



Digitalisation for the Green Deal

Webinar 3 – Impact of digital transformation on the environment and the role of clean technologies

March 2, 2021

Key messages from webinar #2

- Deep Dive on Digitalisation
 - Various tools, actors
 - Pros/Cons of Digitalisation
- Key relevance of Digitalisation for Development Cooperation
- Digitalisation as a strategic tool of the EU Development

Agenda for webinar #3

- **Tools** available on Digitalisation
- **Environmental risks** of digitalisation
- Digitalisation applied to **clean energy**
- Digitalisation supporting the **circular economy**
- **Sustainable Digital Infrastructure**
- Group work

Tools for promoting Digitalisation

Energy & Digital Tech

- Towards the next MFF:
 - Very small Technical facility available on digital already
 - End of April a « bridge » technical facility will be available for studies and TA
 - In 2022 (depending on NDICI programming) a consistent TAF will be available through the entire MFF
- Unit INTPA F6 has a specific facility for energy and digital and collaborates with F5
- Focal point in F5 for green and digital: Ms. PIROLI Milena (INTPA)
<Milena.PIROLI@ec.europa.eu>

Developing Digitalisation Initiatives

Engaging Private Sector

- Main instrument is the **EFSD+** (European Fund for Sustainable Development Plus) through the banks to establish venture capitals
- Support the development of a conductive business environment through **Technical Assistance** and **digital governance programmes**.
- Action through the D4D Hub – a coordination platform with EU MS and private sector
 - Contact: BARONE Barbara (INTPA) <Barbara.BARONE@ec.europa.eu>; MACOVEI Georgiana (INTPA) Georgiana.MACOVEI@ec.europa.eu

Digitalisation Toolkit

- [Introduction](#)
- [Policy and regulation](#)
- [Copernicus](#)
- eGovernance
- Entrepreneurship
- VET for professionals
- eAgriculture
- Big data and AI
- Connectivity & Digital Infrastructure
- Smart Cities
- Digital & Gender
- Digital & Energy
- Digital & Education
- Digital financial services/inclusion
- Self-learning: digitalisation: where to go
- Cybersecurity /Trust&Security/Diplomacy
- Digital & Health


D4D Hub


Key actions


- Creation of the “African Union - European Union [D4D Hub](#)” - based on the recommendations of the [EU-AU Digital Economy Task Force Report](#)
- Launch of a series of African-European multi-stakeholder initiatives, boosting the rollout of the African Union's own [Digital Transformation Strategy](#)
- Operationalise the Team Europe approach in digital transformation, positioning the EU with its human-centric digital economy model on the world's digital map.
- EC and BMZ organized the [Smart Development Hack](#) (April 2020), gathering 1000+ innovative digital solutions to help facing the COVID19 emergency


Capacity4Dev : Digitalisation 4 Development


Digitalisation 4 Development



Home



Highlights



Wiki



Library


Discussions


Media


Events


Members

 **Quick post (Discussion)**

Share information or an idea, start debate or ask a question here...

Latest activity

Digital for Women

W [Francesco STELLA](#) created a new WIKI page | 6 days ago

Digital4Women: how to enable women empowerment in Africa through mainstreaming digital technologies and services in EU development programmes Since the end of the 20th century, lives and societies have increasingly become digitalised with internet, digital technologies and tools as drivers for...


👍 0 💬 0 👁 26


Infosheet 3 - Copernicus


W [Francesco STELLA](#) created a new WIKI page | 1 week ago

Toolkit Infosheet 3 - Copernicus DIGITALISATION FOR DEVELOPMENT. A TOOLKIT FOR DEVELOPMENT COOPERATION PRACTITIONERS INTERNATIONAL PARTNERSHIPS What is Copernicus? Satellite observations, including imagery and other data can provide key information for a number of areas in which the EU is involved...

Search in group...


 Edit membership

 Invite a member

 Notifications are enabled (disable)



About the group

Sharing information on Digital for Development

 Recommend

Group created on 25 July 2019

Share



Icebreaker

Digitalisation is going to save our world, right?



European
Commission

Environmental Risks of Digitalisation

Digitalisation: positive vs negative impacts on the environment

Impact	😊 vs 😞
Production and distribution of ICT equipment	
Dematerialization and online delivery	
Energy consumption in use (directly and for cooling)	
Reduced need for travel	
Greater energy efficiency in production and use, and recycling	
Short product life-cycles and e-waste	

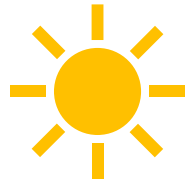
Digitalisation: positive vs negative impacts on the environment

Impact	😊 vs 😞
Production and distribution of ICT equipment	😞
Dematerialization and online delivery	😊
Energy consumption in use (directly and for cooling)	😞
Reduced need for travel	😊
Greater energy efficiency in production and use, and recycling	😊
Short product life-cycles and e-waste	😞

Focus on ICT & Climate interaction

What is the effect?

Understanding digitalisation means to acknowledge and to comprehend its dual nature.



- **Smart devices:** reduce energy need for devices
- **Smart-grids** allow for flexible and decentral energy-grids + renewable energy sources
- **Teleconference-systems** reduce need for travel
- **Control and transparency**



- **Energy consumption**
- **Consumption of resources** (e.g. „rare earths”)
- **Electronic waste** is polluting the environment + „recycled“ under extremely bad circumstances
- **eCommerce** increasing postal deliveries

Focus on ICT & Climate interaction

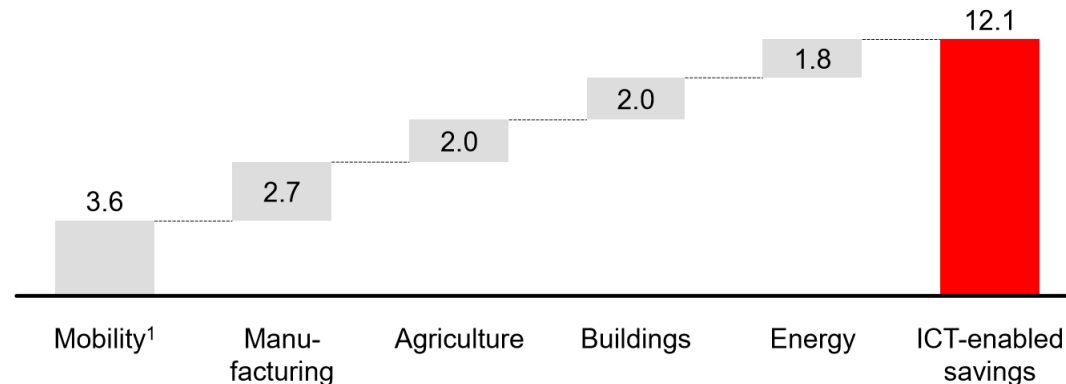
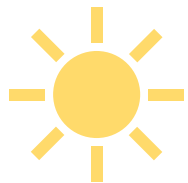
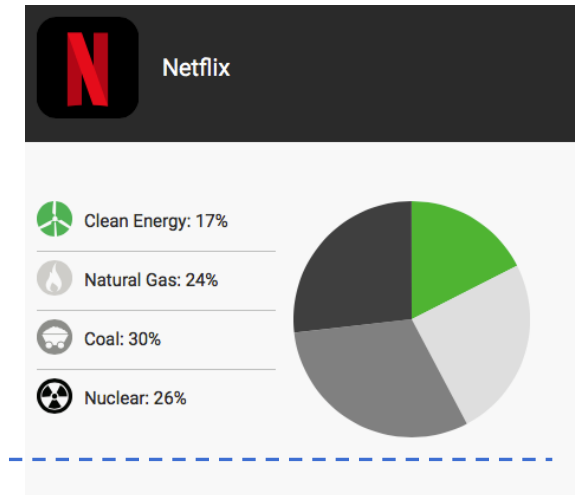
What is the effect?

Understanding digitalisation means to acknowledge and to comprehend its dual nature.



Across the tech sector we need to recognize that data centers will rank by the middle of the next decade among the large users of electrical power on the planet.”

