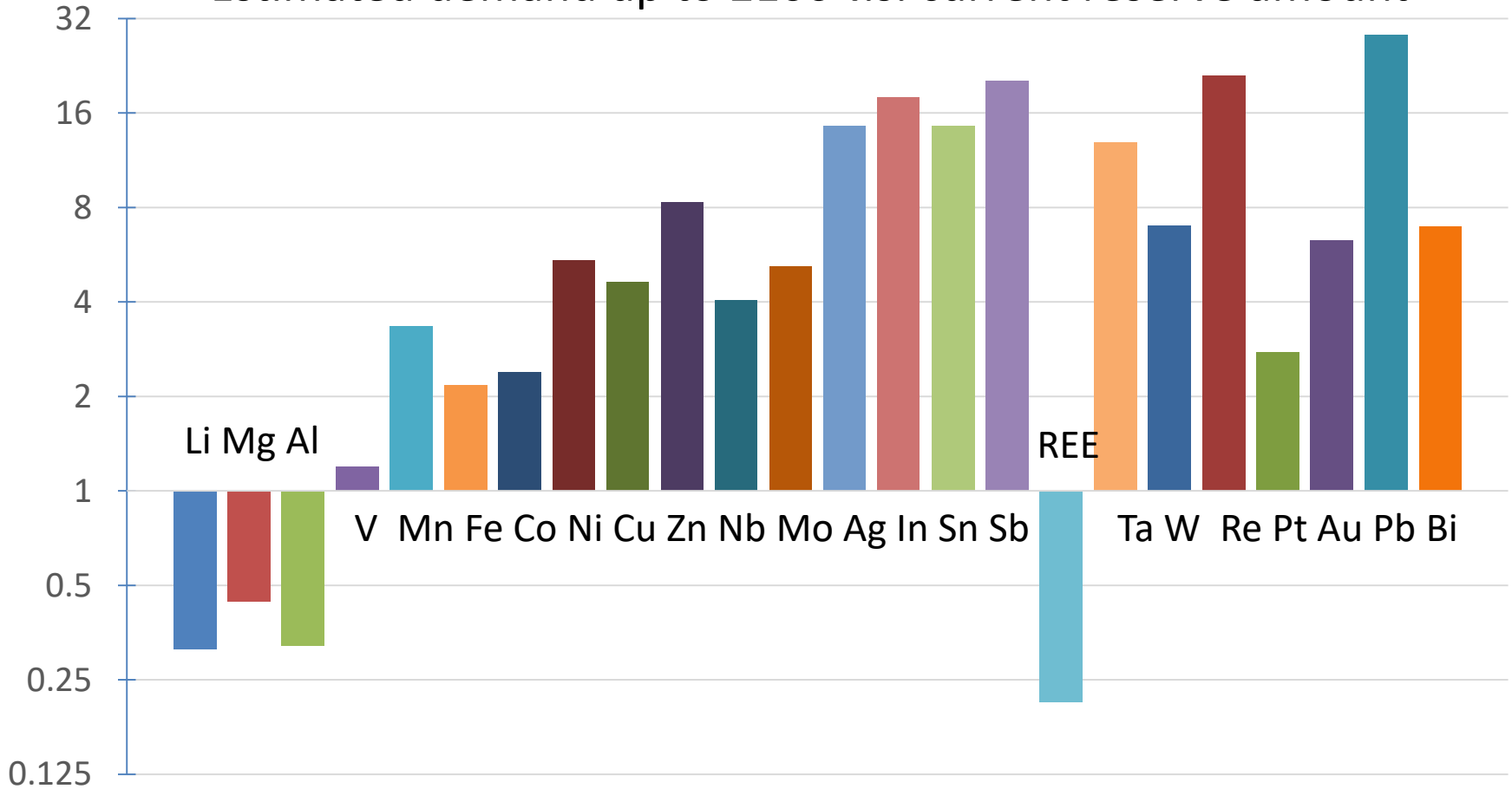
Developed level

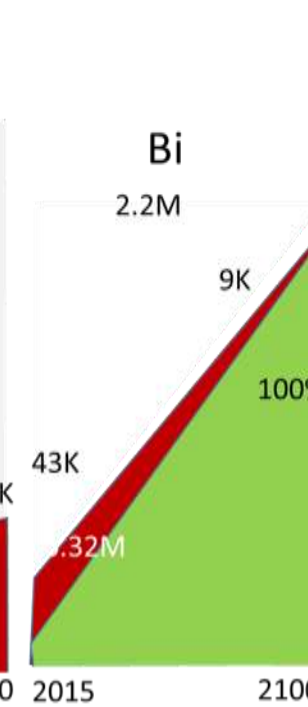
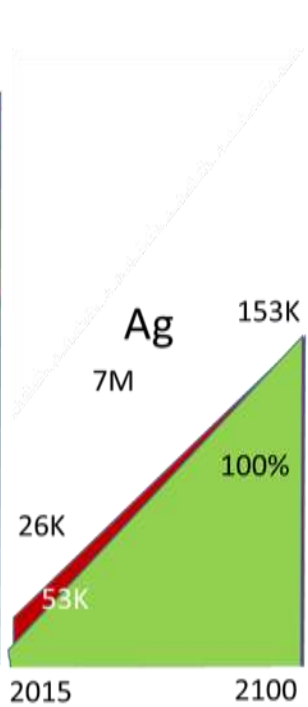
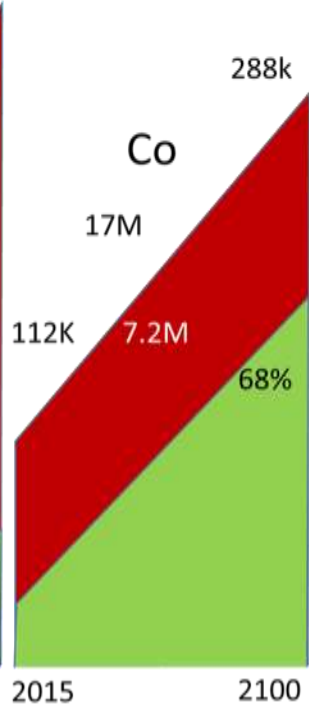
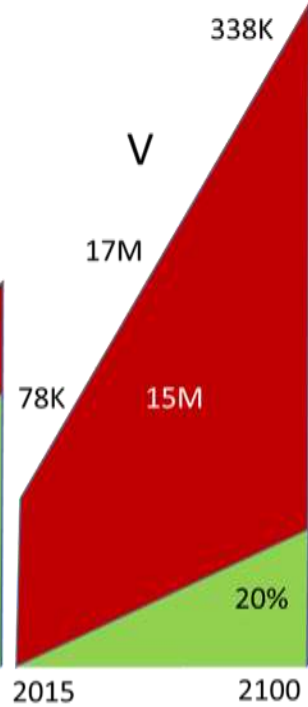
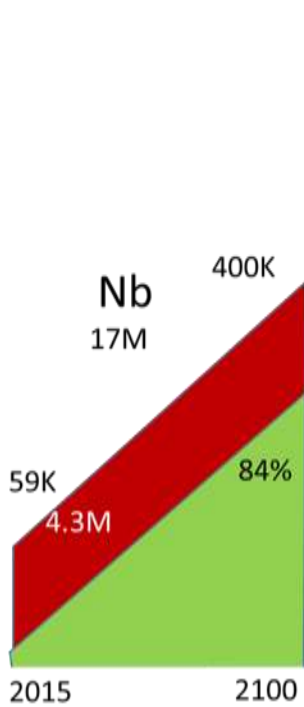
