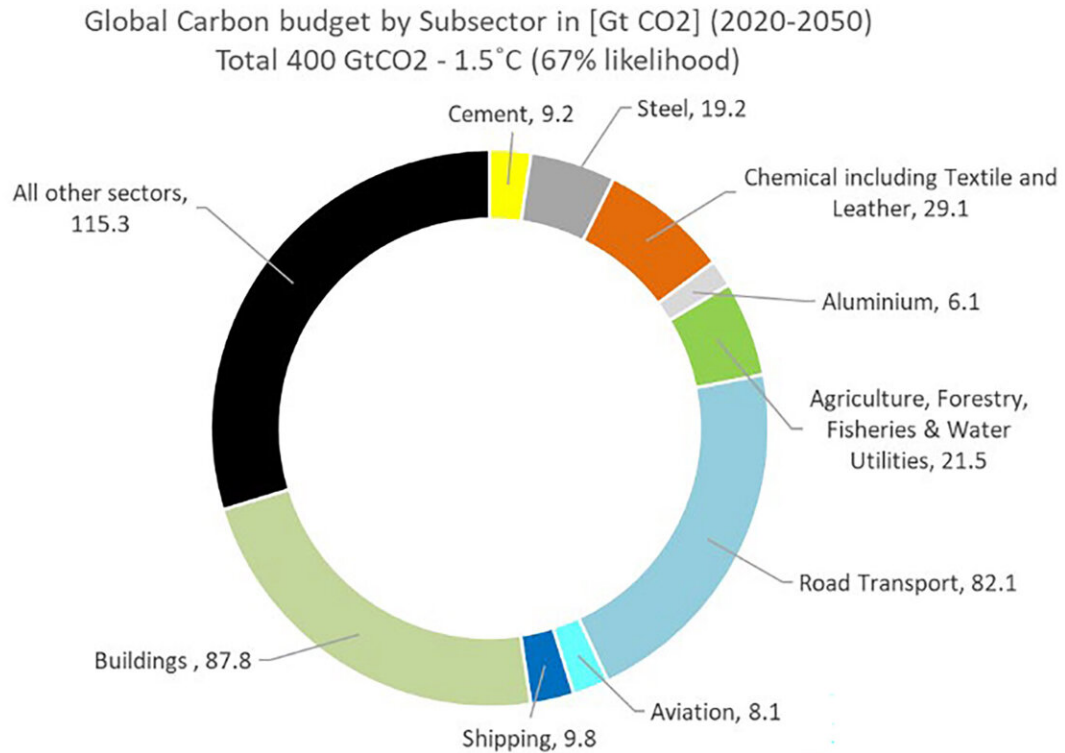


# How to limit global warming to 1.5C

November 1 2021



Global carbon budget by subsector to limit global warming to 1.5C by 2050.  
Credit: Sectorial Pathways for Industries—One Earth Climate Model 2021

For the first time, sector allocations of the global carbon budget have been provided for both hard-to-abate and all other sectors—12 main macro industry sectors in total, reporting scope 1, 2 and 3 breakdowns.

Scientists from the University of Technology Sydney (UTS) have developed energy-related carbon budgets for industries including the aluminum, steel and chemical industries and the car and aviation industries.

The research shows that it is still possible to limit global warming to 1.5C and implement the Paris Climate Agreement. This, however, requires timely climate action by the energy intensive industries supported by the finance sector, backed by reliable and long-term policies from governments.

The global carbon budget to limit global warming to +1.5C with 67% certainty is 400 GtCO<sub>2</sub> until 2050. The steel industry would have a share of 19 Gt CO<sub>2</sub> remaining (5.0%), the cement industry 9 Gt CO<sub>2</sub> (2.4%) and the aluminum industry 6 Gt CO<sub>2</sub> (1.6%). The largest carbon budgets are calculated for buildings (climatization and electricity) with 88 Gt CO<sub>2</sub> (22.6%) and road transport with 82 GtCO<sub>2</sub> (21.1%).

Associate Professor Sven Teske, who lead the research at UTS, said, "It is crucial to have a science-based carbon budget for specific industries to implement [climate targets](#) for all parts of these industries. We found that power utilities have by far the greatest responsibility: They have to provide enough renewable electricity for the energy intensive chemical, steel, cement and aluminum industries and for electric vehicles that no longer need oil."

Those specific industry emission budgets were further subdivided into so-called Scope 1, 2 and 3 emissions, which define the responsibility for those emissions. So far, this system has only been applied to companies, but not to an entire branch of industries or a region in a very granular way. For investment portfolio steering in line with a net-zero emission pledge the finance industry needs one holistic [model](#) for a 1.5C low/no overshoot path. The UTS scientists developed a model—the One Earth

Climate Model (OECM)—to fill the gap for industry sector specific decarbonization pathways.

Emission targets for a specific branch, for example the steel industry sector, and emissions by "Scope" can be used as a benchmark and guidance for [investment portfolio](#) decision-making. It is possible now to develop emission paths for industry classifications, which are then captured in one consistent model in line with the net zero ambition level. Members of the UN-convened Net Zero Asset Owner Alliance (the Alliance) have already started using the model.

The analyzed main industry and service sectors are: Aluminum, chemical, cement, steel, textile and leather industry, power and gas utilities, agriculture, forestry, aviation and shipping industry, road transport, and real estate and buildings.

Günther Thallinger, Chair of the UN convened Net-Zero Asset Owner Alliance, said, "The One Earth Climate Model's sector pathway work is important to inform the financial industry for portfolio decision making as the model is based on a holistic integrated approach. It also shows the granularity that is needed to feed into investors' analysis. The information details on sector budgets and scope, on interconnections and responsibilities, are exceptional."

As a first major use case sending a strong signal to the UNFCCC COP negotiations, the UN-convened Net-Zero Asset Owner Alliance is supporting the further development of the OECM and applying the latest UTS findings and data for informing the investor group's net zero target setting protocol and reporting framework. The Alliance is an international group of 60 institutional investors committed to transitioning their investment portfolios of about \$US10 trillion Assets under Management (AuM) to net-zero emissions by 2050 on a low/no overshoot path

The following recommendations to policy makers, industry and financial actors derive from this new UTS research:

- Stop investing in new oil, coal and gas projects
- Ensure coal phase-out by 2030 in OECD countries; between 2030 and 2040 all regions should phase out coal
- Manufacturing stop for passenger cars with oil-fueled internal combustion engines by 2030
- Governments to provide detailed transitions plans to net zero
- Setting and implementing investment, lending and underwriting portfolio decarbonizations targets in line with 1.5°C no/low overshoot
- Companies to disclosure climate mitigation strategy and its implementation, incl. short- and mid-term target setting, target achievements and transparency on engagement activities as well as investments in renewable energies and climate solutions

Provided by University of Technology, Sydney

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