

# SATELLITE TV: WHAT ABOUT ITS CARBON FOOTPRINT?



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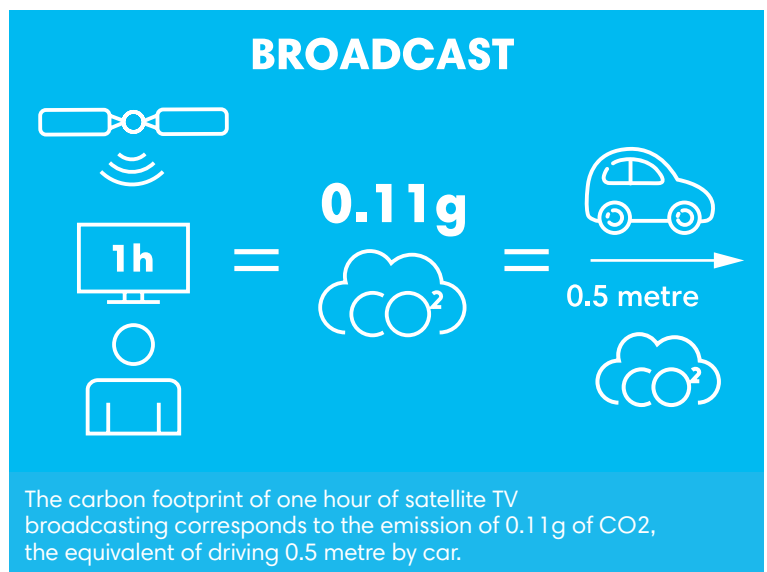
# SATELLITE TECHNOLOGY AS A MEANS OF BROADCASTING TELEVISION SERVICES: AN EXTREMELY LOW CARBON FOOTPRINT

In 2020, Eutelsat appointed Objectif Carbone to conduct a comparative study of the different modes of television broadcasting. This document aims to summarise the main conclusions of the study.


Each Eutelsat satellite distributes hundreds of television channels to tens of millions of viewers.

With the Covid 19 crisis, television consumption has dramatically increased around the world. Linear television appeared to be the best way to get information, to connect with others and also to learn through programmes that bring people together. In France as in the UK, on average, viewers spent more than 4 hours each day in front of their television, which is respectively 19 and 31 minutes more than in 2019. The same applies to Italy, with more than 6 hours spent in front of the television every day during the first lockdown. In the United States, a study by United HealthCare estimates that Americans watched 6 hours of TV programmes every day, an increase of 30% compared to 2019.


- Main Reasons:**
- A single satellite can broadcast a large number of television channels over a very wide area (several dozen countries).
  - The carbon footprint of satellite broadcasting does not depend on the number of people receiving the signal, unlike terrestrial technologies.




MEASUREMENT	GROUND INFRASTRUCTURE (Teleports, Head Office)	SATELLITE FLEET (life cycle, excluding operation)
In tCO <sub>2</sub> e/year	4,979 tCO <sub>2</sub> e/year	37,484 tCO <sub>2</sub> e/year
In gCO <sub>2</sub> e/1 hour of viewing	0.01/gCO <sub>2</sub> e/hour	0.1/gCO <sub>2</sub> e/hour



A fleet of **39** satellites




**1 billion** viewers



Almost **7,000** channels broadcast = Around **42,500** tCO<sub>2</sub>e/year

The equivalent of 0.2 % of air transport emissions (commercial flights) in France in 2019\*