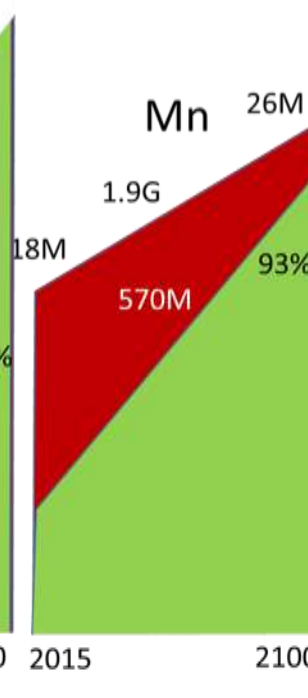
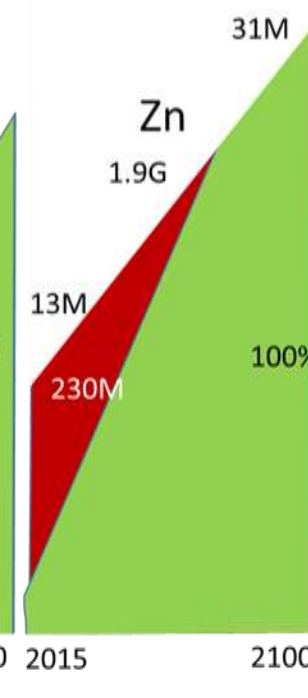
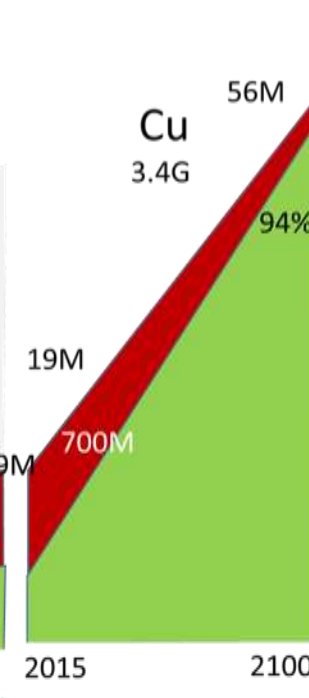
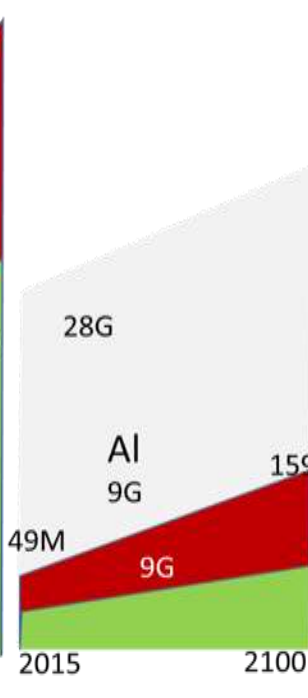
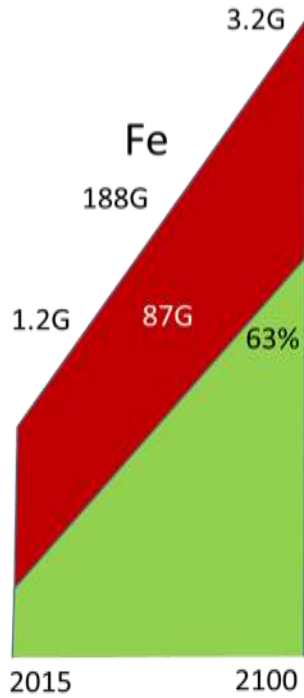
Consuming countries

