CLIMATE ACTION POSITION STATEMENT

The current situation

Humanity's greenhouse gas (GHG) emissions have changed the composition of our atmosphere and the climate that surrounds us. Around the world, people are beginning to feel the effects, from increased average and extreme temperatures, to changes in rainfall patterns, to more severe and less predictable storms. There are clear signals that the climate has changed over the last century. Climate scientists measured 2016 as the warmest year on record, and 16 of the 17 warmest years have occurred since 2001 (NASA, 2017). While climate scientists, through the Intergovernmental Panel on Climate Change (IPCC) and other forums, continue to refine our understanding of climate change and reduce uncertainty, the scientific consensus on the need for urgent action is clear.

Mars recognizes our responsibility to address the environmental and social impacts of our business. Tracking and reducing GHG emissions to lessen our climate change impact are key aspects of that responsibility, and provide important opportunities to help drive momentum for global climate action.
Science tells us that to avoid the worst consequences, we should limit the increase in global average temperature to well below 2°C above pre-industrial levels, a threshold outlined in the international Paris Agreement on climate change. To stay beneath this threshold, scientists estimate that no more than 1 trillion tonnes of carbon dioxide can be added to the atmosphere. This is called the "carbon budget". Global emissions since 1870 have already consumed more than half of that budget, leaving less than 500 billion tonnes to emit in the future.

The urgency of climate change is recognized in the UN Sustainable Development Goals (SDGs) – SDG 13 calls for "urgent action to combat climate change and its impacts." Mars supports the SDGs and recognizes the need for engaging others to collectively play our part in addressing climate change, as no single company can make meaningful progress alone.

Mars' full value chain GHG emissions in 2015 were estimated at 26.2 million tonnes of carbon dioxide equivalent (MtCO2e) – approximately equivalent to the emissions of Panama (WRI, 2017). While energy use is a significant driver of our operational emissions, agriculture and land use change emissions make up the lion's share – approximately 75% – of our full value chain emissions (figure 1). With that in mind, we are focusing our climate change actions in the areas of our business that involve producing and purchasing agricultural raw materials. Ultimately, by doing everything we can to reduce our GHG footprint consistent with the global 2°C goal, we aim to achieve real, positive impacts on our business, people, and the planet.

Climate change is also intrinsically linked with Mars' other sustainability priorities. It will impact water scarcity, while land use choices can either drive or mitigate climate change. The strategic approaches we choose to address climate change in our value chain have implications for human rights and the incomes of farmers who grow the materials we source.

Our long-term ambition

Mars' climate change targets are to reduce our total GHG emissions from our full value chain by 27% by 2025 and by 67% by 2050, from 2015 levels.

Mars has developed ambitious, science-based GHG reduction targets, which aim to keep us within our share of the global carbon budget. Our targets are informed by the best-available climate science, detailed emissions data, and a set of "carbon principles" (Putt del Pino, 2016).

Mars' 2015 Value Chain Greenhouse Gas Emissions

Measured in million tonnes carbon dioxide equivalent ($MtCO_2e$)

