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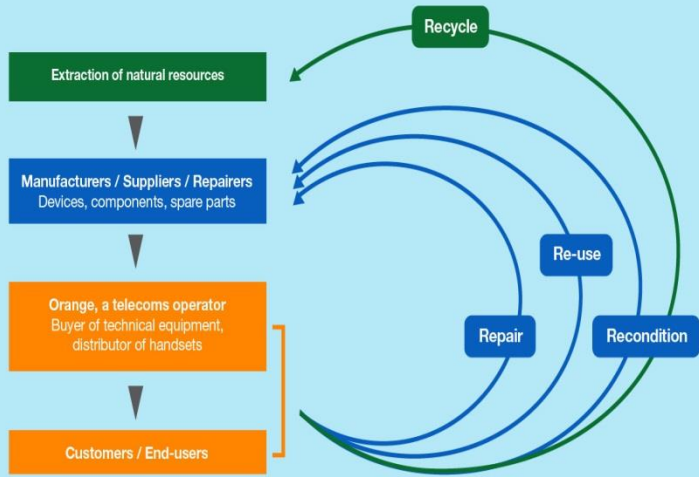
**7<sup>th</sup> ITU Green Standards Week**  
**Manizales, Colombia 4-5 April 2017**

**Circular Economy :**

**Repair, Reuse, Renovate, Recycle**

**Philippe Tuzzolino Orange Group : VP-Environment**





## Orange en route for the circular economy

We are adapting our business model to ensure it consumes fewer natural resources and generates less waste, especially WEEE\*. It's an approach that focuses on more virtuous modes of design, production, and consumption, partly by extending the lifespan of materials and re-using them. Orange is transforming, driven by a long-term vision, as explained in the following slides.

\* Waste Electrical and Electronic Equipment



• As a member of the MacArthur Foundation, CE100 since January 2015, Orange integrates the concept of circular economy in its processes, in particular by refurbishing and reusing old mobile phones. The Group also works closely with its suppliers in order to extend the lifespan of network technical equipment.

- the project is attempting to:
- 1- Launch a stakeholders dialogue for initiate actions plan
- 2- Work with Ellen MacArthur Foundation on Modularity in ICT sector

Until now, our activity mostly operated on a linear model: supply, distribution, use and end of life of devices and hardware.



Though in a less critical manner than in many other industries, the ICT linear model also faces its limits (environmental impact, resources).

More and more digital products and services are being consumed...

x 4 000  
The increase in mobile data traffic in 10 years

Global reserves at current consumption rate:  
Gold = 16 years  
Tin = 20 years  
Copper = 30 years  
Nickel = 40 years  
*source Planetscope*