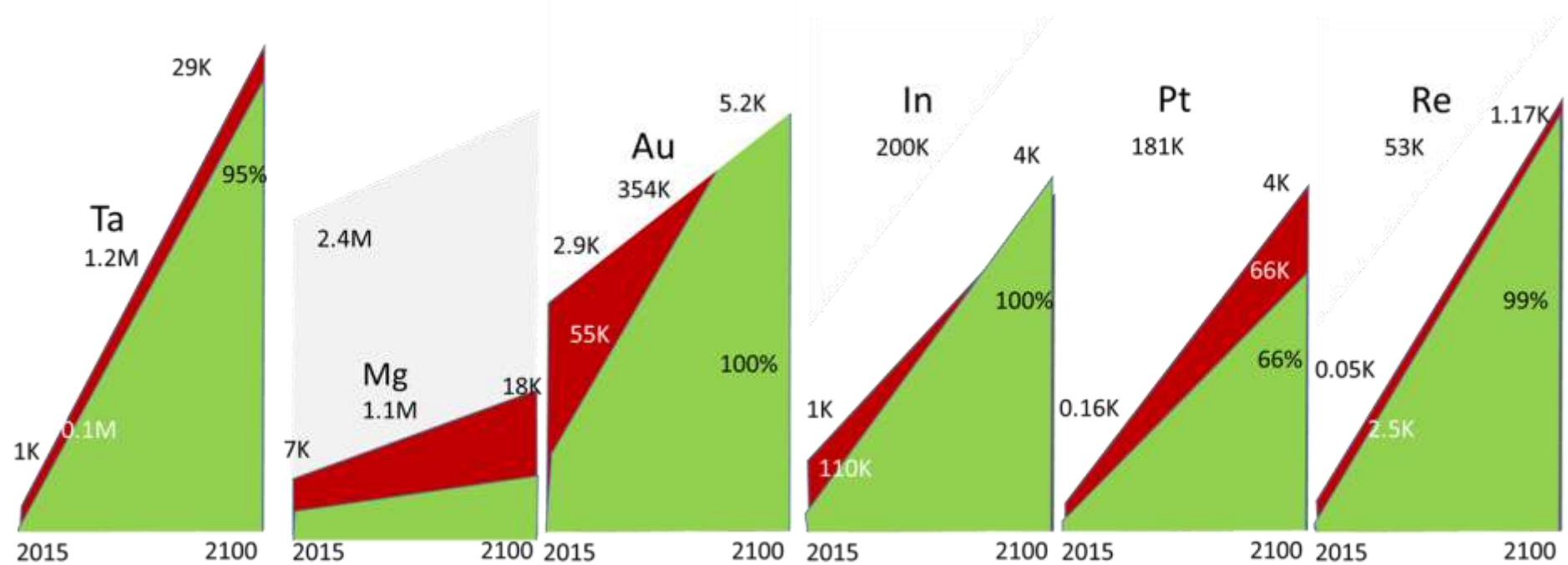
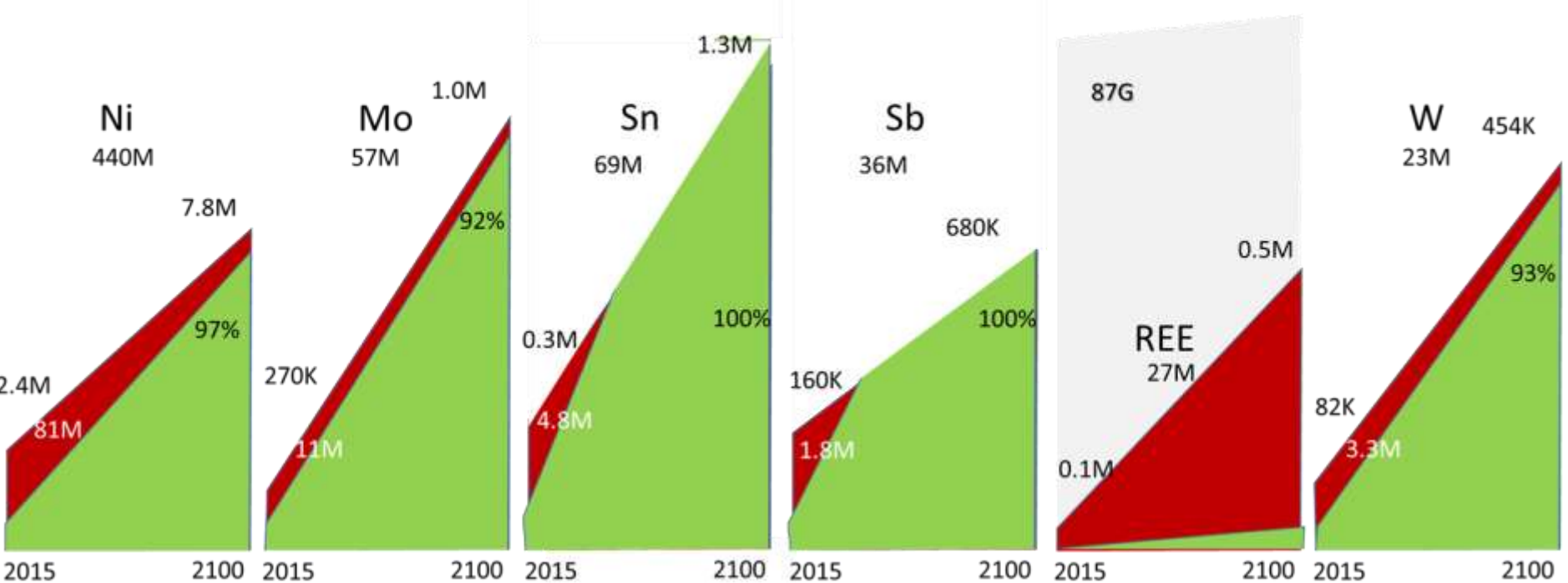
Fig.8 Fe consumption / capita v.s. GDP/ capita of several countries from 1994 to 2014

Much more times of resources will be required by 2100.