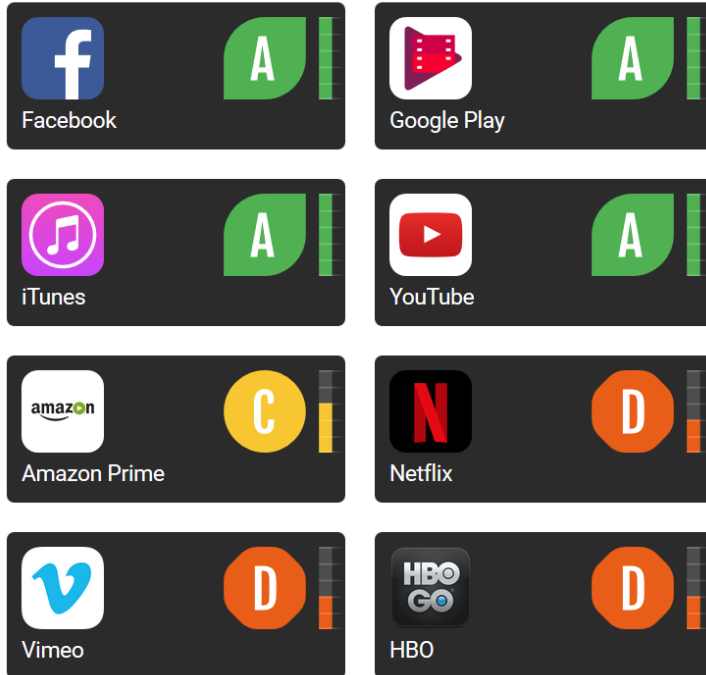
- Brad Smith, President Microsoft -



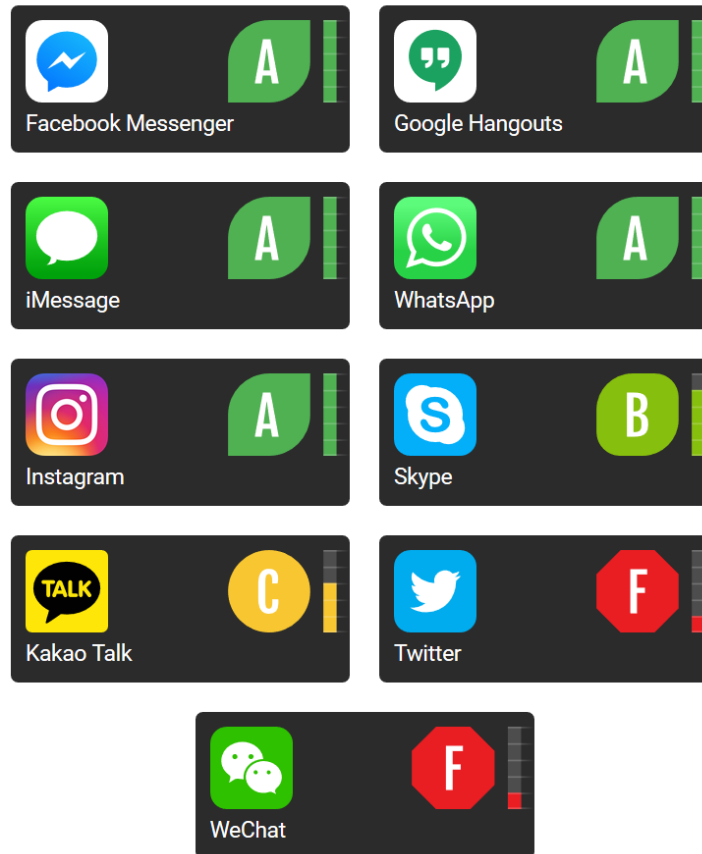
**CO2 abatement
potential by
sector (2030)**

Are your apps clean?

