

CLIMATE CHANGE MYTHBUSTERS: SEPARATING FACT FROM FICTION

Climate change is one of the most talked-about issues in the world today, but it is also one of the most misunderstood. Residents are exposed to a huge amount of information mixed with misinformation, half-truths and oversimplified claims. This can make climate change feel confusing, overwhelming or distant. It can also make it more difficult for people to understand what climate change actually is, why scientists are so confident that it is happening and what it means for daily life in Stellenbosch Municipality. As part of the Municipality's growing climate change awareness efforts, below we unpack some of the most common myths about climate change and explain the facts behind them.

Myth 1: Climate change is fake news

This is one of the broadest and most persistent climate change myths. It often comes from a combination of smaller misconceptions. Some people argue that the climate has always changed, so current warming must just be part of a natural cycle. Others point to floods, cold spells or storms and claim these events disprove global warming. Some distrust climate models, while others believe climate change is a hoax or conspiracy.

The science does not support these claims.

It is true that Earth's climate has changed naturally in the past. Over geological time, the planet has gone through ice ages, warmer periods and shifts caused by volcanic activity, changes in the Earth's orbit and other natural drivers. But what is happening now is different in two important ways: **the speed of change** and **the cause of change**. The planet has warmed by $\sim 1.1^{\circ}\text{C}$ since 1850, and this warming is happening faster than anything seen in at least the past 2,000 years (Figure 1)¹. The last decade has been the hottest ever recorded globally². This is not ordinary natural variation. It is a rapid change happening over a relatively short period.

¹ Intergovernmental Panel on Climate Change (IPCC), 2021. [Summary for Policymakers](#). In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, and B. Zhou (eds.)]. In Press.

² IPCC, 2021. [Summary for Policymakers](#). In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., et al (eds.)]. In Press.

Changes in global surface temperature relative to 1850–1900

(a) Change in global surface temperature (decadal average)
as **reconstructed** (1–2000) and **observed** (1850–2020)

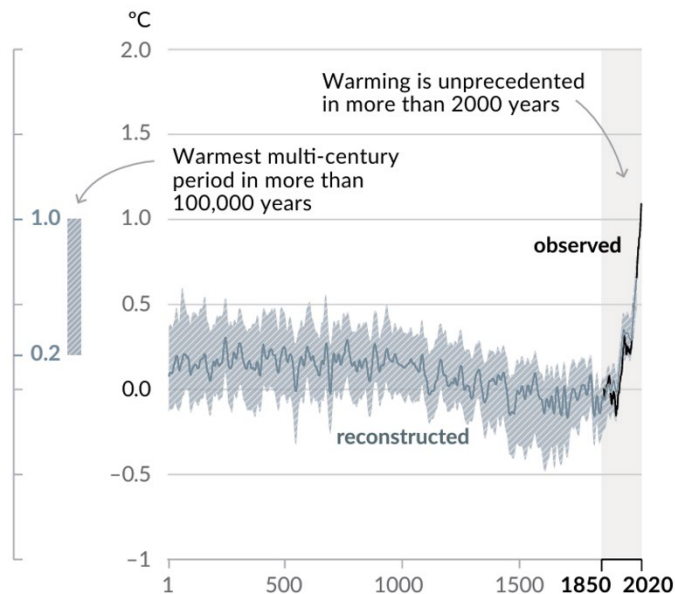


Figure 1: History of global temperature change and causes of recent warming³. Changes in global surface temperature reconstructed from paleoclimate archives (solid grey line, years 1–2000) and from direct observations (solid black line, 1850–2020), both relative to 1850–1900 and decadal averaged. The vertical bar on the left shows the estimated temperature (very likely range) during the warmest multi-century period in at least the last 100,000 years, which occurred around 6500 years ago during the current interglacial period (Holocene). The Last Interglacial, around 125,000 years ago, is the next most recent candidate for a period of higher temperature. These past warm periods were caused by slow (multi-millennial) orbital variations. The grey shading with white diagonal lines shows the very likely ranges for the temperature reconstructions.