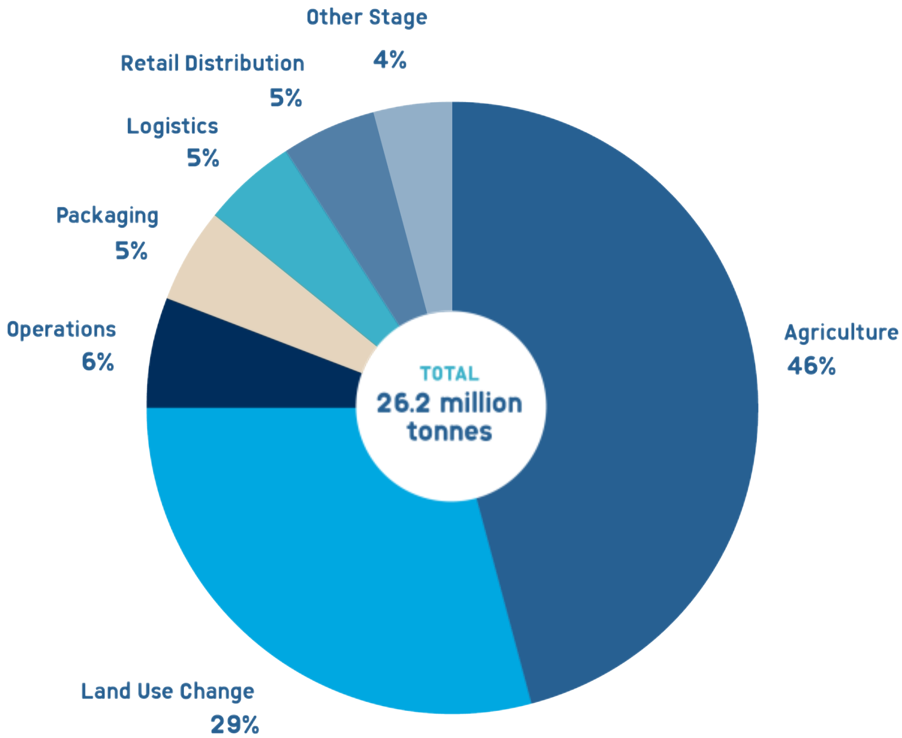

Figure 1: Mars' estimated full value chain GHG emissions in 2015, by source category

Working with the Science Based Target initiative, World Resources Institute (WRI) and other partners, we calculated our share of the global carbon budget from 2015-2050 at a cumulative 560 $MtCO_2e$, based on our 2015 emissions of 26.2 $MtCO_2e$. If our annual emissions remain constant at 2015 levels, we will consume our budget in less than 22 years, leaving nothing for the period from 2038-2050. If we achieve a 67% reduction by 2050, we will stay within our share of the carbon budget, as illustrated in figure 2 below.

Glidepath for Mars' greenhouse gas (GHG) emission reduction targets

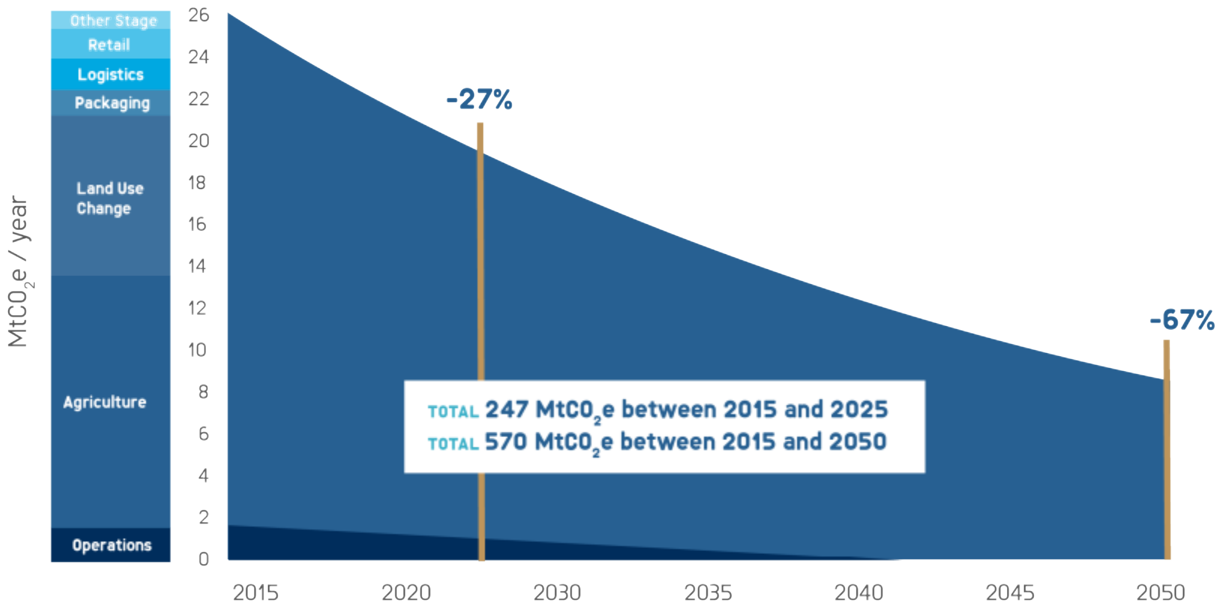

Figure 2: Illustrative glidepath to reach Mars' long-term value chain GHG emission reduction targets

In addition to the above full value chain emissions targets, we have also set a **2040 goal of zero net GHG emissions from our direct operations** as part of our Sustainability Plan.