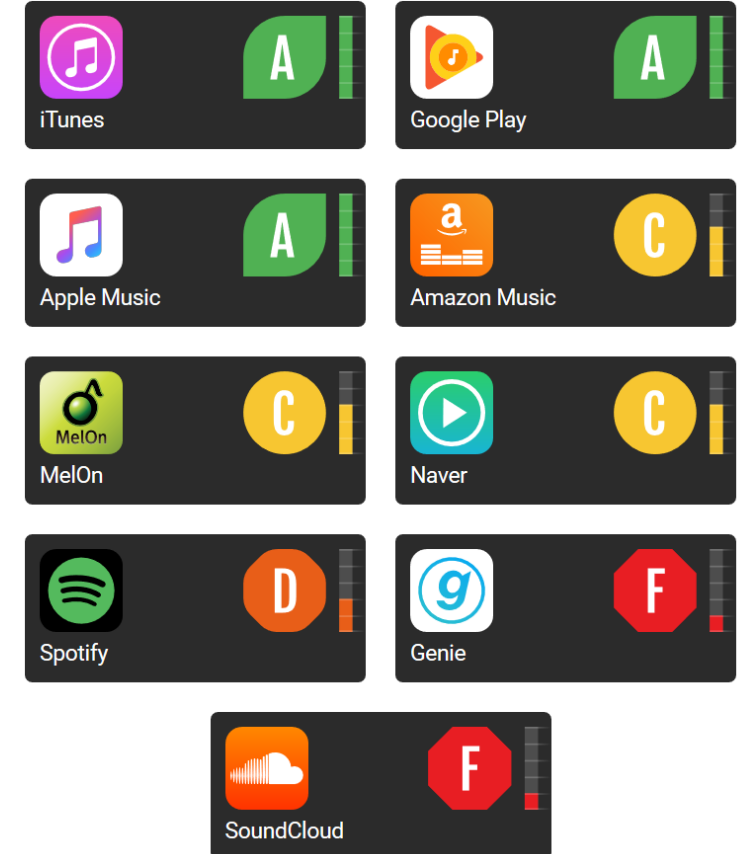
VIDEO



MESSAGING

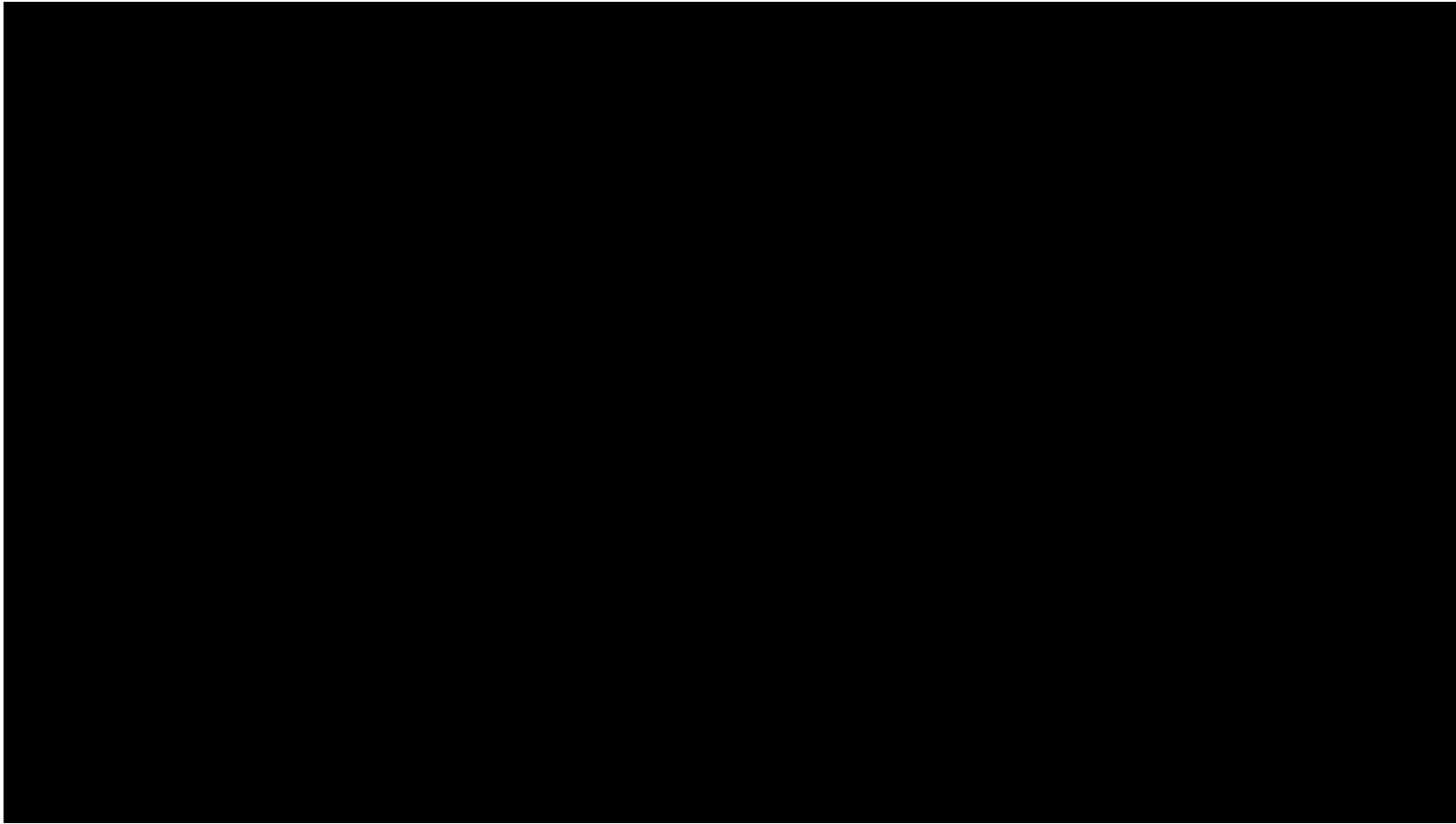


MUSIC



Click Clean Report [Greenpeace] - <http://www.clickclean.org/international/en/>

E-Waste: where does it go?



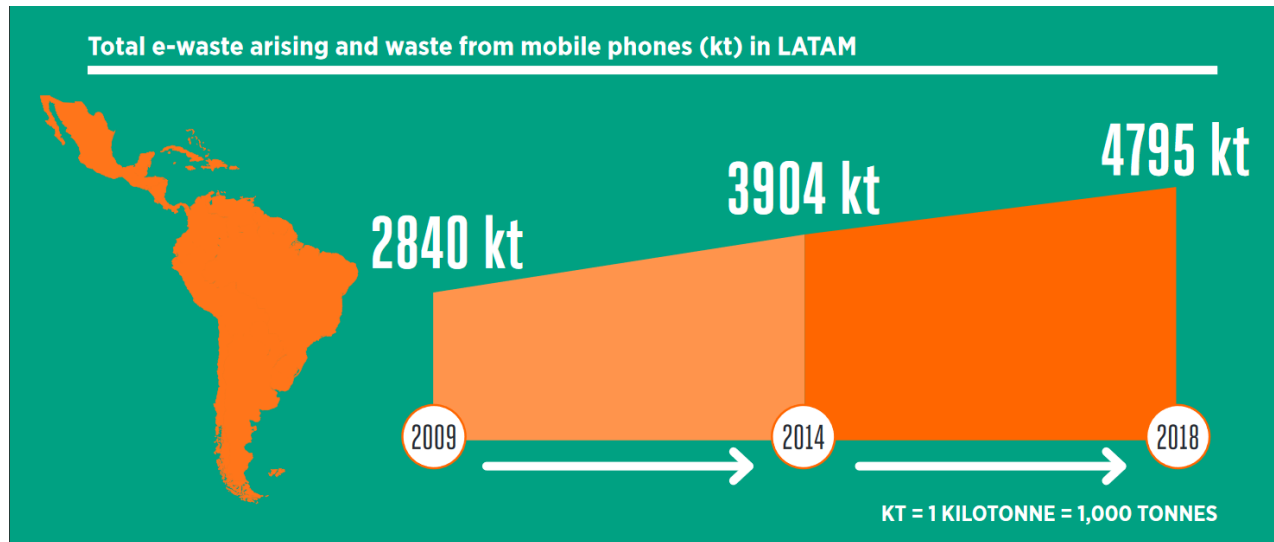
E-waste, quantified



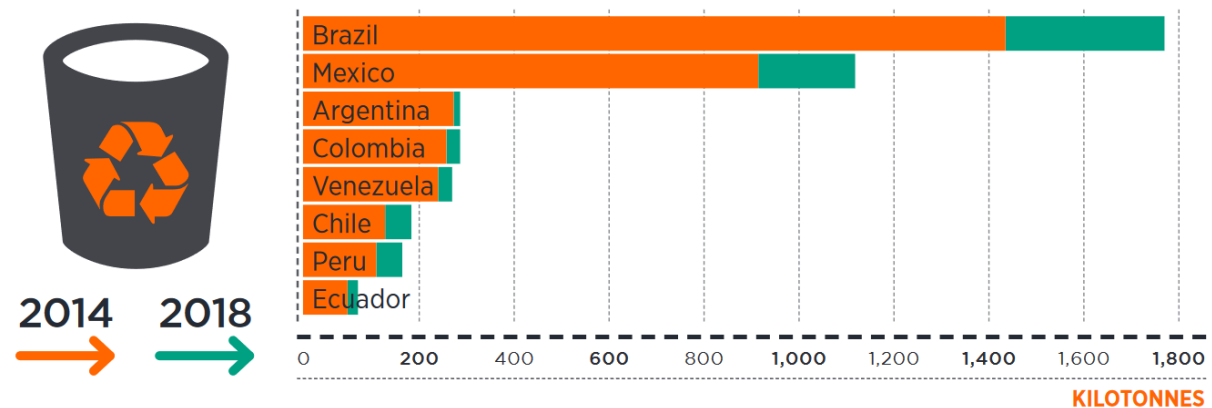
Note: 2017-2021 are estimates

Source: ITU, 2018

E-waste, quantified



eWaste in main Latam markets



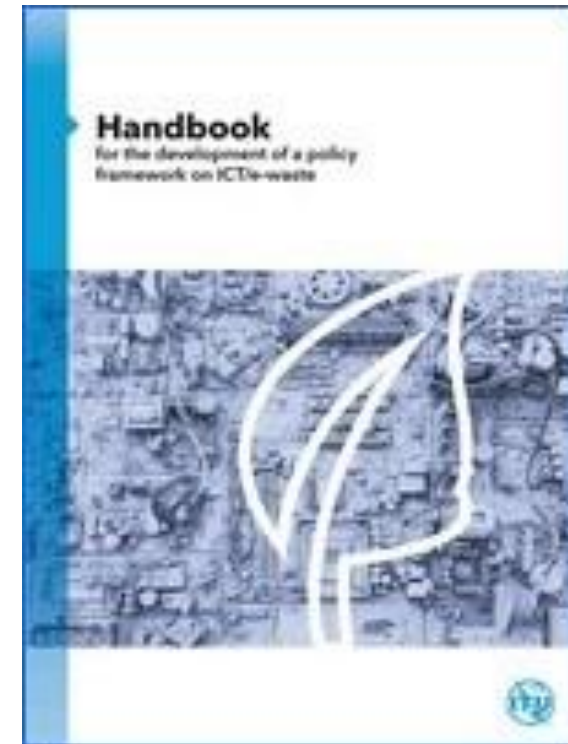
Source: GSMA, 2015

E-waste: possible (bottom-up) solutions

- Agbogbloshie Makerspace Platform (AMP)
 - <https://qamp.net/>
- World Reuse, Repair and Recycling Association
 - <http://wr3a.net/>
- Solving the E-waste Problem (StEP) Initiative
 - <http://www.step-initiative.org/>
- The Restart Project
 - <https://therestartproject.org/>

E-waste: possible solutions at the policy level

- Handbook for the development of a policy framework on ICT/e-waste
- Developing an e-waste national policy and regulatory framework for **Malawi** [study]
- E-waste Management Policy and Regulatory Framework for **Saint Lucia** [study]



[https://www.itu.int/en/ITU-D/Climate-Change/Pages/ewaste/Ewaste Policies and Regulatory Frameworks.aspx](https://www.itu.int/en/ITU-D/Climate-Change/Pages/ewaste/Ewaste_Policies_and_Regulatory_Frameworks.aspx)

Case Study Discussion

Ali Baba's Ant Forest



Case Study Discussion

- Over 500 million users
- Planted 100 million real trees in Northwest China
 - Total area of 112'000 hectares,
- Protected a total area of 12'000 hectares.
- Creation of 400'000 job opportunities (USD 8.4 million in income for farmers)
- Awarded as 2019 Champion of the Earth for Inspiration and Action by UNEP

Case Study Discussion

- What do you think about such a solution?
- Pros? Cons?
- Is it replicable? Is it scalable?
- Can it be improved?
- ...