Scientists also know what is causing it. The warming trend matches the sharp increase in greenhouse gases (GHG) such as carbon dioxide, methane and nitrous oxide. These gases trap heat in the atmosphere. They occur naturally, but human activity has pushed their concentrations far beyond natural levels. Burning coal, oil and gas, land clearing, industrial processes and some agricultural practices have all increased GHG concentrations dramatically. Carbon dioxide levels are now at their highest in around 2 million years, while methane and nitrous oxide are at their highest in around 800,000 years⁴. This increase can be directly linked to human activity, including through the

³ Source: IPCC, 2021. [Summary for Policymakers](#). In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., et al. (eds.)]. In Press.

⁴ IPCC, 2021. [Summary for Policymakers](#). In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., et al. (eds.)]. In Press.

chemical fingerprint of fossil fuel emissions⁵. More than 99% of peer-reviewed studies agree that climate change is human-caused⁶.

Another reason people doubt climate change is because they confuse weather with climate and misunderstand the term global warming. Weather is what happens from day to day, while climate is the long-term pattern over decades. Global warming refers specifically to the rise in the Earth's average surface temperature, but scientists now more often use the broader term climate change because warming does not mean every place gets hotter in a straight line all the time. A warming planet shifts the whole climate system, changing rainfall patterns, intensifying heatwaves and, in some cases, increasing cold spells, storms and sudden swings in weather. That is why a warmer world can still produce cold spells, floods and severe storms. These events do not disprove climate change. They can be exactly the kind of instability a changing climate produces. They are often part of how a destabilised climate behaves.

Climate models also do not deserve the level of distrust they often receive in public debate. They are not random guesses. They are physics-based tools developed and tested over decades using what scientists know about the atmosphere, oceans, land and energy systems. If you trust a weather forecast, you already trust the kind of physics that climate models are built on. Climate models simply ask a longer-term question. When older climate models are compared with the warming that has actually occurred, many of them prove to be remarkably accurate⁷.⁸ Claims that climate change is a conspiracy have also been repeatedly investigated. Independent inquiries have found no evidence of large-scale fraud or data manipulation⁹. Global warming is measured by satellites, ocean buoys, weather stations, ice cores and many other independent sources all over the world. These different lines of evidence point to the same conclusion: the world is warming and human activity is the main reason why. You can't fake thousands of independent data sources.

Bottom line: Climate change is not fake news. It is measurable, visible and scientifically verified.

Myth 2: A couple of degrees of warming is not a big deal

⁵ IPCC, 2021. [Summary for Policymakers](#). In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Masson-Delmotte, V., et al. (eds.)]. In Press.

⁶ Lynas, M., Houlton, B. H., and Perry, S., 2021. [Greater than 99% consensus on human caused climate change in the peer-reviewed scientific literature](#). Environmental Research Letters 16:114005.

⁷ IPCC, 2007. FAQ 8.1. [How Reliable Are the Models Used to Make Projections of Future Climate Change?](#)

⁸ The National Aeronautics and Space Administration (NASA) Science Editorial Team, 2020. [Study Confirms Climate Models are Getting Future Warming Projections Right](#). NASA, 9 January.

⁹ The Guardian, 2010. [Climategate scientists cleared of manipulating data on global warming](#). 8 July.

At first glance, this myth sounds reasonable. A change of 1.5°C or 2°C seems small compared with the difference between a warm summer day and a cool winter day. But this comparison is misleading because climate science is talking about the global average temperature, not the temperature on a particular day in one place. A rise of 1.5°C or 2°C in the global average is an enormous shift in the Earth's climate system. That average hides a lot of variation — some regions warm more than others, heatwaves become more intense, rainfall patterns shift, droughts lengthen, floods become more severe and ecosystems begin to fail when certain limits are crossed. So, while the number sounds small, the consequences are not.

Even half a degree matters. Scientists are very clear that there is a major difference between a world that warms by 1.5°C and one that warms by 2°C. Compared with a 1.5°C world, a 2°C world would mean: i) ~2 billion more people exposed to dangerous heat; ii) a doubling in the proportion of the global population exposed to climate change-induced water stress; iii) much greater declines in crop yields in some regions; iv) twice as many plants and vertebrates and three times as many insects projected to lose more than half of their geographic ranges; and v) the loss of around 99% of coral reefs, instead of 70–90%¹⁰, resulting in serious consequences for food security, marine biodiversity, fisheries and the livelihoods of many coastal communities. That means the difference between 1.5°C and 2°C is not minor. It is the difference between severe disruption and near-total collapse in some systems. This matters locally too. A hotter world affects water availability, agriculture, fire risk, infrastructure, public health and biodiversity. Small changes in the global average can translate into much more intense local impacts.