Estimated demand up to 2100 v.s. current reserve amount







3 roles of Urban mining from the viewpoint of sustainability

Sustainable Resource management

Sustainable Supply Chain management

Sustainable Waste management

SUSTAINABLE DEVELOPMENT GOALS

世界を変えるための17の目標

1 貧困をなくそう



2 気候をゼロに



3 すべての人に健康と福祉を



4 質の高い教育をみんなに



5 ジェンダー平等を実現しよう



6 安全な水とトイレを世界中に



7 エネルギーをみんなにそしてクリーンに



8 働きがいも経済成長も



9 産業と技術革新の基盤をつくろう



10 人や国の不平等をなくそう



11 住み続けられるまちづくりを



12 つくる責任つかう責任



13 気候変動に具体的な対策を



14 海の豊かさを守ろう



15 陸の豊かさも守ろう



16 平和と公正をすべての人に



17 パートナーシップで目標を達成しよう



SUSTAINABLE DEVELOPMENT GOALS

2030年に向けて
世界が合意した
「持続可能な開発目標」です

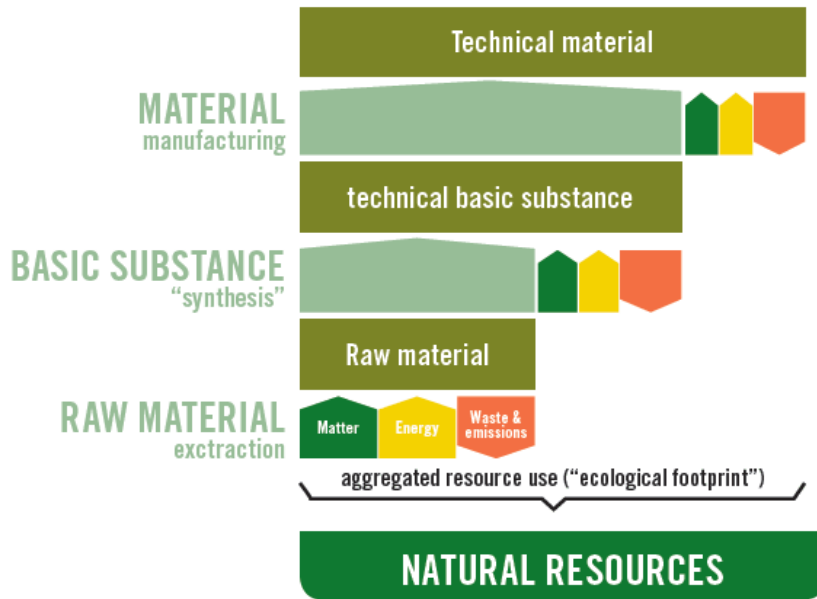
Resource efficiency

How can we make our economy circular and resource efficient?

Currently, we are using more resources than our planet can produce in a given time. We need to reduce the amount of waste we generate and the amount of materials we extract.



Figure 4: Aggregated resource use for technical materials



12.4

tonnes of materials per capita were **extracted** in the EU.

3.2

tonnes of materials per capita were **imported** to the EU.

1.3

tonnes of material per capita were **exported** from the EU.



Consumers' view
weight

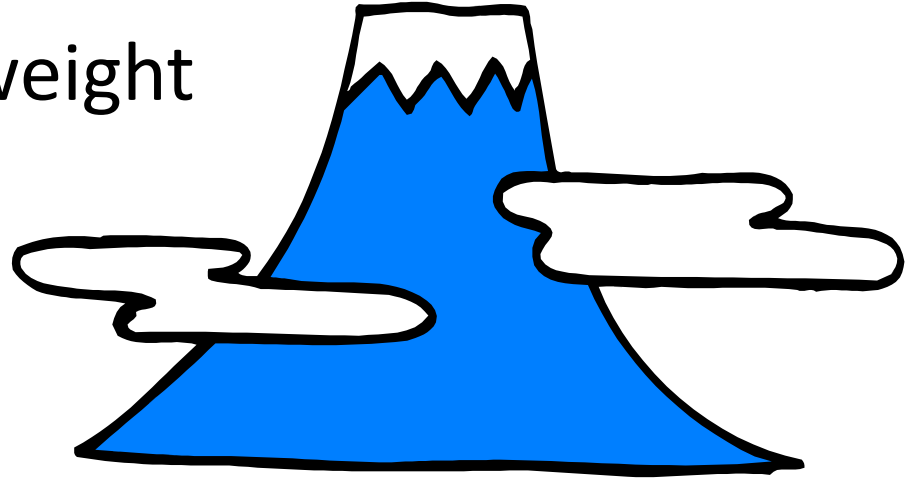


Total volume of gold which
Human has been used is only
Three pools of Olympic

Au



Resources' view
weight



One Mt. Fuji

100,000,000,000ton

100G ton

The natural resource
which was dug for the
three pools of gold.

11,000ton



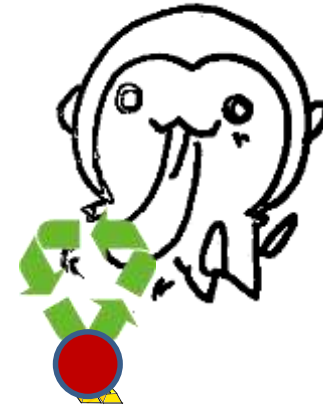
gold 10kg

56,000ton



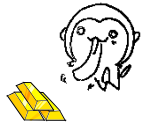
silver 1.2ton

300ton



copper 0.8ton

8ton



鉄 1ton



95.1g



47.8ton

Medals shoulder great eco-ruecksuck,
if they are produced from natural resources

3 roles of Urban mining from the viewpoint of sustainability

Sustainable Resource management

Sustainable Supply Chain management

Sustainable Waste management

E-waste (Electric waste)