→ Share your thoughts on **Mentimeter**


Digitalisation applied to clean energy

Clean Energy Transition: why?

- A more secure, competitive and sustainable energy system will address the existential challenge of our time - **climate change**.

How?

1. Energy **efficiency** first!
2. Showing **global leadership** in the take-up of renewables
3. A new energy **rulebook**
4. More **rights** for consumers
5. Increased security of supply thanks to a **smarter** and more efficient electricity market

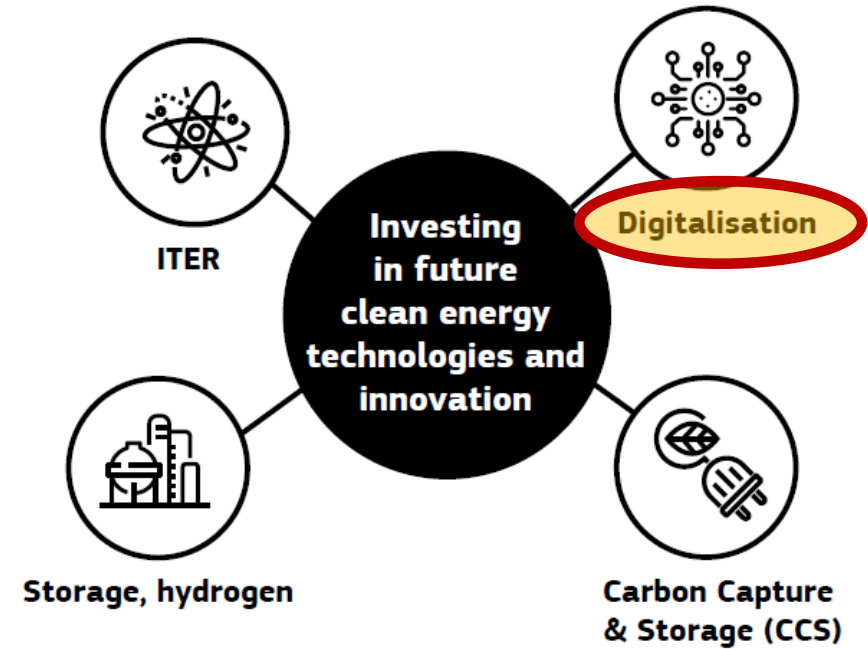


EU Energy targets by 2030

- At least **40%** cuts in greenhouse gas emissions
- At least **32%** renewables in energy consumption
- At least **32.5%** energy efficiency

Clean Energy Transition

- The clean energy transition requires important investments: **research** and **innovation** will contribute to the creation of a strong industrial basis and make the EU a global technology leader



Clean Energy and Cooperation

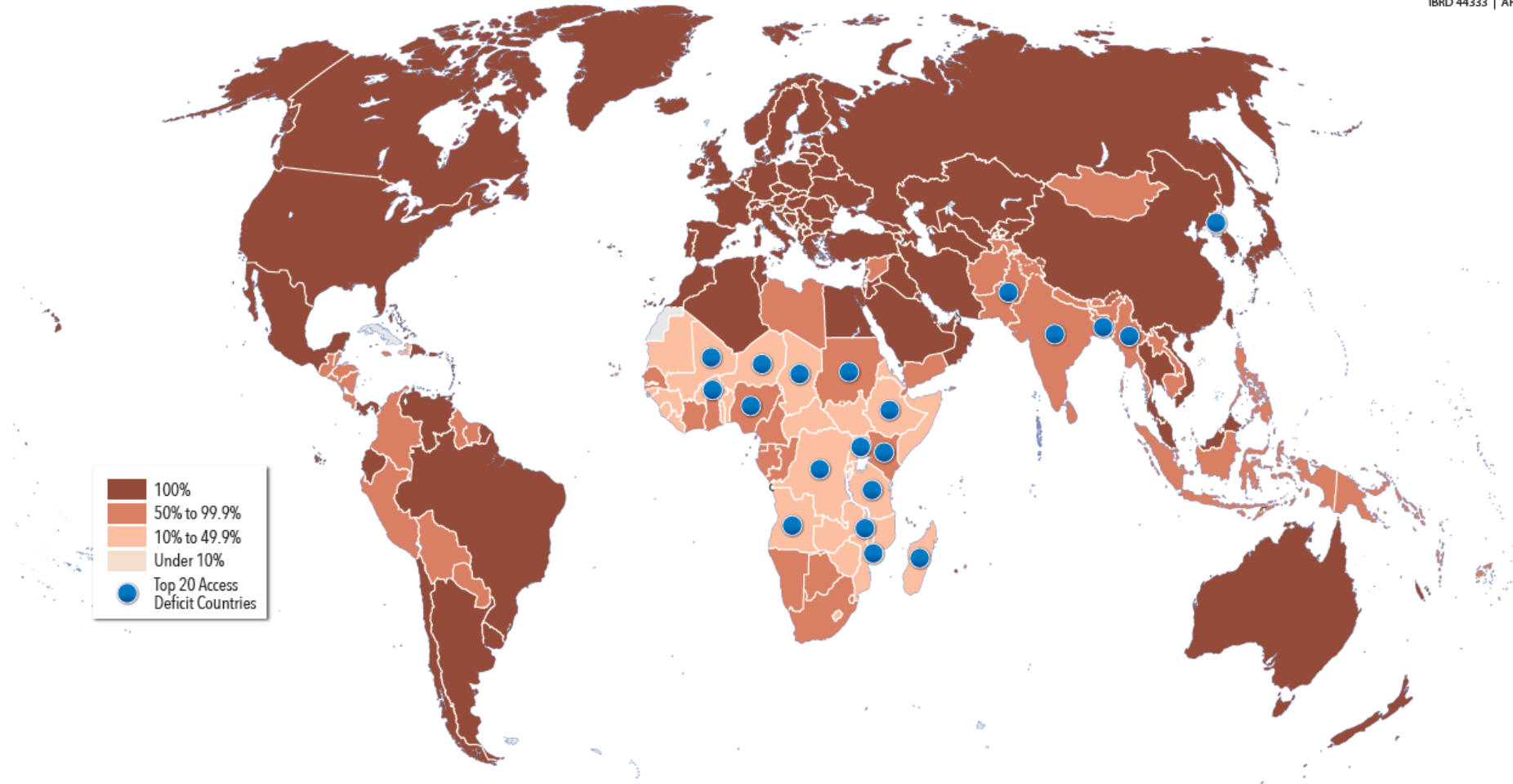
- EU's external **energy policy** is based on **close cooperation** with all our external partners, to ensure security of supply, foster the global clean energy transition, and create a level playing field for EU companies on global energy markets.
- **International energy cooperation** is also key for managing the EU's external energy dependency, given that the EU imports half of its energy needs.

Clean Energy and Cooperation

- **Boosting investment** in clean energy in our close **neighborhood**, and particularly in **Africa**, will create sustainable growth and jobs locally.
 - EU is Africa's biggest partner for sustainable energy
 - Access to energy in Africa is a key European policy goal
 - Approximately €2.7 billion of financial assistance has been or will be provided to Sub-Saharan Africa in the period from 2014 to 2020, giving about 40 million people access to energy.
 - EU-Africa Platform of Sustainable Energy Investments established

Share of population with access to electricity in 2017

IBRD 44333 | APRI



Source: World Bank.

Digitalisation & Clean Energy

A clash of Worlds: who will win?

- **Utilities** seek to ensure reliable electric service to customers and therefore prize stability
- **Tech start-ups** are focused on rapid change.
- Successful firms from Silicon Valley created new markets and established natural monopolies.
- Start-ups in the Energy sector seek to conquer markets already monopolized by incumbent firms (e.g. electric power utilities).