In setting our GHG targets and developing our strategies for meeting those targets, Mars established several key "carbon principles":

1. Allocation of the global carbon budget should be science-based and aligned with the global 2°C target, which if applied by all emitters would comply with the global budget.
2. Our GHG reduction targets must be absolute, not intensity-based, or we risk hitting our targets but still exceeding our share of the budget.
3. All greenhouse gas emissions count – we will not exclude parts of our value chain from our accounting, though we will prioritize where we focus our efforts to deliver reductions.
4. Both reducing net emissions and increasing carbon sequestration can contribute to our goals in a way that is consistent with the science, if done and accounted for correctly.
5. Our strategies for meeting our carbon budget should not restrict the ability of others outside of our value chain to meet GHG reduction targets for their activities.
6. We will use transparent and credible GHG calculation and accounting methods and robust data.

Our theory of change

Climate change has critical implications throughout our value chain. We release carbon dioxide into the atmosphere when we consume energy from fossil fuels – directly in our factories or indirectly to produce the fertilizers used by farmers who supply our raw materials – or contribute to deforestation through expansion of agriculture lands. When those same farmers grow crops to produce our raw materials, the plants sequester carbon, both in the parts we buy and those we don't. This carbon cycle for agriculture is central to our share of climate impacts and our opportunities to reduce them.

The framework below applies the carbon cycle and carbon budget concepts to inform our strategies for tackling our emissions. By focusing on actions within our value chain and associated with clear, measurable emissions reductions, we can make significant progress toward our GHG reduction targets. Concurrently, we can explore strategies that sequester carbon within our value chain to help counterbalance emissions we can't avoid. Emission reduction activities outside our value chain will not be factored into our carbon accounting, as our focus is on reducing emissions related to our business. (Note that the actions included in this figure are illustrative examples and not comprehensive). Our theory of change is that by employing strategies to reduce our direct emissions and sequester carbon within our value chain, while exploring opportunities to invest in carbon sequestration activities outside our value chain, we can stay within our carbon budget.