Bottom line: A couple of degrees of warming is not a mild change. It is the difference between serious disruption and dangerous instability.

Myth 3: Climate change is a distant threat. It will not affect me or Stellenbosch anytime soon

This myth is especially important to challenge because it can create complacency. If climate change feels far away, abstract or only relevant to other countries, people may assume it is not something that affects their community now. The evidence shows otherwise. Climate change is not only a future issue. It is already being experienced in South Africa, the Western Cape and the Stellenbosch Municipal area.

The Western Cape has already seen clear signs of climate stress. In 2015, South Africa recorded its lowest annual rainfall since 1904¹¹. By 2017 to 2018, the province was in

¹⁰ IPCC, 2018. [Summary for Policymakers](#). In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA, pp. 3-24. <https://doi.org/10.1017/9781009157940.001>.

¹¹ PoliticsWeb, 2016. [SA rainfall in 2015 the lowest on record – SAWS](#).

the grip of one of its worst droughts in decades. More recently, on 10 March 2026, parts of the Western Cape experienced their hottest temperatures in more than a decade, with several towns recording temperatures ranging from ~42–45°C¹². These were not minor disruptions. They affected water security, farming, ecosystems, livelihoods and the daily lives of residents.

In Stellenbosch and the wider Winelands, people working outdoors have reported that recent heat feels unusually intense compared with the conditions they were used to in the past¹³. Mid-30°C afternoons are now occurring more often than they once did. This increase in extreme heat has happened alongside a clear drying trend, contributing to lower dam levels, water shortages and crop losses¹⁴. These are not only future projections. They are signs of change that are already visible.

Climate models do show that these trends are likely to intensify in future, with more very hot days, continued drought risk and a hotter, drier average climate for Stellenbosch Municipality¹⁵, but the key point is that climate change is already here. Future projections build on an observed trend, they do not appear from nowhere. For residents, this matters because climate change is not only about the environment in a narrow sense. It affects water supply, food prices, electricity demand, the condition of roads and stormwater systems, the health of natural areas and the resilience of local infrastructure.

Bottom line: Climate change is not a distant threat. Stellenbosch Municipality is already experiencing it.

Myth 4: It is too late or pointless to act

This myth often sounds like this: “We have already passed the point of no return, so there is no point trying to reduce greenhouse gasses (GHG) now.” It can sound realistic or even practical, but it is not what the science says. The latest assessment from the Intergovernmental Panel on Climate Change makes it clear that it is still possible to limit warming and reduce harm, but the window for doing so is narrowing¹⁶. In other words, it is not too late, but delay makes the problem harder, more dangerous and more expensive.

¹² Independent Online (IOL), 2026. [Western Cape and Namakwa experience record-breaking heatwave](#). 13 March.

¹³ Hirsch, M., and de Beer-Procter, C., 2023. [Farmworkers feel heat as SA wine industry eyes climate change](#). African Arguments. 27 April.

¹⁴ Zwane, E. M., 2019. [Impact of climate change on primary agriculture, water sources and food security in Western Cape, South Africa](#). Jamba 11(1):562.

¹⁵ The Council for Scientific and Industrial Research (CSIR), 2023. [GreenBook Risk Profile Tool](#). CSIR: Pretoria.

¹⁶ IPCC, 2023. [Summary for Policymakers](#). In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 1-34, doi: 10.59327/IPCC/AR6-9789291691647.001.

If global GHG emissions are cut by ~42% by 2030, there is still a chance of limiting warming to 1.5°C¹⁷. This matters because each fraction of a degree avoided prevents real damage. Keeping warming to 1.5°C instead of 2°C would significantly reduce the additional harm caused by droughts, heatwaves, storms, sea-level rise and biodiversity loss. Climate change is not an all-or-nothing issue where nothing matters after a certain date. Risk increases gradually with each additional increase in temperature. That means every tenth of a degree matters. Every amount of global warming avoided saves lives, protects infrastructure, reduces pressure on water systems and limits damage to ecosystems and agriculture.

