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# The carbon footprint in subtitling: towards a more energy efficient and conscious work activity.

María Asunción Pérez de Zafra Arrufat
Training Coordinator of the Vice-rectorate for Equality, Inclusion and Sustainability. University of Granada

arrufat@ugr.es

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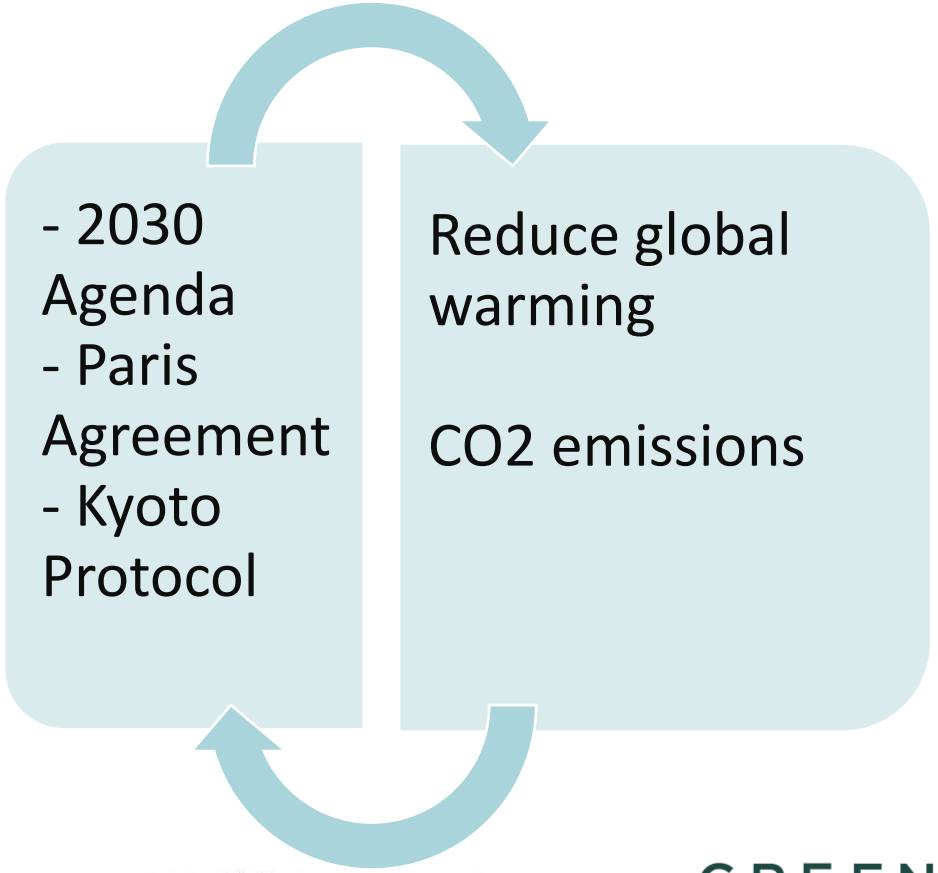
# Climate change

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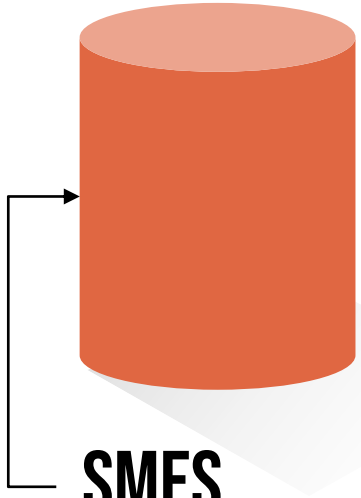
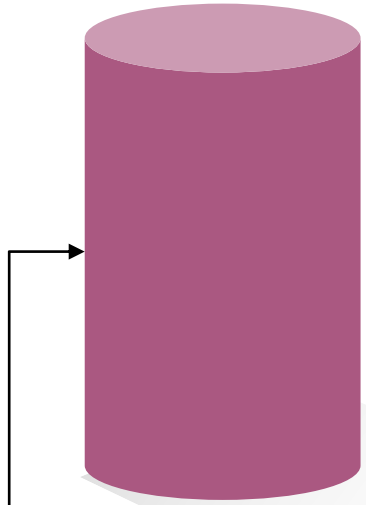
# The impact of SMEs' labor activity



**SMES**

50% of global Gross Domestic Product



**EMPLOYMENT**

70% of contracts

-UNITED NATIONS (2022)

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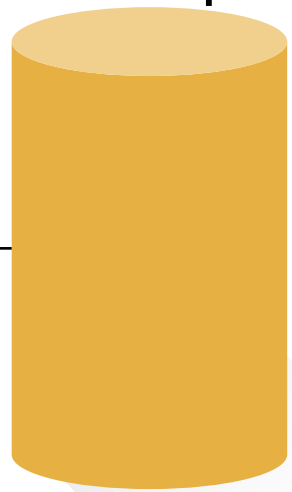
# Spanish business sector