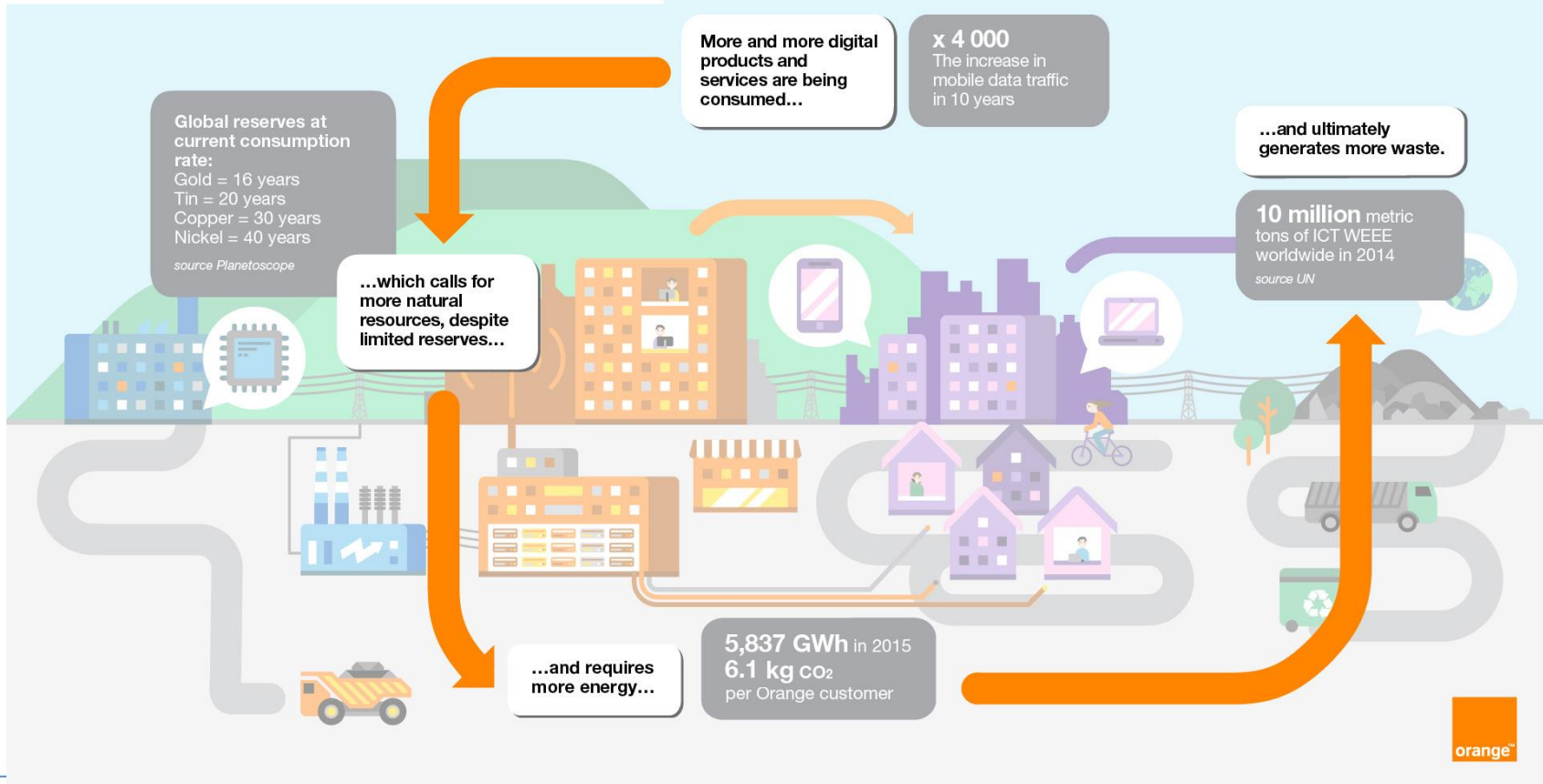
...which calls for more natural resources, despite limited reserves...

...and ultimately generates more waste.

10 million metric tons of ICT WEEE worldwide in 2014  
*source UN*

...and requires more energy...

5,837 GWh in 2015  
6.1 kg CO<sub>2</sub> per Orange customer



This is why we are transforming our business model wherever we can in every part of the chain.

**Eco-design of services:** after five years of using the Multiconnect Business service, savings of **10 tonnes of CO<sub>2</sub>** for a business equipped with 100 telephone handsets.

Progressive roll-out of **software eco-design**, for **15-20%** energy savings

**65%**  
Orange's certified ISO 14001 coverage at end-2016

**-70%**  
Energy savings made possible by server virtualisation in our datacenters (already 66% of our 90,000 servers)

**By improving our operating methods**

**-92,000 metric tons of CO<sub>2</sub>**  
The annual saving generated by the 2,600 solar-powered mobile stations deployed

**80%**  
Energy savings on air conditioning from optimised datacenter ventilation (free-cooling)

**By developing eco-design**

**Eco-design of products:** Optimising Livebox and TV decoder packaging: **20% more product per pallet**. Use of cardboard from **sustainably managed forests** and **vegetable-based inks**.

