# Justice in climate mitigation scenarios

Climate justice is about much more than CO2 emissions. At its core, it is a question of how we use and distribute energy in a fair manner. Here, we focus on fair, global energy distributions for basic energy services: food, mobility, housing and economic activities. Unfortunately, it is not always clear what a "fair" distribution would look like. Let's explore this question together!

## Economic Activity

### High Threshold

Despite being contested, the gross domestic product (GDP) is universally used as an indicator for economic performance.

Below, we present future GDP trajectories across different world regions. **GDP per capita** is used to assess the economic activity of a country in relation to its population. In climate scenarios, GDP per capita is an important indicator for estimating energy demand and supply.

The dashed line displays the **average GDP per capita across the world**. This average GDP per capita is projected to be around 28.000 USD per person (in 2017 USD) and assumes a global future that features high levels of sustainability, wealth and equality. This GDP per capita is comparable to today’s GDP of Spain and Saudi Arabia and would mean more than doubling current global average GDP per capita (13.000 USD) [1].

The estimate for this 28.000 USD per person is taken from the Shared-Socioeconomic Pathways (SSPs), a set of socio-economic scenarios often used in climate mitigation modelling. More specifically, this global average is based on SSP1 (“Taking the Green Road”).

[1]: <https://www.imf.org/external/datamapper/NGDPDPC@WEO/OEMDC/ADVEC/WEOWORLD>

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### Low Threshold

Let’s now envision a different future! In this case, the dashed line still now marks 20.000 USD per capita. This can be vaguely assumed to be a universal threshold required for a **decent life**. It symbolises a life where all basic needs are satisfied, without consuming luxury goods. Today countries like Greece, the Seychelles and Uruguay have similar GDP per capita.

This rough estimate is taken from the apparent decoupling of the Human Development Index (HDI) and GDP, which can be observed in a simple visual analysis.

## Mobility

### High Threshold

Below, we present future trajectories for mobility across different world regions. Mobility is assessed using **passenger kilometres per year**, which includes all modes of transport except air travel. This indicator provides insights into the overall level of mobility within a population or region and is used to estimate energy consumption and environmental impacts in climate scenarios. To provide a benchmark, the dashed line refers to the **Japanese mobility system**, which is often considered an efficient and effective role model. The average Japanese individual travels approximately 22km per day (8.000km per year). This allows to daily travel the distance from the Vienna International Airport to the Hofburg (20km) to reach the work place, and have a shorter additional trip to the gym or a grocery store every day. This threshold likely also allows for longer trips over some weekends and an annual long-distance trip to the sea side.

### Low Threshold

To satisfy human **mobility needs for a decent life**, one rough estimate is 3.500 passenger kilometre a year, which translate to a little less than 10km per day. This is about double the length of Vienna’s Ring Road (5.3km) [2]. Living within this limit would mean that everybody would be able to commute to their work place in maximum 15 minutes by bike. Groceries and leisure activities would be pursued in the neighbourhood.

[2] <https://www.wien.info/en/sightseeing/ringstrasse>

## Housing

### High Threshold

Below, we now present future trajectories for housing across different world regions. **Floor space per capita** is used to assess the level of living or working space available to individuals. In climate scenarios, this indicator helps calculate heating and cooling needs, which are essential for determining energy demands. The dashed line symbolizes a floor space of 45m² (or 480ft²) per person, which is the **estimated average of floor space per person across European countries** in 2014. This is approximately the area covered by 5 average cars. For a family of three, this would mean living in a spacious single family house with a kitchen, a children’s rooms and a living room large enough to host family parties.

### Low Threshold

Now let’s consider a dashed line that marks 10m² per person, which can again be considered a lower limit for a **decent life**. The family of three has now 30m² at their disposal, which allows one medium-sized room and a small kitchenette.

## Nutrition

A balanced diet is crucial for human health and involves consuming a variety of fruits, vegetables, nuts, and animal products. Meat production has many environmental impacts and requires a lot of resources compared to plant-based foods. Raising animals for meat requires large amounts of land, water, and feed. The production of feed for livestock, like soy and corn, often involves deforestation and the use of fertilizers, which contribute to greenhouse gas emissions. Moreover, certain animals produce methane, a potent greenhouse gas, during their digestive process.

Below, we present future trajectories for meat consumption across different world regions. Meat consumption is assessed using **kilo calories of meat consumption per capita per day**. The EAT-Lancet Commission recommends that a **healthy diet** includes approximately 90cKal (or 85g) of meat per day, which is represented as dashed line. This quantity is equivalent to a piece of meat about the size of the palm of your hand.