Eco-rucksack of mining

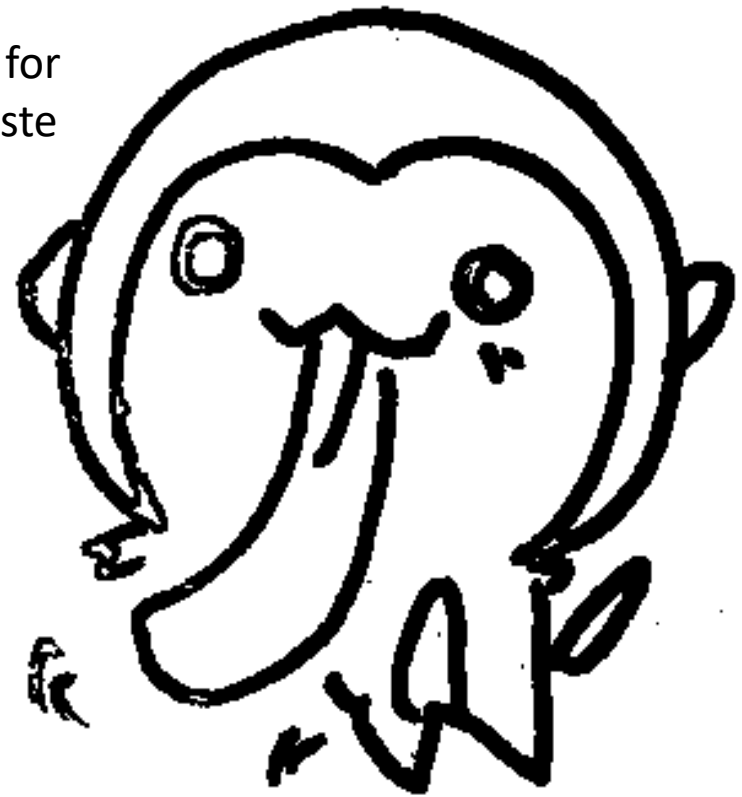


47.8ton

Eco-rucksack for Hearing E-waste

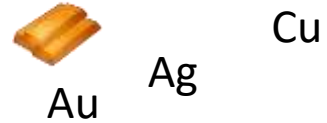
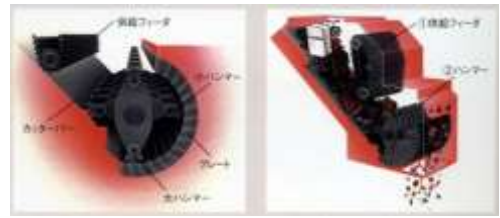
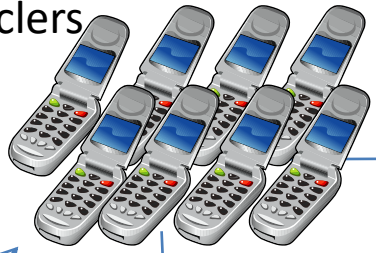
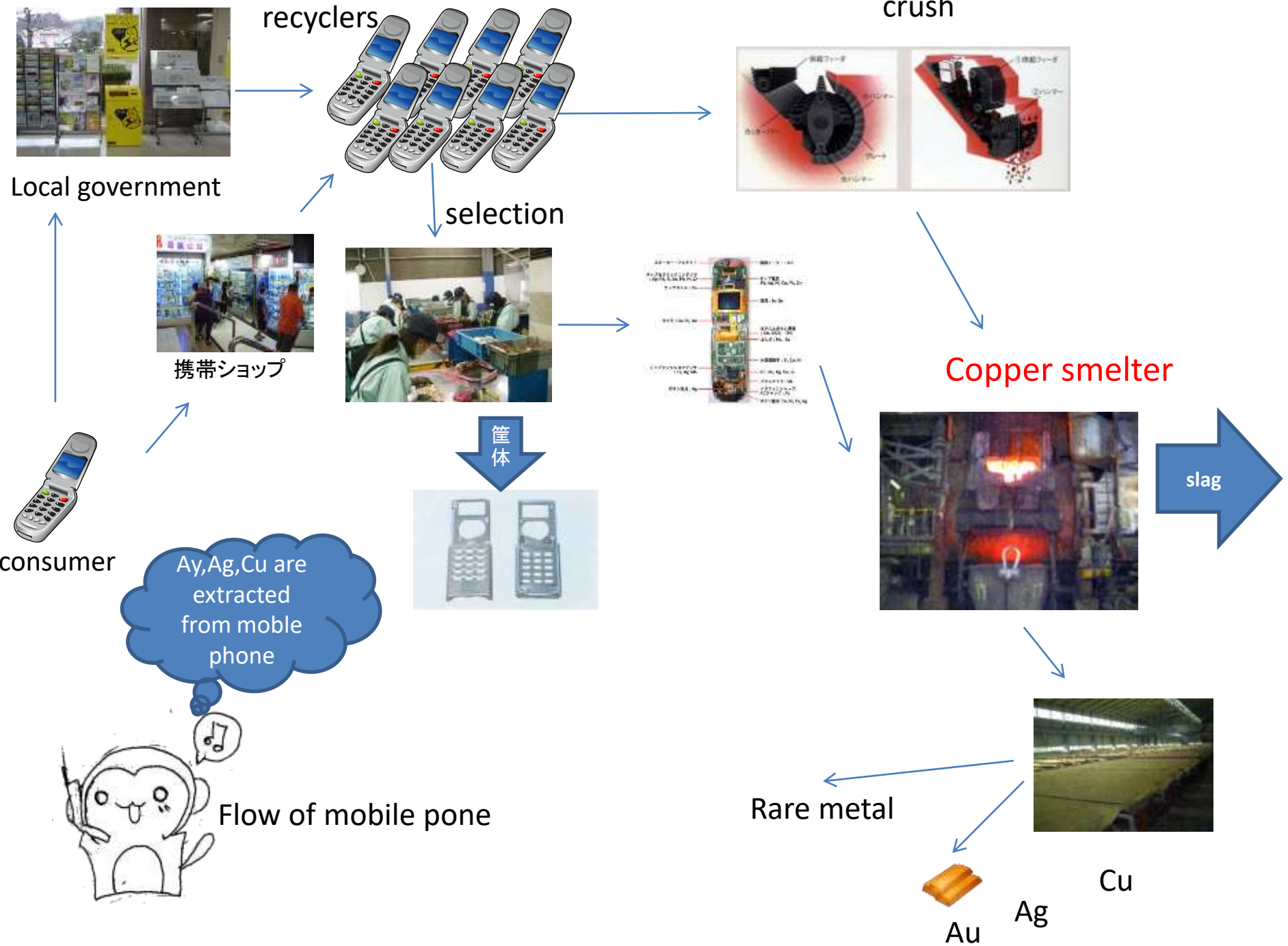


95.1g



1600ton

One recycled medal prevent the environmental value.