**-50% CO<sub>2</sub> emissions per customer-usage in 2020 (base 2006)**

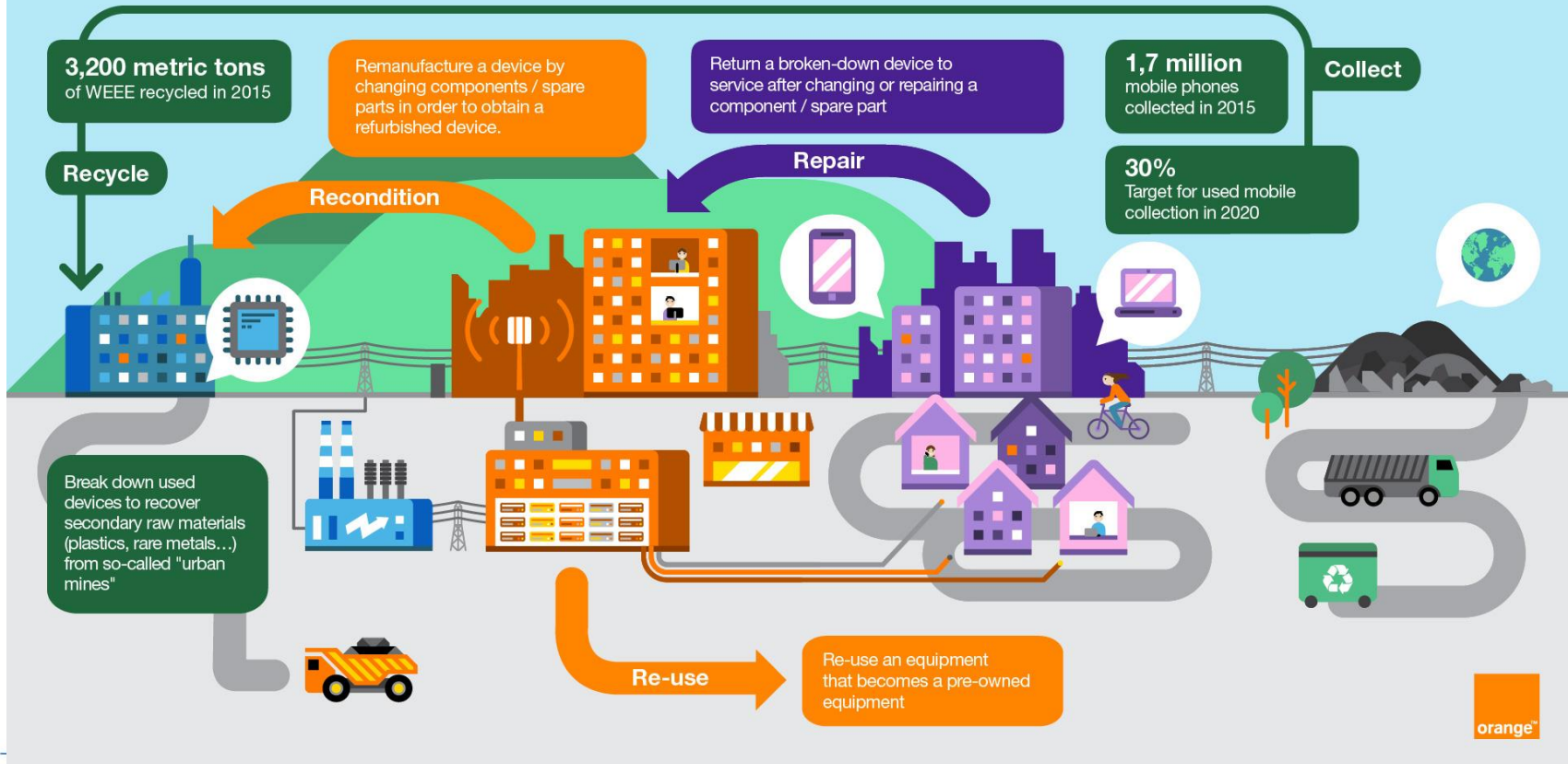
**Significant results already achieved**