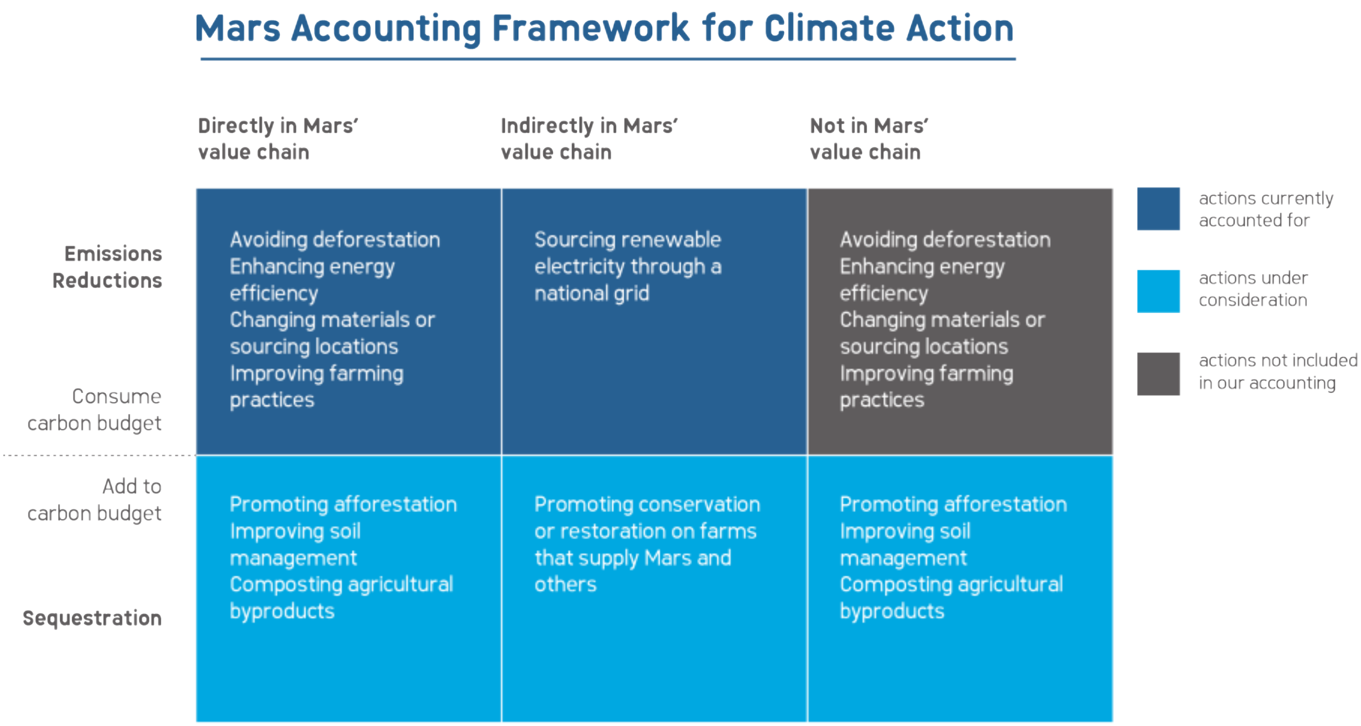

Figure 3: This framework illustrates how Mars accounts for sustainability actions within its carbon budget and corresponding greenhouse gas targets

Short-term actions

At Mars, we are already taking action to tackle climate change, meet our GHG reduction targets and drive momentum for global climate action. For our direct operations, this approach involves increasing energy efficiency and expanding clean energy by investing in renewables. In our value chain, it involves reducing and avoiding deforestation and forest degradation related to the raw materials we source, as well as increasing carbon sequestration and reducing GHG emissions through improved agricultural practices. In all of our work, we collaborate with thought leaders and other companies to help improve data and accounting methodologies and pilot strategies to learn about what works.

Renewable energy

Energy efficiency plays an important role in contributing to our emissions targets, and Mars will continue to pursue innovative solutions to reduce energy use in our direct operations. Switching to renewable and low-carbon energy sources is another increasingly important strategy for reducing emissions from our direct operations. Our strategy relies on both on- and off-site renewable energy projects. All off-site and some on-site projects rely on the electrical grid for transmission and to balance energy generation with consumption. As it isn't possible to track electrons through a grid we use attribute tracking systems established by governments, grid operators or private contracts such as renewable energy certificates and other instruments. These systems allow us to build an information bridge between the output of a generating asset and Mars' energy use.

Thermal energy makes up nearly two-thirds of Mars' current energy demand in direct operations, so we consume significant volumes of natural gas at our sites. While a comparatively clean and efficient fuel source, we realize that we can't depend on natural gas to reach our GHG reduction targets. With this in mind, we are working on low carbon (such as certain biomass options) and zero carbon (such as solar thermal) energy sources at project and structural levels, to make it easier for all companies to procure and source low-carbon thermal energy.

Land use and deforestation

Mars takes a systems approach to land impact. Building on our deforestation prevention policy, we are working to better measure and reduce the land use impacts in our value chain. Agricultural and land-use change related GHG emissions represent nearly one quarter of global human emissions and three-quarters of Mars' value chain emissions.[1] By fully integrating agriculture-related land use change into our GHG reduction target, Mars is establishing a quantitative metric for tracking reductions in deforestation. Coupled with our existing work on deforestation and our new target on total land use, this represents a significant step forward in our deforestation prevention efforts.

Few companies include land use change in their emissions reporting and GHG targets because of lack of data or standardized accounting methodologies. Working with several external partners on the World Food LCA Database project to update ecoinvent[2], a database that provides full life cycle environmental impact data on thousands of products, Mars has estimated our GHG emissions from land use change. We are also working with external partners and other companies on a project to refine the method for allocating these emissions to raw materials and drive standardization of these calculations.

We estimate that 75% of Mars' emissions are from our agricultural value chains, which includes approximately 29% from land use change and 46% from agriculture. This impact is primarily concentrated in raw materials sourced from tropical countries – beef, cocoa, palm oil, pulp and paper, and soy account for more than 80% of our estimated land use-related GHGs. This information will help Mars, our suppliers and our peers more effectively target actions to address deforestation and land degradation and stay within our carbon budget.

Sourcing

Mars has three primary options for reducing our emissions related to the raw materials in our value chain:

- **Improve raw material production practices** – most agricultural value chains have untapped efficiency opportunities, whether through yield improvement or more precise application of inputs such as fertilizer.
- **Change where we source** – certain raw materials can be grown in alternative regions with a lower GHG impact.
- **Replace the raw materials we source** – for some existing and new products, we have options including substituting lower-emission ingredients or designing new products that use lower impact materials.