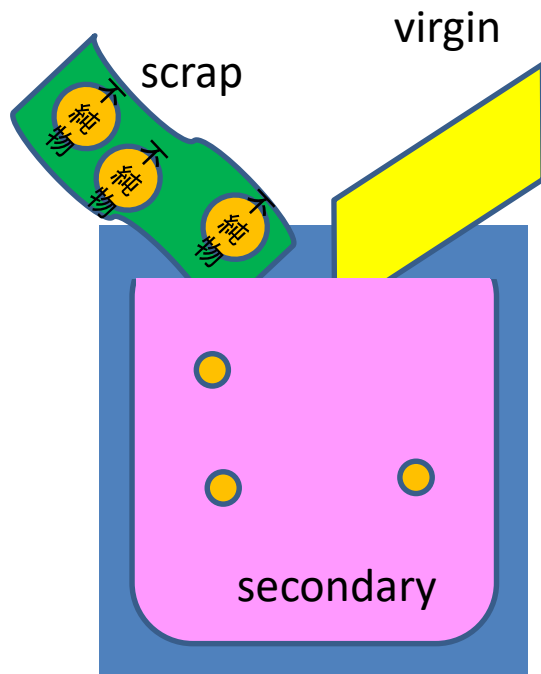


Ay,Ag,Cu are extracted from mobile phone



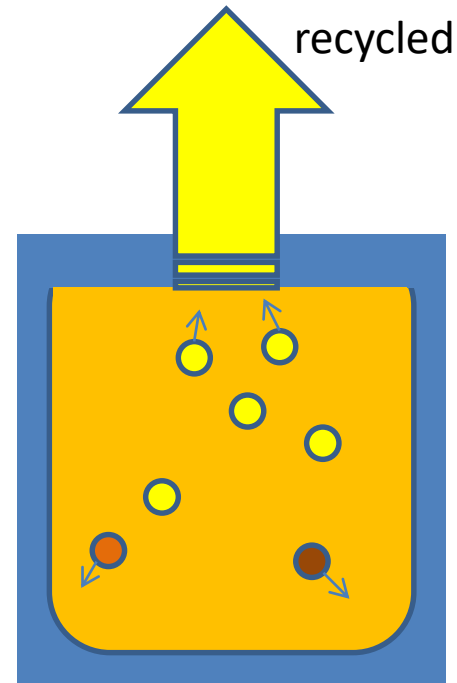
Flow of mobile phone

Two different type of recycling