**-46% CO<sub>2</sub>**  
Reduction in our emissions per customer-use between 2006 and 2015

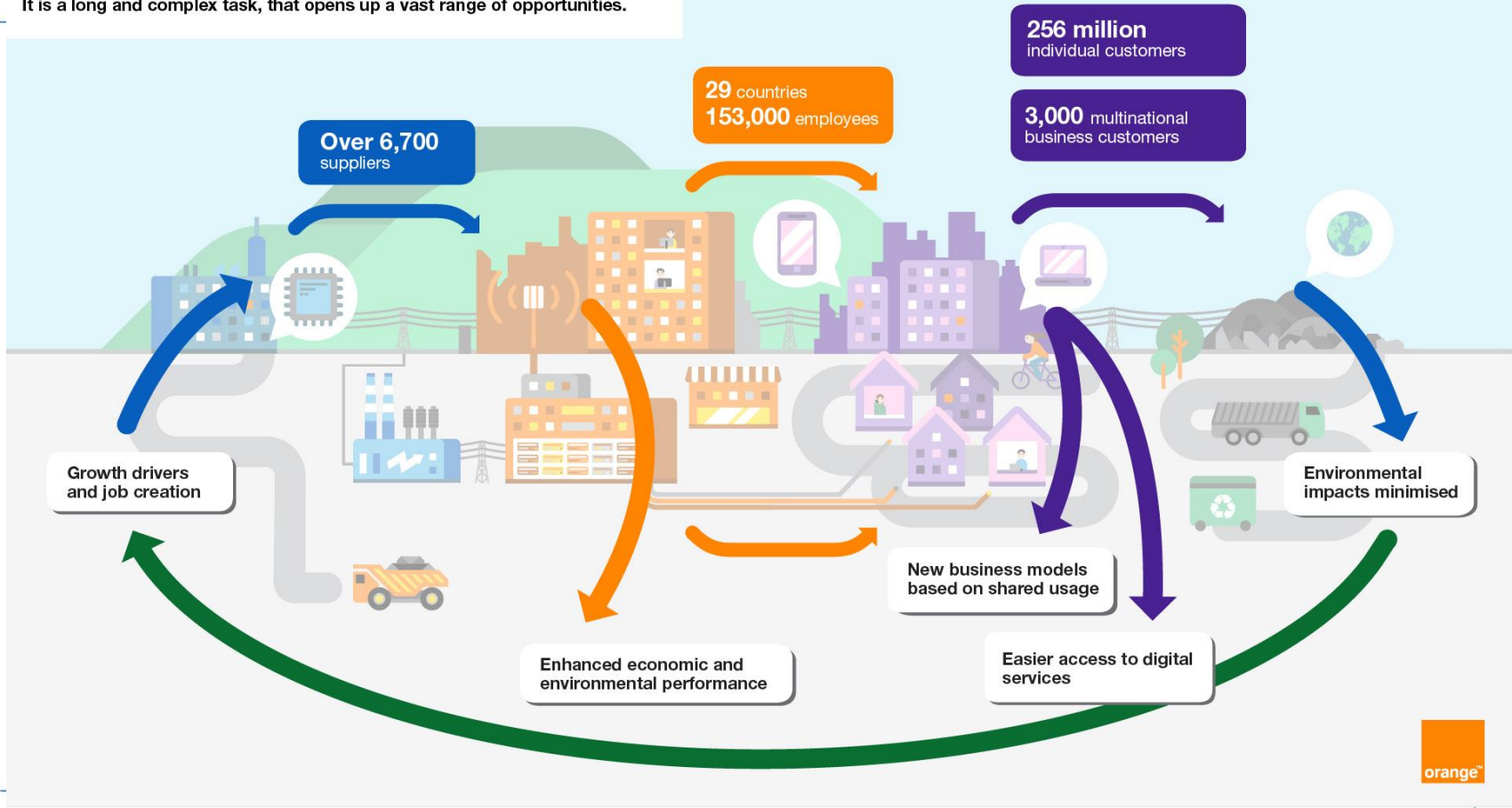
Over 60,000 servers virtualised, for a **1 000 metric tons** reduction in hardware



We are striving to extend the lifespan of our equipment and terminals and are contributing to the development of end-of-life hardware recovery and re-use sectors.