As we develop our raw material specific strategies, we will deploy combinations of the above strategies. In all cases this will involve working closely with our suppliers and the farmers in our value chains to develop mutually-beneficial solutions.

Sequestration

The ability of trees and other plants to sequester carbon from the atmosphere creates two opportunities to help Mars stay within our carbon budget: sequestering carbon in our value chain, and investing in sequestration activities outside of our value chain (see figure 3).

In the first category, Mars is working to source raw materials from agricultural systems that capture carbon for a longer time period or can be changed to do so. Composting agricultural wastes to be used as soil enrichment is one example; another is to support activities that create and store biomass – such as increasing the carbon on degraded lands. This approach can have additional benefits such as soil erosion control, water storage and community development, for example by providing new sources of income through sustainable forest products or payments for ecosystem services. The practices that farmers employ in their fields can also yield carbon benefits. In the same field, one farmer could grow crops to sell to Mars, compost wastes from the crops we buy, and plant forest on a vacant part of her land. Mars also invests in the Livelihoods Fund for Family Farmers, which includes initiatives to help small-scale farmers improve on-farm practices to increase carbon sequestration. From a carbon budget and accounting point of view, there is no limit to the amount of sequestration we can aim for – it is even possible for a crop to have negative emissions. We are exploring this opportunity across our raw materials – particularly in tree crops such as cocoa.

We are exploring options for the second category of sequestration – projects outside our value chain. We realize we need to be judicious about relying on negative emissions approaches because of the costs and new supplier relationships needed, the potential distraction from reducing emissions in our own value chain, and the land resources they may require.

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[1] **Operations emissions** result from on-site electricity, fuel and refrigerant use at facilities owned or controlled by Mars; **agricultural emissions** result from practices Mars' suppliers use to produce, process and transport agricultural raw materials, such as fertilizer application, irrigation, and harvesting; and **land use emissions** result from changes in the way land is used, for example clearing forests for agricultural use, or changes in the amount of biomass on the land.

[2] The ecoinvent database version 3

Data & reporting

Since 2009, Mars has published a GHG emissions inventory annually. We use the Greenhouse Gas Protocol to calculate and report our emissions in each source category, with the best available data. For categories with a larger share of our total emissions, we have invested additional effort in securing better and more granular data to improve accuracy. We use public data sources, such as the U.S. Environmental Protection Agency's eGRID, the U.K. Department of Environment, Food and Rural Affairs database, and ecoinvent, to supply the impact factors used in our calculations when available, and we apply them consistent with publicly available methods. We utilized these methodologies and data sources to calculate our 2015 total value chain emissions as 25.6 MtCO_2-e. We will continue to invest in the collective development of better methods and data availability and work with our suppliers to apply a better understanding of their emissions to drive reductions.

What's next

Mars will continue to refine and expand our approach to measuring and reducing our GHG emissions, including addressing land use related emissions such as deforestation. We will work with thought leaders to improve data and methodologies and apply the best available science to our strategies. We are committed to transparency, and will work to strengthen our emissions calculations and reporting. Applying our principle, "all GHG emissions count," we will strive for a complete picture of our emissions, by exploring emerging areas such as soil carbon dynamics, carbon pricing, and indirect land-use change emissions accounting. We will continue to develop our approach to carbon sequestration activities outside our value chain. Finally, while our GHG reduction targets aim to reduce our emissions consistent with helping to prevent the worst climate change impacts, we recognize that climate change is already occurring. Adapting to and improving resilience against climate change is also critical for the long-term sustainability of our business, and we will continue to assess and respond to the related impacts in our value chain.

Citations

NASA (2017). *NASA, NOAA Data Show 2016 Warmest Year on Record Globally*. Retrieved from NASA Web site: https://www.nasa.gov/press-release/nasa-noaa-data-show-2016-warmest-year-on-record-globally

Putt del Pino, S., et al. (2016). *From Doing Better to Doing Enough: Anchoring Corporate Sustainability Targets in Science*. Retrieved from World Resources Institute Web site: http://www.wri.org/publication/doing-enough-corporate-targets.

World Resources Institute (WRI), CAIT Climate Data Explorer (2017). *Historical Emissions Dataset*. Retrieved from World Resources Institute Web site: http://cait.wri.org/historical.