Dilution type: Fe,Al,plastic paper

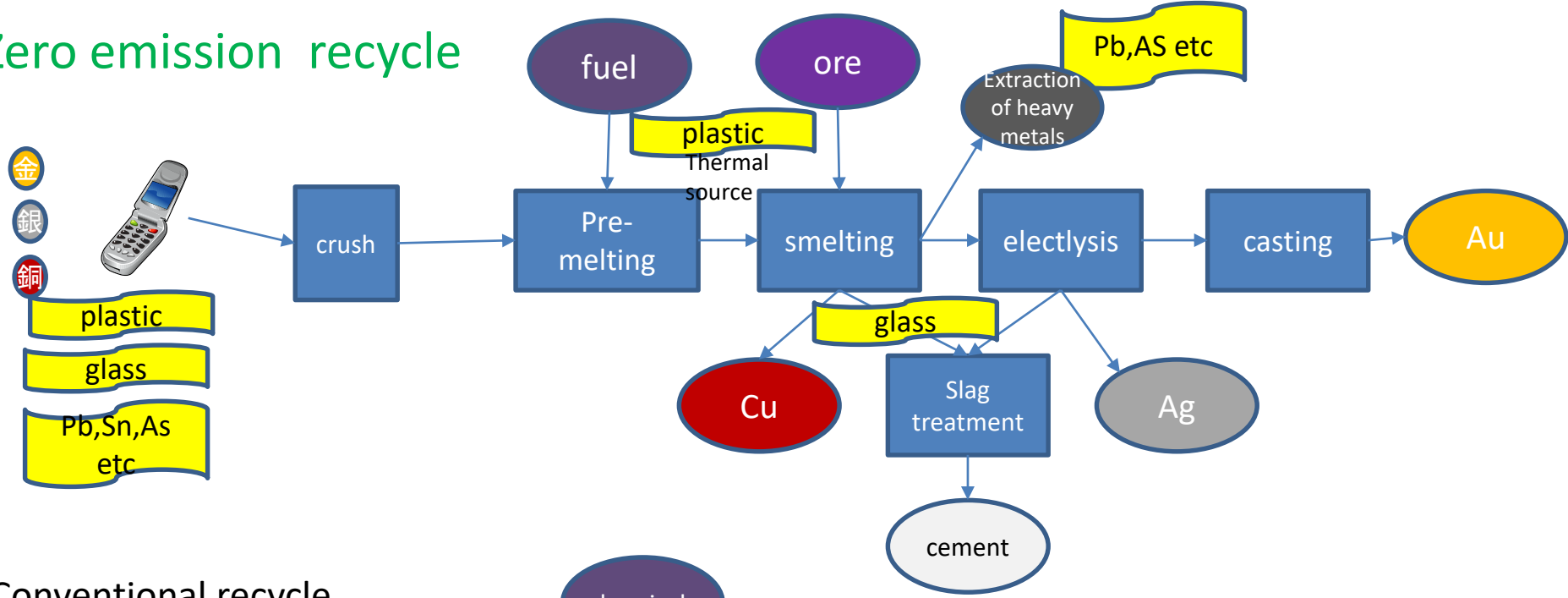
Quality is downgraded



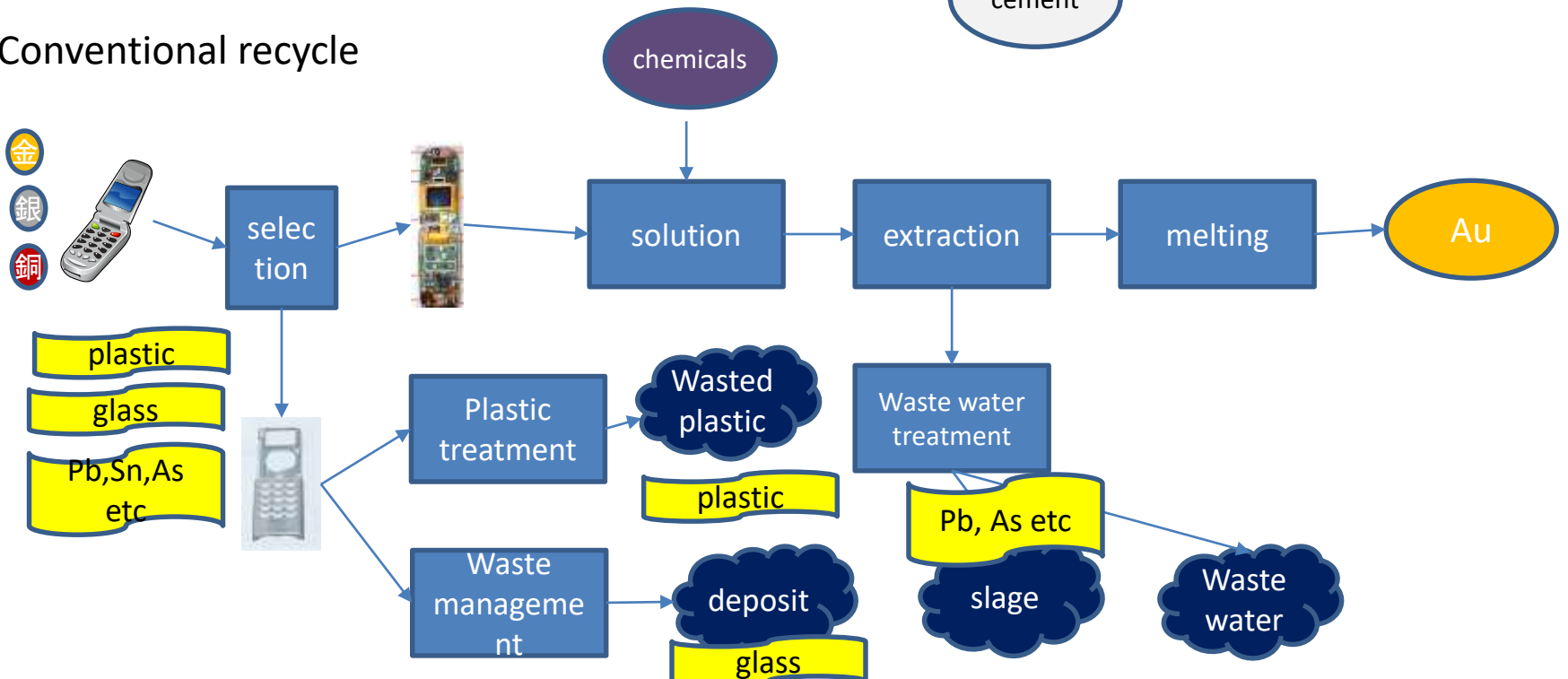
Extraction type: precious metals, rare metals