Digitalisation & Clean Energy

Technology is not enough

- Some firms/governments are using digital innovations to increase energy efficiency
- Some firms are using digital technologies to reduce the cost of extracting oil & gas
 - Enable higher consumption of fossil fuels and overwhelm the carbon savings
- Digitalization can support clean energy systems IF policies incentivize decarbonization

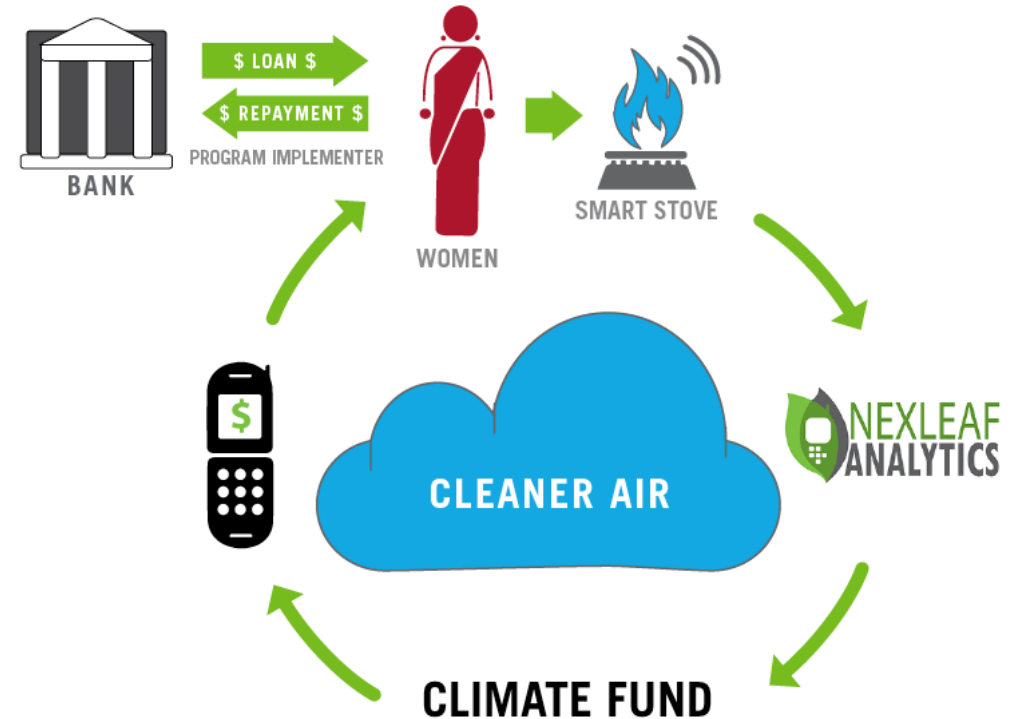
Opportunities from Digitalisation

- In 2016, global investment in digital electricity infrastructure and software reached \$47 billion
 - Figure greater than the amount spent on natural gas-fired power plants.
- Upgrading the existing electricity system is only the first step in an electric power revolution.
- Important effect of digital innovations: **decentralization of power systems** around the world

Digitalisation & Clean Energy

StoveTrace - India

- StoveTrace is a cloud-based remote monitoring system for improved cookstoves in rural households.
- StoveTrace continuously uploads data on cooking events in a home, giving improved stove stakeholders access to use measurements in near real time, without additional field visits.
- StoveTrace also enables rural women to receive cash payments for their measured use of improved cookstoves and **carbon mitigation**.
- StoveTrace has been installed in over **700 households** across more than **30 villages** in India.



Digitalisation & Clean Energy

M-KOPA, Kenya/Nigeria/Uganda

PRICING

Paying for your M-KOPA device					
Product	Daily rate	Number of days	Deposit	Gross price	Cash price
M-KOPA Solar Power Set	NGN 2,975 425/ day	104	NGN 39,000	NGN 348,000	NGN 275,000

What is in the box

- 32" Flat Screen Digital TV
- 2 x M-KOPA 6000 Control Units
- 2 x 60 W Solar Panel
- 2 x Solar Tube Lights
- 1 x 6M Extension Cable
- 1 x 18" Fan
- Phone Charge Cables
- 2 x Solar Lights with high and low setting

Benefits Of M-KOPA Solar Set

- TV-up to 12 hours of viewing (including daylight hours)
- Fan-upto 12 hours
- Lights upto 6 hours a night
- Hours of usage is only an indication, true usage will depend on the solar home system.
- No need to buy petrol,save money
- Make payments in full and on time to qualify for system upgrades and more
- No more cost,smoke and noise from a generator
- 2-year warranty on the M-kopa system /panel/battery/TV
- 1-year warranty on accessories and lights



Digitalisation & Clean Energy

HITCH - Nigeria

- HITCH is a cost-effective solar+battery-powered smart wireless router that automatically creates and interconnects community WiFi hotspots into a dynamic cloud
- HITCH devices run entirely on renewable energy (solar and battery) to power the services.
- Including off-grid charging capacity to power functional productivity-enhancing devices (such as smartphones and LED lights) for end-users as an add-on to the value proposition.

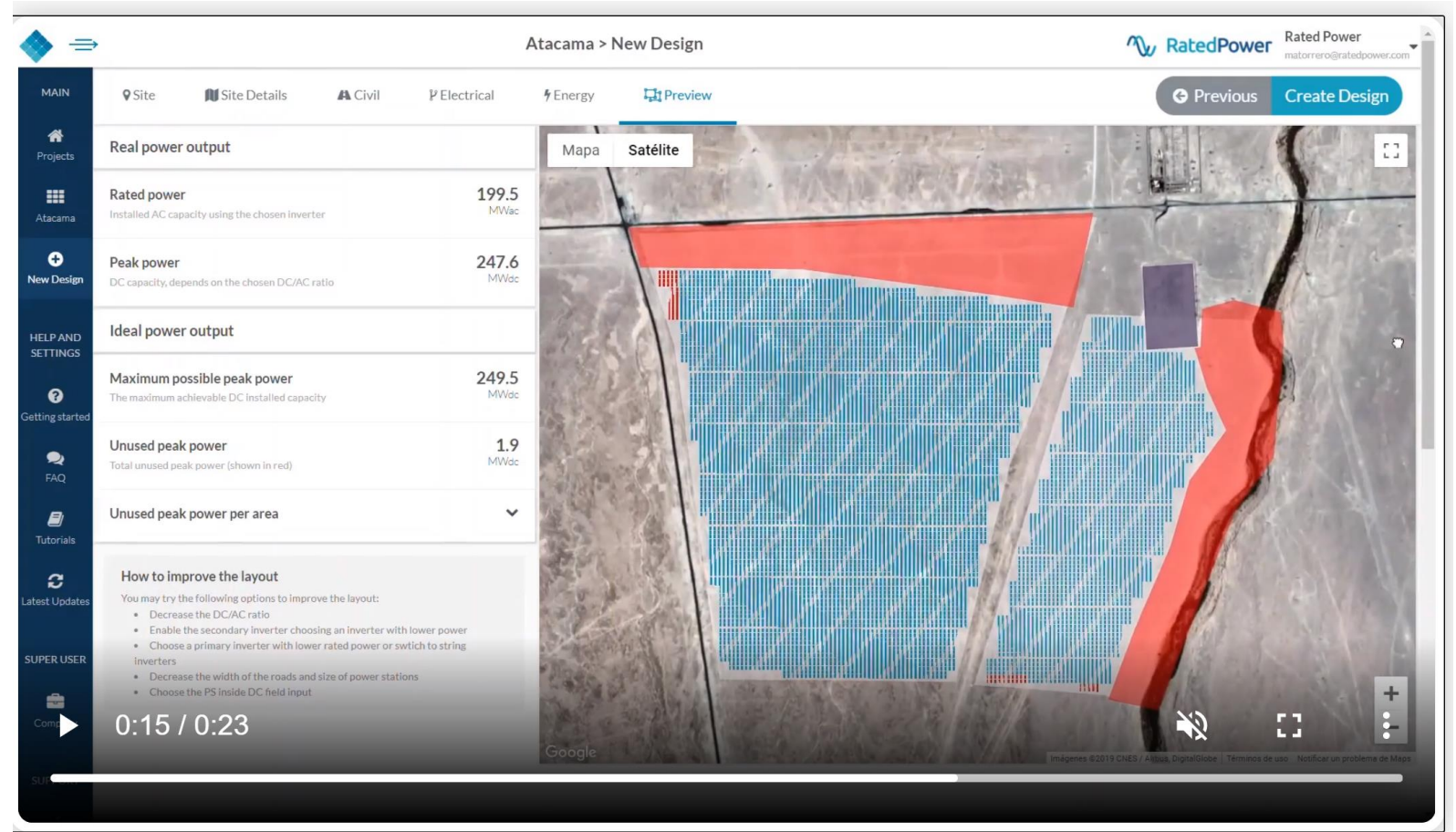
Digitalisation & Clean Energy Latin America

- In **Chile**, Enel Green Power has been using IoT to monitor hydroelectrical power generation
 - MEMS (Micro Electro Mechanical Systems) acoustic sensors for energy harvesting
 - Collecting data to reduce costs and increase energy efficiency
- In **Mexico**, Siemens introduced the first digitalization system optimizing the use of electricity while reducing the emissions of contaminated gasses

Digitalisation applied to clean energy

RatedPower

- Software to design utility-scale Photovoltaic Plants
- Accelerate the transition to solar power



Major opportunities, major risks

- Proliferation of internet-connected devices on the electric power system
 - Multitude of new access points for malicious hackers seeking to steal sensitive customer data or take down the grid
- Privacy issues: electricity consumption data can be extremely revealing
 - Household's consumption habits profiling
 - Proprietary business practices

Major opportunities, major risks

ANALYSIS

Are smart meters real-time surveillance spies?

