

## Explanation of Global Calculator scenarios

The four plausible 2°C pathways (distributed effort”, “consumer reluctance”, “low action on forests” and “consumer activism) set out in the report “Prosperous Living for the World in 2050: insights from the Global Calculator”, have lifestyle indicators that approximately match a business as usual scenario where lifestyles continue to improve as economies develop.<sup>1</sup>

Under business as usual, the world’s population is expected to rise from 7 billion in 2011 to around 10 billion by 2050. During this time the global GDP is expected to at least triple. The gains of this growth will mostly be seen in today’s emerging economies. For example, the average Indian could be around 5 times as wealthy and the average Chinese around 6 times as wealthy as today, compared with the average American who will be around twice as wealthy as today. With these increases in wealth, we will see improvements in the global average lifestyle. For example:

- The average home floor area, around 90 square meters in 2011, could rise to around 100 square meters (this compares to the average in the UK of around 80 square meters)
- By 2050 the world’s population could on average travel as far as the average OECD resident domestically (around 11,000 km per year), up from around 7,500 in 2011
- By 2050, the world’s population on average could own as many TVs as the average person in the UK, of around 2 per household, up from around 1 per household in 2011
- The UN’s FAO project that on average everyone will eat around 2,300 calories per day by 2050, up from around 2,200 in 2011
- The UN’s FAO project that on average everyone will eat around 230 calories of meat per day by 2050, up from around 190 calories in 2011. This is above the WHO’s recommendation for a healthy diet, of around 150 calories per day.

Note that the Global Calculator looks at world averages only. This could mean that inequality has reduced by 2050 with more people living close to the average lifestyle, or it could still mean that there is a lot of variation between countries as seen today (for

---

<sup>1</sup> Throughout this paper, business as usual is defined as the Global Calculator example pathway, “IEA 6DS (approximate)”. This assumes current policies only.

example with overconsumption of food in some areas). This use of averages enables the model to be simple, which makes it easier for experts to engage with the analysis and to trust the underlying calculations.

Under this business as usual scenario, global energy demand could rise around 70% by 2050. Such growth in demand is expected to be predominantly fuelled by fossil fuels; fossil fuels accounted for around 80% of supply in 2011 and it is projected that this will remain roughly unchanged. Such a scenario would result in a continued rise in global greenhouse gas emissions, resulting in a global mean temperature rise of up to 6 degrees.

The Global Calculator shows that improvements in lifestyles, described under business as usual, can continue as expected alongside successful action on climate change. It shows that to achieve this growth in lifestyles, whilst limiting the global mean temperature rise to 2 degrees, we need to urgently transform the technologies and fuels we use and make smarter use of our limited land resources.

For our technologies and fuels we need the following:

- the amount of CO<sub>2</sub> emitted per unit of electricity globally needs to fall by at least 90% by 2050
- the proportion of households that heat their homes using electric or zero-carbon sources should rise from 5% today to 25-50% globally by 2050.
- Buildings in 2050 must be 50-65% better insulated
- Our appliances should be more efficient than today (for example, refrigerators should be 40% more efficient).
- Cars should be around 50% more efficient.

For land, we need to protect and expand our forests globally by around 5-15% by 2050 because forests act as a valuable carbon sink. This requires:

- A focus on livestock management and production. For example, we need the proportion of beef produced from confined systems (6% today) to be between 3% and 15% by 2050.

- For cows fed on pasture land, we need to increase the average number of cows per hectare (100 m x 100 m) from 0.6 today to 0.9-1.0 by 2050.
- Crop yields should be 40-60% higher than 2011 levels by 2050.
- There is scope to further increase productivity by making multiple uses of land (e.g. co-cropping or multi-cropping), which is needed to reduce the land required for crops by around a further 10%