Waste is greater than recycled

Zero emission recycle



Conventional recycle

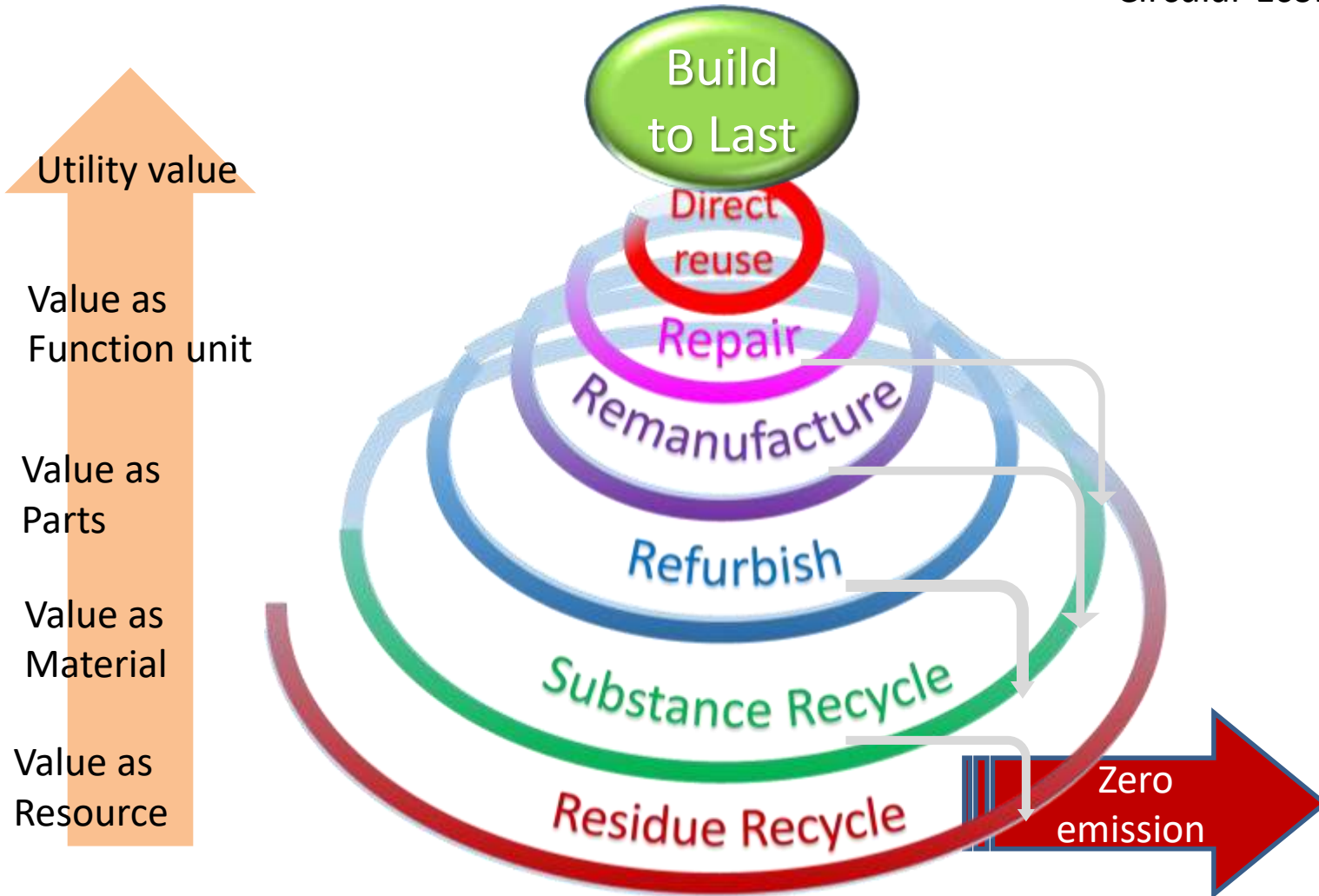


Three 100%s of recycled medal

- 100% content
all atoms in medal comes from recycling
- 100% collected
collected material is enough to produce all medal
- 100% used
collected material is fully used without waste

Multi-value Circulation

Beyond
Circular Economy | EU



Urban mined medals
go beyond 2020



Toshi-kouzan.jp



都市鉱山からつくる! みんなのメダル プロジェクト



プロジェクト参画組織：東京2020組織委員会 環境省 日本環境衛生センター NTTドコモ 東京都

使わなくなった、携帯電話・パソコン・デジカメ等が、
メダルに生まれ変わります!



小型家電のリサイクル回収に、ご協力ください。

[▶ 回収場所・方法はこちら](#)

最新トピック

2017/3/24 ホームページを公開しました。4/1からプロジェクトがスタートします。

東京2020組織委員会、環境省、日本環境衛生センター、NTTドコモ、東京都

★ リサイクルを通じて参画できるプロジェクト

Urban mined Olympic medals are now in mining

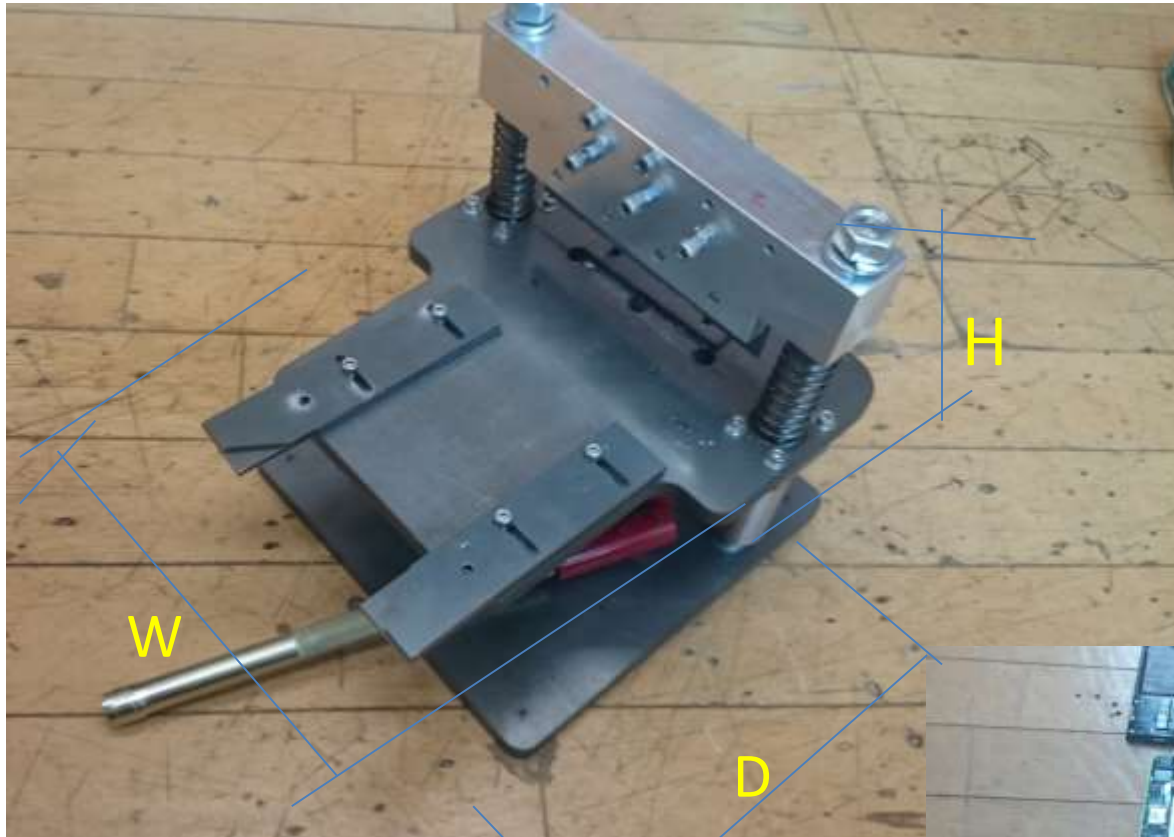


これが我が家のMy都市鉱山



代表的な小型家電製品とその1kgに含まれる金の量(mg)です。(天然鉱石は1から4mgです。)

Cell-phone Opener for the removal of LiB



W=210:D=210+130 rod:H=250
weight10Kg



Kyoto city adopt urban mined gold medal to Kyoto city marathon.





Urban mined medals
of **local governments'**
events
will be the symbol of
recycling of the area.



It contains **my** old
electric households



NIMS's Urban mined Medal beyond 2020

Easy customize to local events
Lower environmental impact



toward 2020 and beyond it,

Let us
fix the urban mined medal
as symbol of recycling.



Thank you !!