**SMES**

99% of the total number of companies



**EMPLOYMENT**

75% of jobs



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# Tools of the Ministry for Ecological Transition and the Demographic Challenge

## CALCULATOR

Carbon footprint

## CARBON FOOTPRINT REDUCTION

## DECARBONIZATION

Estimate CO2 absorption through specific actions

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# *ICT for green*

- Subtitling is directly dependent on the use of technology
- It requires massive multimodal information management
- It includes online data management

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How much do we pollute by consuming 30 minutes of Netflix?
SERIES
STRANGER THINGS
Available Now
Strange sightings. Government secrets. Fearless kids.
And a dark force that turns a small town upside down.
Play
More info
Trending Now
NARCOS
NETFLIX

1.6kg of CO2
SERIES
STRANGER THINGS
Available Now
Strange sightings. Government secrets. Fearless kids.
And a dark force that turns a small town upside down.
Play
More info
Trending Now
NARCOS
NETFLIX

# What is this amount equivalent to?

# Driving 6.5km

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# Research questions

- What **standards are used to measure CO $_2$** emissions ?
- What are the **variables** that influence the measurement of the **carbon footprint** in the **subtitling profession** ?
- How could **emissions be reduced** ?

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# Definition of

## Carbon footprint

A carbon footprint is the total greenhouse gas emissions caused directly and indirectly by individuals, organizations, or a product. Generally, the carbon footprint can be defined as the full life cycle of carbon equivalent emissions and effects from all products and services. The ICT sector includes all consumer and corporate devices (Batmunkh , 2022)

# Sustainability in automatic subtitling

- Improve the efficiency of natural language processing techniques.
- Performance in multimodal data processing.

(Müller et al., 2019)

# How to measure the carbon footprint?

## ISO standards

- ISO14064
- ISO14067
- ISO14040

## Protocol of Bestari et al. 2015

- Based on ISO standards
- Specific for office environments
- Simplified system to encourage its application

## Other methods

- Hintemann et al. 2019
- Marks et al. 2021
- Obringer et al. 2021

Specific for computers

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What are the **variables** that influence the measurement of the **carbon footprint** in the **subtitling profession** ?

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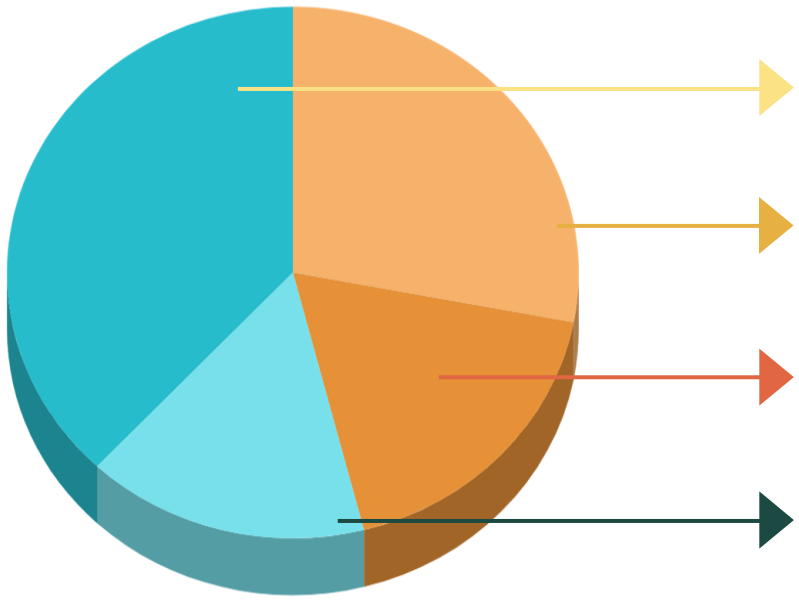
# Work environment variables



| | |
|---|---|
| **Common resources** | Air conditioning and lighting |
| **Transport** | To the office |
| **Rest room** | Refrigerator and other appliances |
| **Main resources** | Computers and printers |

# Work activity variables

| DEVICE | RESOLUTION | CONNECTION TYPE | DATA |
| --- | --- | --- | --- |
| Laptop<br>Tablet<br>Mobile | Reduces consumption and CO2 emissions | Fixed access networks instead of WiFi | Volume of data consumed |
| + SCREENS | MEETINGS | | |

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How can **emissions be reduced** ?

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# Emissions reduction

1. Calculating the current carbon footprint

2. Developing a plan for the reduction of the carbon footprint

3. Establishing a decarbonization plan

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# proposals

## Work environment

Leaving equipment in standby mode

Low consumption devices

Renewable energy sources

Sustainable means of transport

Use of **fixed** networks

## Work activity

Default video quality

meetings without camera

Reuse of the final material

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# final considerations

Subtitling in audiovisual material

Carbon footprint

The reduction of CO2 emissions

Future research line

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# Moltes gràcies

Mariasun

arrufat@ugr.es

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