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Improving energy performance in 5G networks

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TIM
LA FORZA DELLE CONNESSIONI

Mobile Energy Performance (2022)

Energy consumption - 14% (2019-2022)
Data Traffic on Nets + 66% (2019 -2022)

Telco Operators (UK, Italy) are the biggest energy consumers (after the railways)

Mobile networks (by Ericsson's research)

0,2% global carbon emission

0,6% global use of electricity

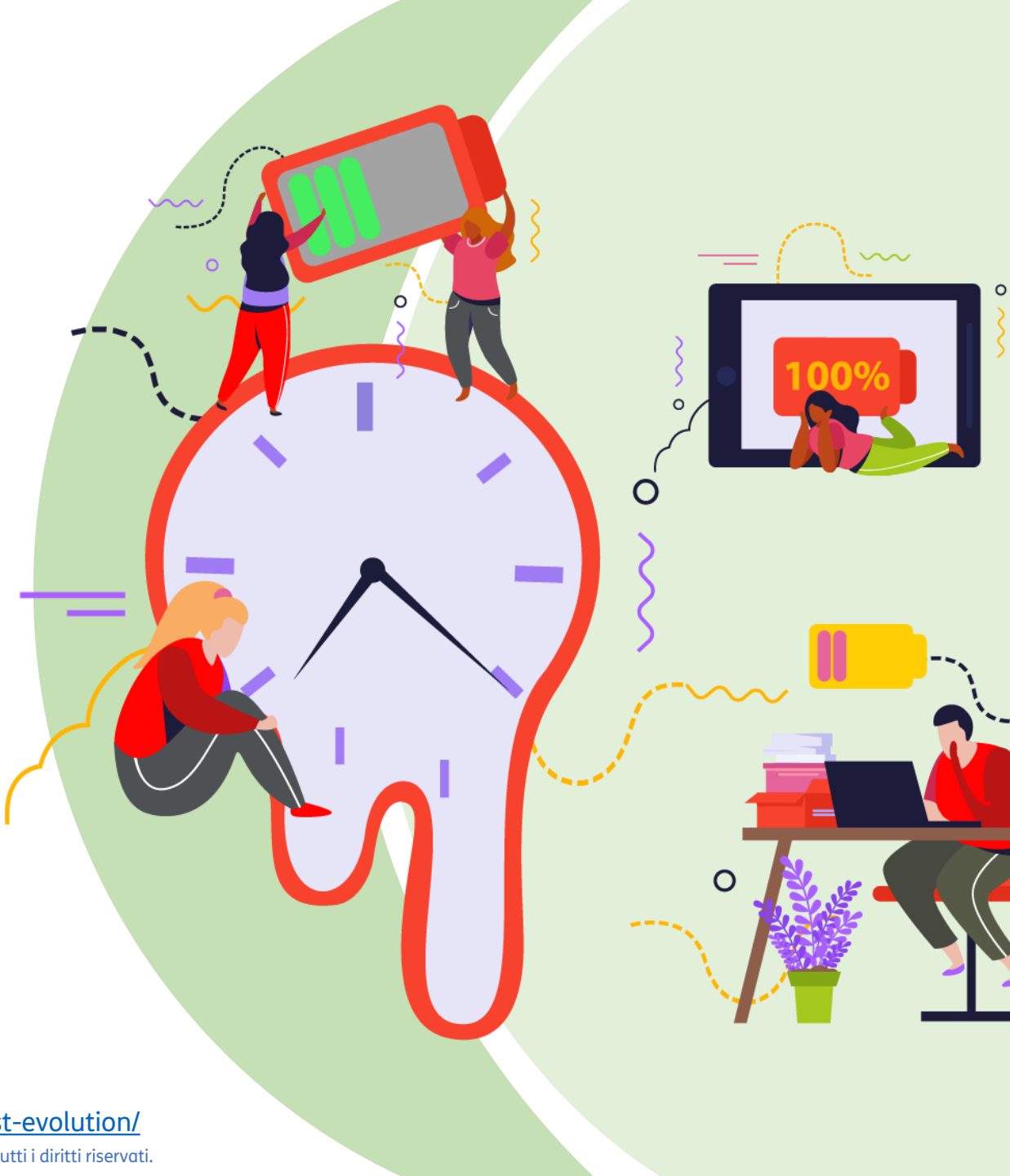
https://www.ericsson.com/en/blog/3/2021/1/achieving-sustainability-with-energy-efficiency-in-5g-networks

Bit Drives Watt

Traffic on mobile networks increases by about **30-40% YoY**

The energy consumption of **5G networks is 2-3 times of 4G** due to the increase in data traffic (by GSMA)

without intervention
the energy consumption will increase



https://www.gsma.com/futurenetworks/wiki/5g-era-mobile-network-cost-evolution/

5G

Efficiency according to ITU-R IMT-2020 and 3GPP standards

More than 90% 4G energy consumption (Joule/bit)

Power Reduction 5G Functionality

- Beamforming
- Open- RAN
- Artificial Intelligent (traffic fluctuations)
- Intelligent Sleep mode
- Flexible Architecture

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Decommissioning's value

3G as "network legacy"

consumes much more per bit

due to:

- **equipments's obsolescence**
- **Intrinsic protocols' efficiency**

5G & CO2 reduction

5G Smart Digital Services (network slicing)

Traffic control in Smart City

Smart Agriculture

Smart Industry

Smart Energy

TIM's Project

Green by Design

3G Switch Off – 18.000 sites

5.000 sites in **new energy effective technologies**

Thank you for your attention