Smart meters provide highly detailed energy-use data that law enforcement can use to bust indoor pot farmers. And that's only the tip of potential smart meter surveillance.



Smart meters provide highly detailed energy-use data. The info can be used by police to find and to bust indoor pot farms, by insurance companies to determine health care premiums, and by criminals to determine if you own high-dollar appliances and when is the best time to steal them. And that's only the tip of the potential privacy invasion iceberg.

In central Ohio, police file at least 60 subpoenas each month for energy-use records of people suspected in indoor marijuana growing operations, [reported the Columbus Dispatch](#). Most of the houses with indoor pot growing operations are reportedly in quiet neighborhoods without much traffic. DEA agent Anthony Marotta said the subpoena is only one tool used to catch "grow house" operators. Police get a tip about suspicious activity, but if undercover officers don't discover anything illegal during a stake out, then utility consumption records can be sought. "How else can I get an indicator to get probable cause if I can't see anything?" Marotta said to reporter Dean Narciso.



Digitalisation promoting circular economy

Digitalisation & Circular Economy

- Two transitions already happening in the EU
- Efforts to promote them are rarely aligned

How to do it?

1. Think systemically, define a **vision and act**.
 - Digital review of the circular economy transition
 - Sustainability review of the digital transition
2. Provide an adequate **governance** framework and economic **incentives**
 - Expansion beyond siloed agendas
3. Encourage **collaboration** across European society and economy as well as globally
 - Raise awareness

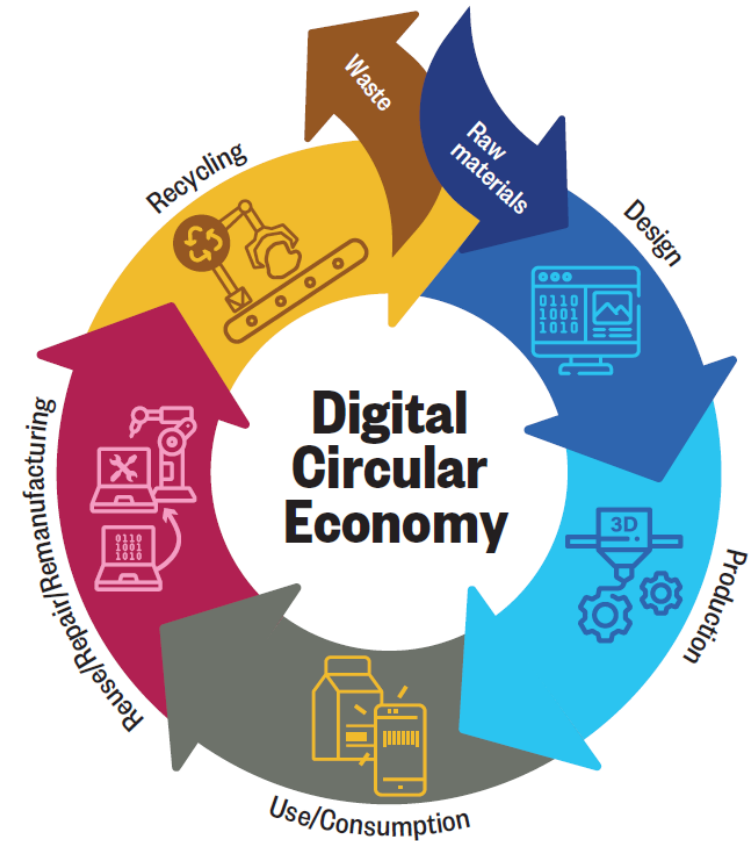
Why to do it?*

- The transition to Circular Economy would create **new markets, jobs and products**
- Boost EU GDP by 7%
- Generate a net economic benefit of €1.8 trillion by 2030.

* (On top of saving the Planet)

Digitalisation & Circular Economy

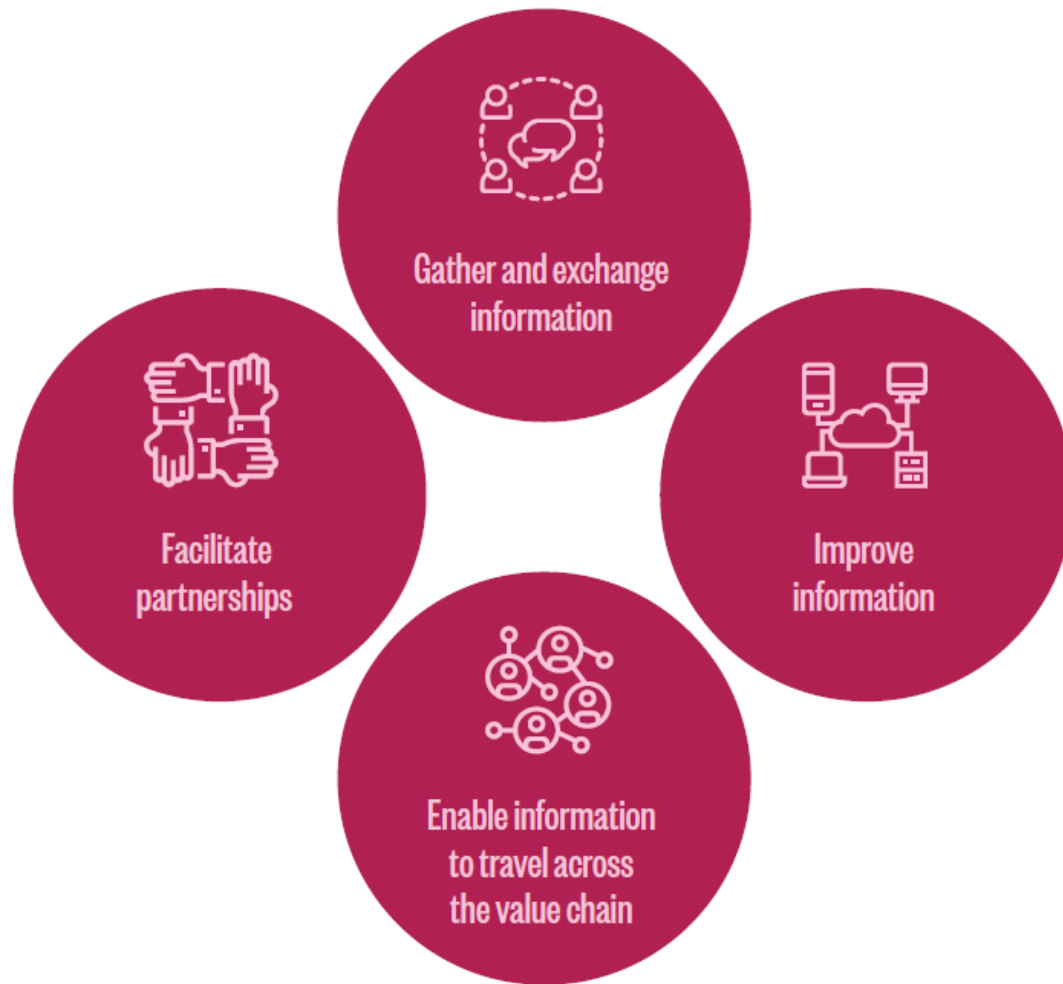
- Data and digitally-enabled solutions are already contributing to the circular economy.
 - Improve the use of natural resources, design, production, consumption, reuse, repair, remanufacturing, recycling and the overall waste management.