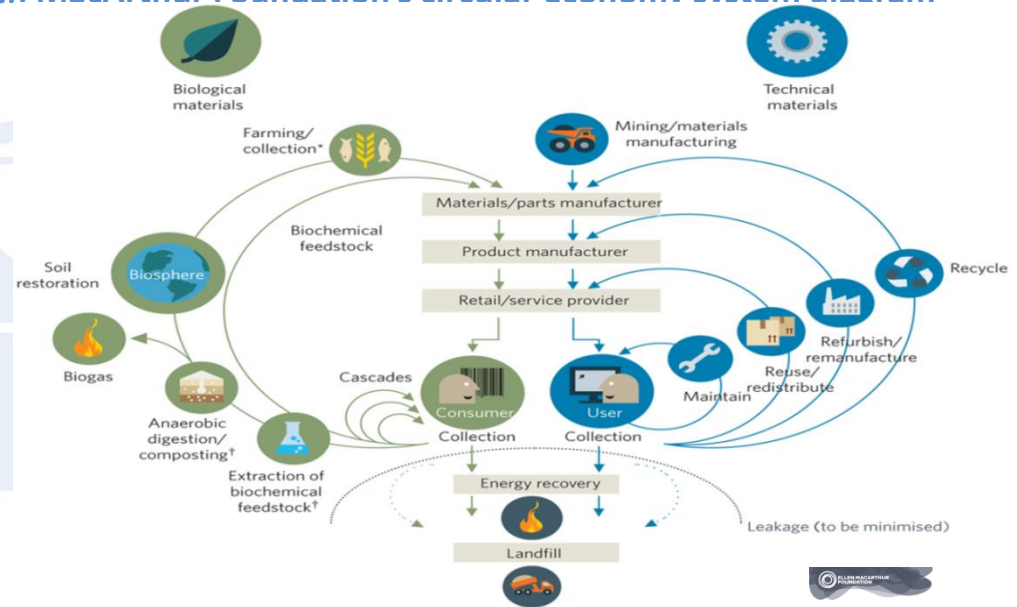
A programme of in-depth transformation that is mobilising a vast ecosystem. It is a long and complex task, that opens up a vast range of opportunities.



# Modularity in ICT: The loops of the Ellen MacArthur Foundation's circular economy system diagram

## modular product design

- **Product life extension**, as modular design is a potential lever to enable easier maintenance, reparability and refurbishment.
- **Creation of secondary component markets**, as modular design requires the adoption of standardized components that can be re-used in other applications.
- **Higher price for material waste streams**, as modular design allows for easier separation of material inputs and therefore higher purity of after-use material streams.
- **Reduction in dependency on finite feedstock**, as modular design enables high purity after-use material streams which improve the quality of recycling, allowing manufacturers to replace virgin materials with secondary materials.



1- Products can be upgraded/maintained easily, and their lifespans extended

2- Full products and/or individual components can be refurbished for future use

3- After collection of equipment to be sent to recycling centers for separation, materials streams are separated for high purity recycling and higher recycling ratio.



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**Thank you !**



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# Appendix



# Internal and external modularity: keep up with evolution



**Livebox V2:** Wi-Fi functionality on daughter board, connected with Mini-PCI

Next generation Wi-Fi might also require a CPU update to avoid bottleneck



**Set-top box Livebox Play:** Blu-ray player pluggable by consumer

SATA connector, next generation devices might use m-SATA or M.2 (as current SSD)

➔ **Add innovations at steady pace:** product remains attractive

# Modularity linked to circular economy

*One product* = several possibilities of circular economy loops

- ✓ **Casing:** when product is updated, damaged plastic parts can be recovered
  - initial investment in material can be higher (PMMA/PC blend, with very good scratch resistance instead of current ABS)
- ✓ **Motherboards:** use old premium boards for new low cost models
  - maximize recovery rate of precious metals (gold, silver, platinum group metals, tin, etc.)