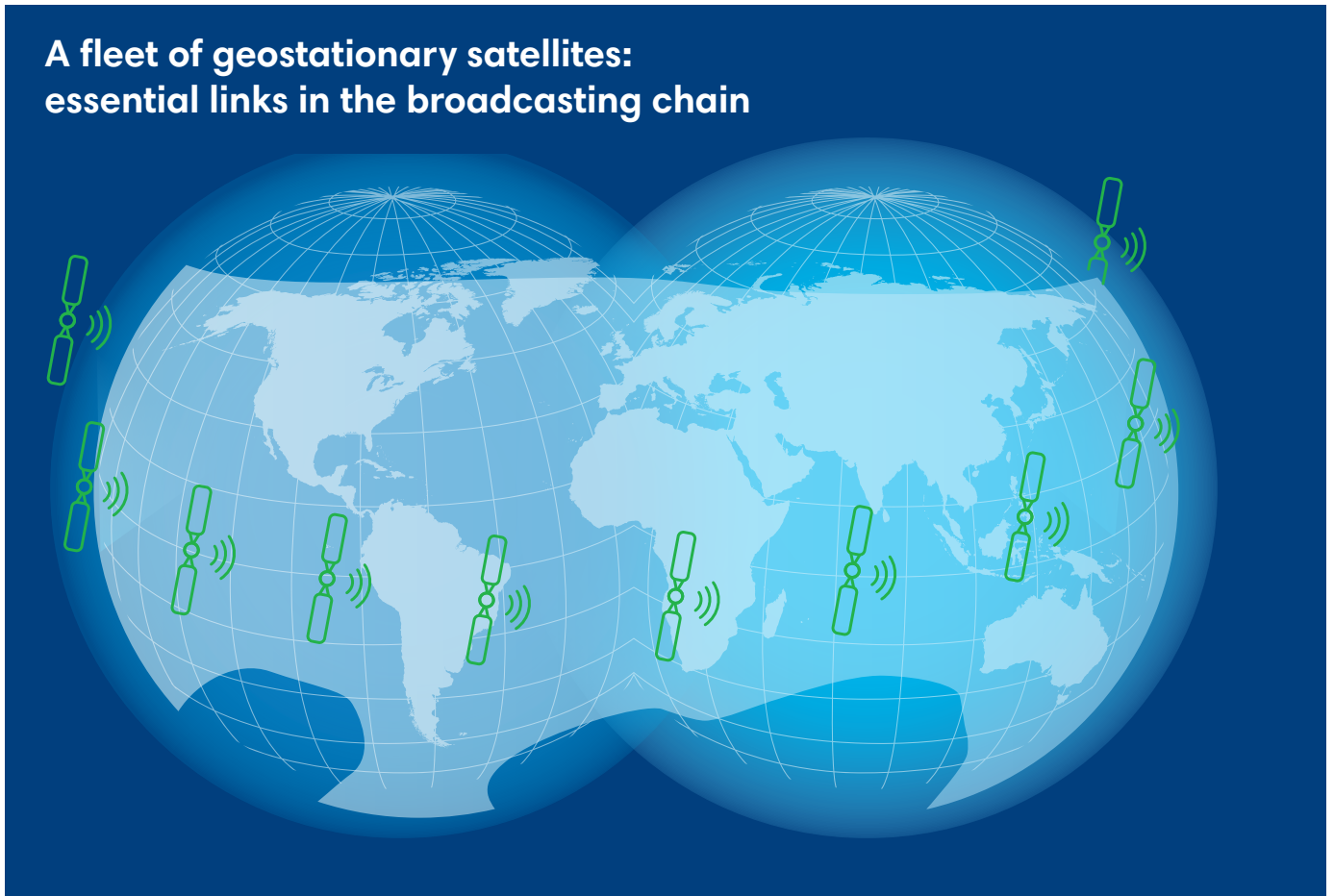


**18.6 YEARS**  
The operation lifetime of a satellite

\* Source: DGAC/Shift Project

# SATELLITE: A HIGHLY EFFICIENT AND LOW-ENERGY WAY OF DISTRIBUTING TELEVISION SERVICES

A fleet of geostationary satellites:  
essential links in the broadcasting chain

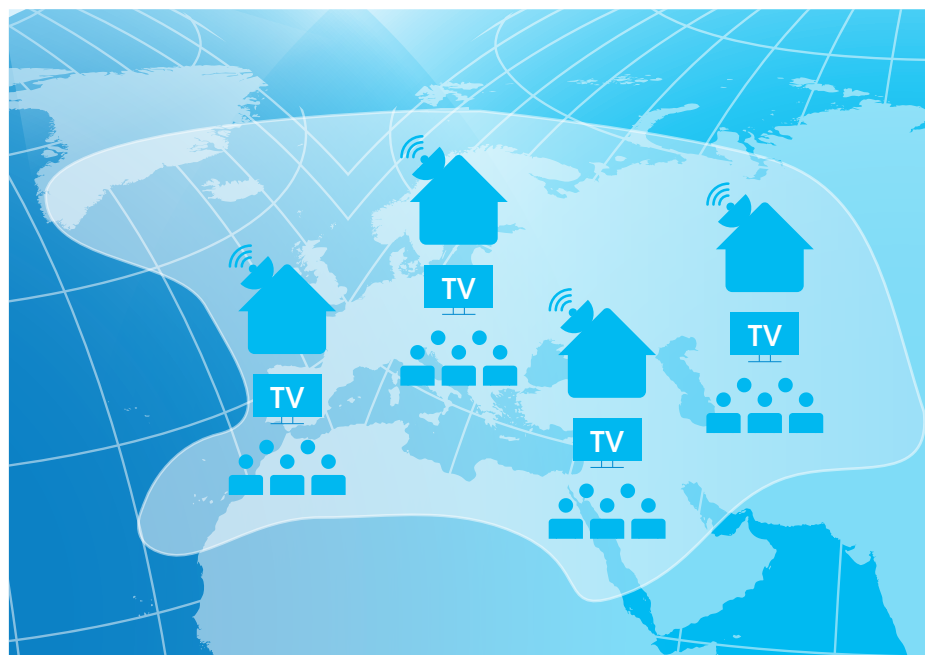


Carbon footprint  
of ground infrastructure

**4,979 tCO<sub>2</sub>e/year**

Carbon footprint  
of the satellite fleet

**37,484 tCO<sub>2</sub>e/year**



**275 million**

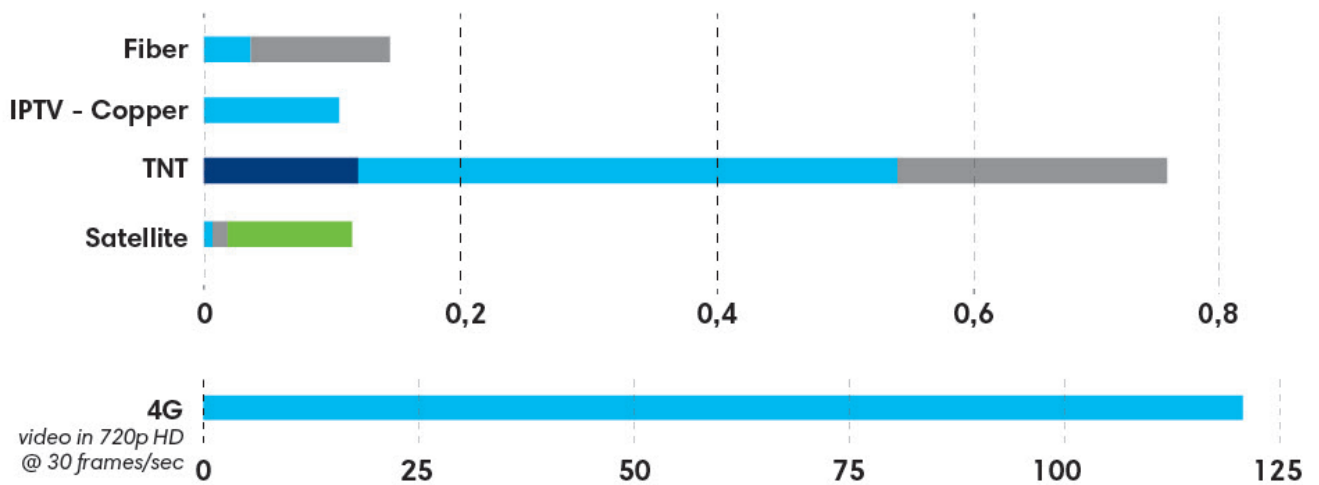
homes receive channels  
broadcast by our satellites

TV programmes  
**3h40/day**  
per viewer

Almost **7,000**  
**channels**  
broadcast

# AN HOUR OF VIDEO VIA 4G IS 1,200 TIMES MORE CARBON INTENSIVE THAN AN HOUR OF SATELLITE TV BROADCASTING

Carbon footprint of TV broadcasting for 1 hour of viewing by channel type (in gCO<sub>2</sub>e/h)



- Gas, domestic fuel, fuel, etc. (teleports, offices, vehicles)
- Electricity (teleports, offices, DSLAM, TNT and 4G antennas)
- Indirect emissions (electrical and electronic equipment, buildings, cable, civil engineering)
- Satellite Fleet

## WHAT ARE THE BEST PRACTICES FOR TELEVISION USE?

### CHOOSING THE TV STREAMING MODE IS NOT CARBON NEUTRAL



For linear content (direct channels), satellite or terrestrial technologies (fibre, copper) are the preferable choice.



In contrast, mobile technologies (3G, 4G and 5G) should be avoided for this type of use, as they generate far more CO<sub>2</sub>. They should be limited to mobile use.

### CHOOSING THE TV STREAMING MODE IN ACCORDANCE WITH THE ENERGY MIX OF EACH COUNTRY



In countries where energy is low-carbon (e.g. France), there is no significant difference in choosing between TNT, fibre, copper or satellite.