Leveraging Digitalisation towards the Circular Economy: 3 different approaches

1. Improve connections and information **sharing**
2. Make products, processes and services **more circular**
3. **Influence & empower** citizens and consumers

1. Improve connections and information sharing



Key functions

- Raise awareness
- Comply with existing (EU) rules
- Produce actionable knowledge
- Improve policymaking
- Reusing, recycling, and minimising waste
- Sharing assets
- Enabling feedback loops
- Reverse logistics
- Enabling secure information sharing

2. Make products, processes and services more circular



Key functions

- Encouraging reuse
- Enabling repair
- Improving predictive maintenance and durability
- Improving waste collection, sorting and recycling

3. Influence & empower citizens and consumers



Increase citizen/consumer awareness,
and enable them to make sustainable
choices and co-create knowledge

Key functions

- Information provision
- Nudge behavior change
- Incentivizing recycling
- Co-creating knowledge

Digitalisation & Circular Economy

Coliba – Ivory Coast

- Coliba team collects plastic waste from households and businesses through a [mobile app](#) and a 40+ strong team of employed collectors, sorts and cleans the plastic at Coliba's facility.
- The team transforms the clean plastic into pellets and re-sells these pellets to local or international buyers who use them to create new goods.
- Plastic bottles collected from over 3,000 monthly active users on the mobile app
- 2 tons of plastic a day recycled



Digitalisation & Circular Economy Cambodia – smarter infrastructure

- Cellcard already saves \$7,600 and 38.4 metric tonnes of CO2 per site over a 5 year period.
- GSMA demonstrated how Cellcard could have saved \$51,200 per site over a 10 year period, with CO2 emissions reduced by an additional 82.2 metric tonnes of CO2 over five years, by shifting to fully solar-powered sites.

→ Cellcard's use of solar power saving as much as \$30M over a 10-year period as well as 100,000 metric tons of CO2.20.



Farm to Fork Strategy

- Key to achieving the goals of the EU's Green Deal.
- Regulatory and non-regulatory measures needed for more efficient, climate-smart systems that provide healthy food, while securing a decent living for EU farmers and fishermen.



make sure
Europeans get
affordable and
sustainable food



tackle climate
change



protect the
environment



preserve
biodiversity

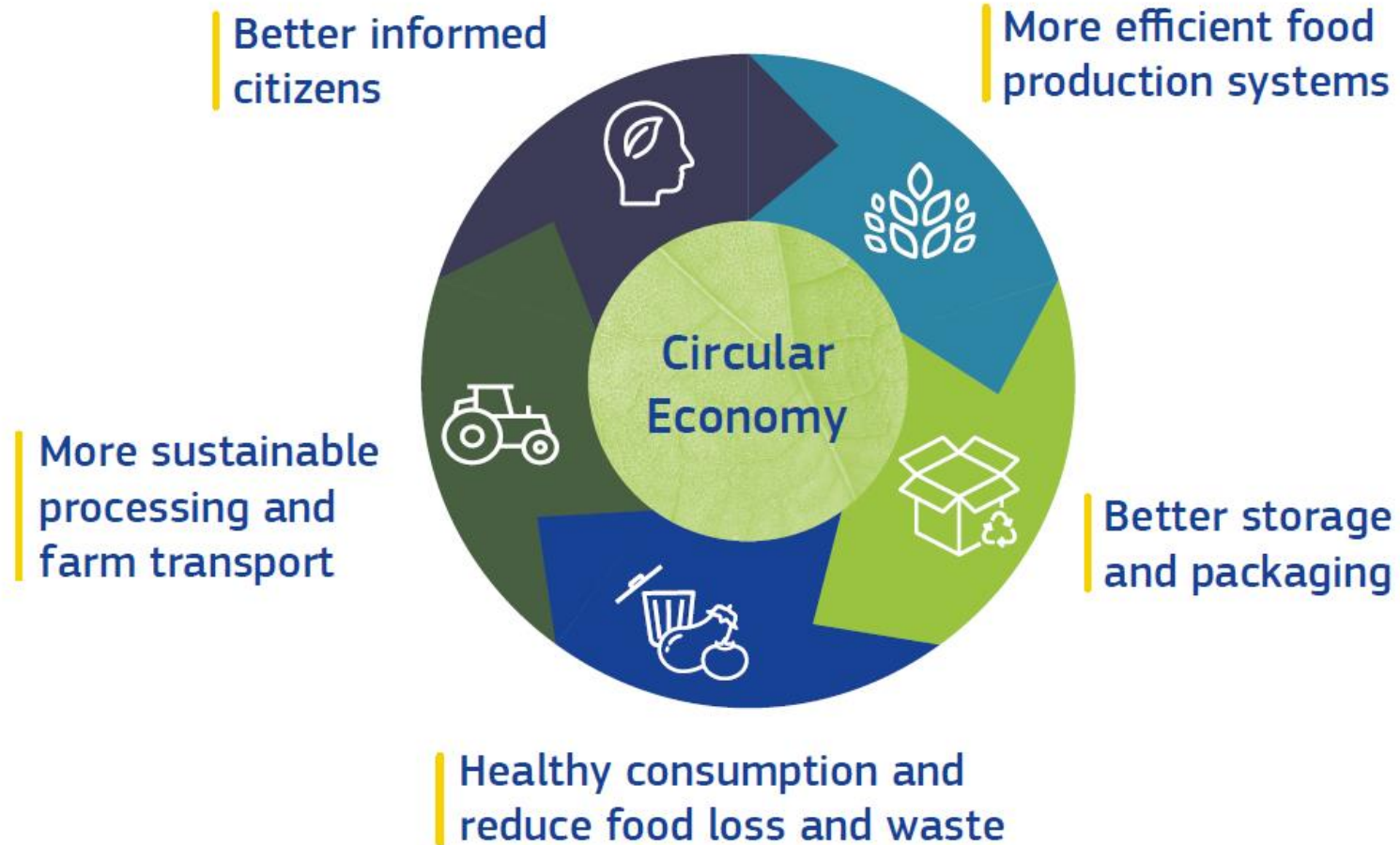


increase
organic
farming

Link: https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2020-941864_en

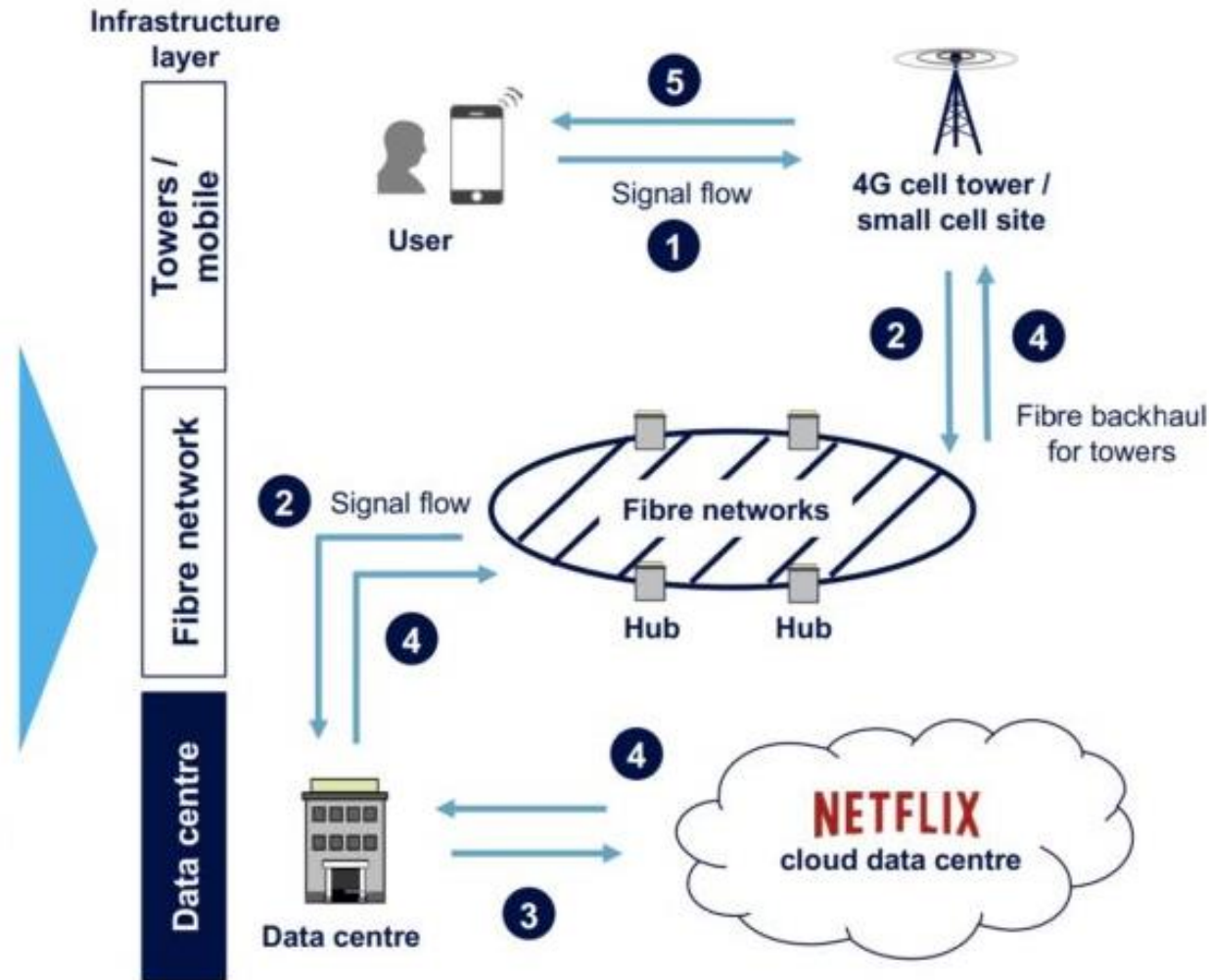
Farm to Fork Strategy

Contribution to achieving a circular economy



Sustainable Digital Infrastructure

Components of a digital infrastructure



Digital infrastructures indispensable



Different industries (pharmaceutical, health care, manufacturing, energy, marine industry, and governmental institutions).

Enterprise social media platforms

Knowledge Intranets

Education sector

...

SDG 9: Industry innovation and infrastructure



Focuses on technological progress in finding sustainable solutions to economic and environmental challenges, such as ensuring growth of new industries with green supply chains and promoting energy

European Open Science Cloud

- To capitalise on the data revolution,
- [European Open Science Cloud](#) (EOSC) to provide European science, industry and public authorities with:
 - world-class data infrastructure to store and manage data
 - high-speed connectivity to transport data
 - powerful [high performance computers](#) (HPC) to process data.
- unlock the value of big data and foster scientific and technological innovation while helping achieve the objectives of the [Digital Single Market Strategy](#).

Data centres consumption



200TWh annual energy
(1%)



0.5% of global emissions



1.7 billion litres/day

Sustainability drivers



Augmented and
Virtual Reality



Home office, e-learning



Smart metering



Smart Farming

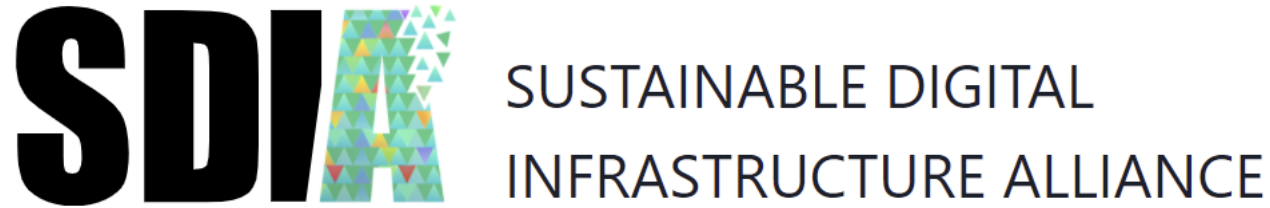


Medical support



Smart mobility

Sustainable digital infrastructures

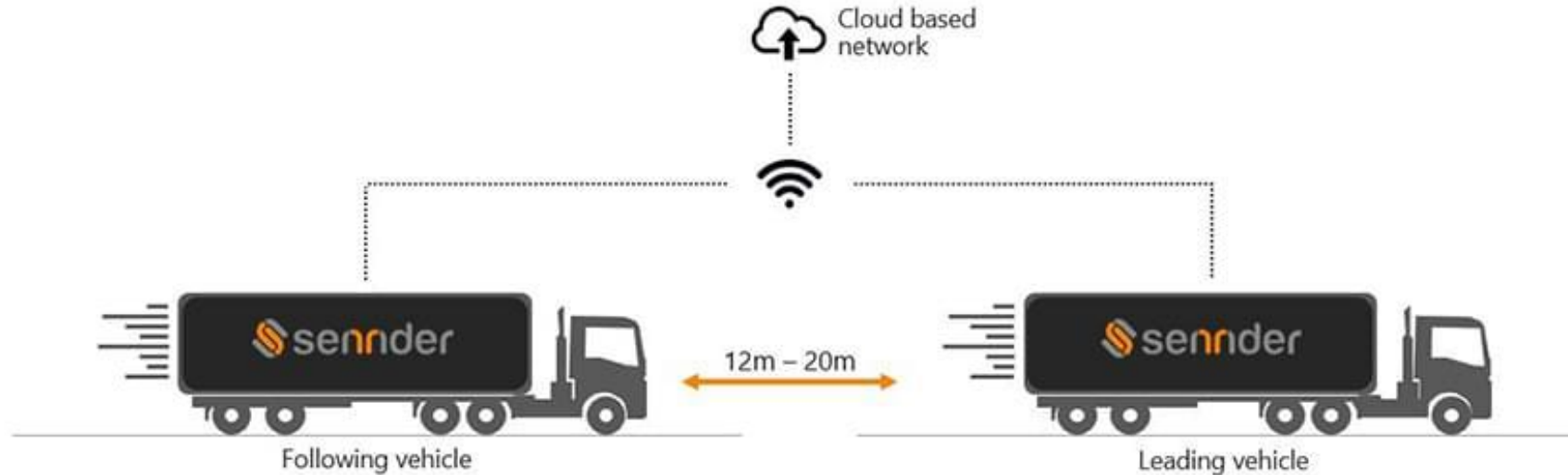


- Ensure the development of a vibrant European digital economy, without consuming unsustainable levels of resources.
- Comprehensive waste heat utilization, renewable power supply or higher server utilization rates
- **The Roadmap to Sustainable Digital Infrastructure by 2030**
- Roadmap enables every industrial actor to connect, benchmark and deliver sustainability within their segment of Digital Infrastructure value chain

Smart grids

- Smart grids are energy networks
- Monitor energy flows and adjust to changes in energy supply and demand accordingly
- Smart grids reach consumers and suppliers by providing information on real-time consumption
- **Demand Response helps fulfil the Smart Grid potential**
- Offers solutions to take advantage of the available demand response opportunities

Technologies to reduce energy performance



GPS coupled with real-time traffic information for route optimisation, on-board monitoring and feedback that enhances eco-driving performance, vehicle connectivity that can safely reduce gaps between platooning trucks to **improve fuel efficiency**, and data sharing between companies across the supply chain to ship more goods with fewer trips.

Group Discussion!

1. Each group presents their sustainability challenges and the opportunities from digitalisation
2. Discuss what key resources from the DGs could help them to support that process, as well as learn/do more in the area of Digitalisation & the Green Deal

Q&A

- Any questions? Comments? Remarks?

Thank you and see you tomorrow for our 4th webinar!

Contact: simone.sala@gmail.com



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Slide 16, 17: GreenPeace; Slide 18: Justin Weinrich, video: “The Burning Field”, <https://www.youtube.com/watch?v=HXuTgwDPGas>; Slide 19,22: picture, source: ITU; Slide 20,32: picture, source: World Bank; Slide 24: video, Ant Forest, UNEP, <https://youtu.be/ZHHIWUPopM>; Slide 36: picture, source: m-kopa; Slide 37: picture, source: Nexleaf; Slide 40: picture, source: RatedPower; Slide 42: pictures, source: CsoOnline, TheDiplomat.com; Slide 51: picture, source: Coliba; Slide 52: picture, source: GSMA; Slide 64: picture, source: <https://www.sennder.com/>.