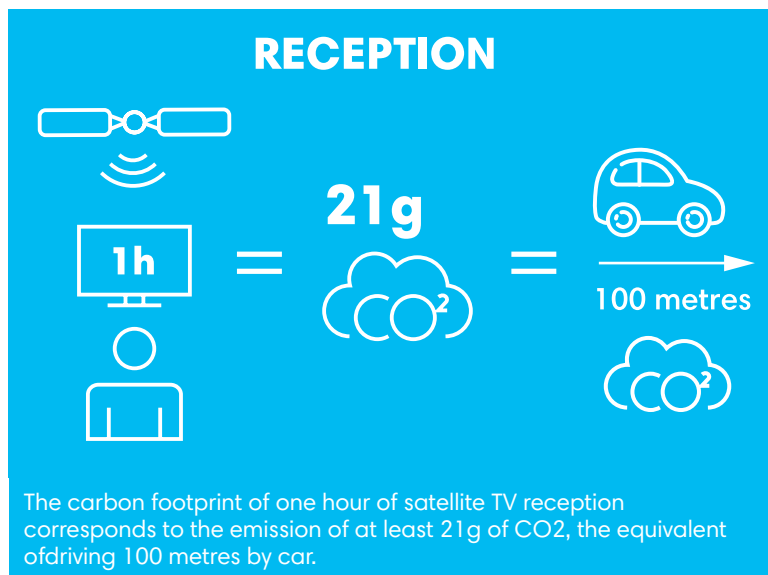
In countries where energy is very carbon intensive (Poland), satellite technology is more effective in limiting CO<sub>2</sub> emissions.

# RECEPTION EQUIPMENT\* REPRESENTS 99% OF THE TOTAL CARBON FOOTPRINT\*\* OF SATELLITE DISTRIBUTION

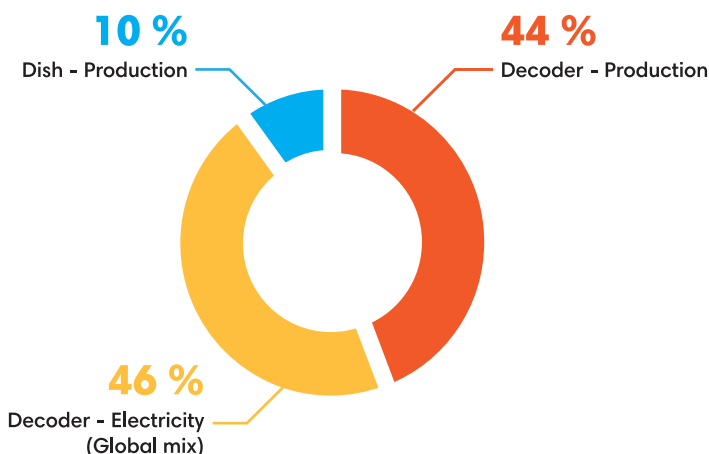
## MOST OF THE ENVIRONMENTAL IMPACT OF SATELLITE BROADCASTING OCCURS AT THE USER END!

According to Green IT, 75% of the environmental impact of digital technology results from the production of equipment. The growing number of devices, which are replaced very frequently, increases greenhouse gas emissions. Therefore, extending the lifespan of these devices (smartphones, tablets, computers, modems) is becoming a priority for all those wishing to sustainably reduce the carbon footprint of digital technology.

In the area of television broadcasting, environmental sustainability requires balanced consumption of television streams depending on the broadcasting technology used (by avoiding streaming from a smartphone for example). Nevertheless, the largest environmental footprint of television broadcasting, as with digital broadcasting, lies in the production of the equipment and its energy consumption by the user. The results of the Objectif Carbone study show that satellite is no exception, although it has a longer equipment life than other reception modes. The dish and decoder are amortised over 10 and 5 years respectively. In reality, they are often used for longer periods of time because they are robust and less affected by technological changes.



SATELLITE	DISH	DECODER
1%	10%	89%
42,500 tCO <sub>2</sub> e/year	739,800 tCO <sub>2</sub> e/year	>7 MtCO <sub>2</sub> e/year
0.11 gCO <sub>2</sub> e/hour	2 gCO <sub>2</sub> e/hour	20 to 300 gCO <sub>2</sub> /hour



The impact of terminals represents by far the largest portion of the carbon footprint for television broadcasting and reception.

For satellite, the production of decoders represents 44% of the total carbon footprint in terms of signal reception.

\* Dish and decoder  
 \*\* Broadcast + reception