This is one of the most important points in climate science and public communication. Action is not pointless simply because the challenge is large. In reality, the larger the challenge becomes, the more important action becomes. Delayed action closes options. Early action keeps more options open.

Bottom line: It is not too late to act, but it will become too late if action is delayed.

Myth 5: I am only one person. My actions are too small to make a difference

This myth is understandable. Climate change is a globally driven problem and against that scale, one person can feel insignificant. It is true that no single individual can solve climate change alone. But it is also true that climate change itself is the cumulative result of billions of daily human choices about transport, energy, food, waste and consumption.

That means the solution also depends on the cumulative result of billions of daily choices.

Research shows that behavioural changes across households worldwide, especially when supported by cleaner technologies, stronger policy and industry shifts, could reduce emissions by 40-70% by 2050¹⁸. Some actions have a much larger effect than others. Living car-free, installing residential solar and increasing home energy efficiency, for example, have a much greater climate benefit than many smaller lifestyle changes¹⁹. This shows that individual choices are not irrelevant. Some are highly meaningful.

¹⁷ United Nations Environment Programme (UNEP), 2023. [Emissions Gap Report 2023: Broken Record – Temperatures hit new highs, yet world fails to cut emissions \(again\)](https://doi.org/10.59117/20.500.11822/43922). Nairobi. <https://doi.org/10.59117/20.500.11822/43922>.

¹⁸ IPCC, 2022. [Summary for Policymakers](#) [P.R. Shukla, J. Skea, A. Reisinger, R. Slade, R. Fradera, M. Pathak, A. Al Khourdajie, M. Belkacemi, R. van Diemen, A. Hasija, G. Lisboa, S. Luz, J. Malley, D. McCollum, S. Some, P. Vyas, (eds.)]. In: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (eds.)]. Cambridge University Press, Cambridge, UK and New York, NY, USA. doi: 10.1017/9781009157926.001.

¹⁹ Kraft-Todd, G., Hernandez, M. and Composto, J., 2025. [The effective impact of behavioral shifts in energy, transport, and food: A global quantitative synthesis of the greenhouse gas](#)

Individual action matters for another reason too: it influences systems. When many people demand cleaner transport, renewable energy, more efficient products or lower-waste options, companies and governments respond. Consumer behaviour helps shape markets. Public pressure helps shape policy. Social norms help determine what becomes standard and what becomes outdated. This does not mean that climate responsibility should be unfairly pushed onto individuals while larger institutions avoid action. Governments and industry have major responsibilities. But individual choices still matter, both directly and because they help drive broader change. In a municipal context, this could include driving less where possible, improving household energy efficiency, reducing waste, making more water-wise choices and supporting public policies that strengthen resilience and lower emissions.

Bottom line: One person cannot solve climate change alone, but collective action is powerful and individual choices are part of that collective force.

Myth 6: We do not need to cut emissions. We can just adapt

Adaptation means adjusting to the impacts of climate change. Examples include stronger flood defences, more resilient infrastructure, drought-resistant farming, improved disaster planning and more secure water systems. Adaptation is absolutely necessary. But adaptation alone is not enough.

The main reason is cost and scale. Developing countries are estimated to need between US\$310-\$365 billion per year in 2035 for climate change adaptation, yet available adaptation funding for developing countries was only US\$26 billion in 2023, 12-14 times lower than what is needed²⁰. Consequently, the global adaptation finance gap is vast. Even wealthier countries struggle to fund measures like relocating communities, rebuilding infrastructure and responding to repeated climate disasters.

This challenge is even greater in Africa. The continent is warming faster than the global average, at ~0.3°C per decade compared with 0.2°C globally²¹, and in 2024 Africa was 1.53°C warmer than the 1961–1990 average, compared with 1.19°C globally²². In practical terms, this means Africa faces more intense droughts, heatwaves, floods and crop losses than many other regions. At the same time, African countries already lose an estimated 2–5% of Gross Domestic Product each year to climate shocks, with some governments having to divert up to 9% of their annual budgets just to respond to

[emission reduction potential of behavioral changes in the transportation, energy, and food sectors](#). Working Paper. Washington, DC: World Resources Institute. doi.org/10.46830/wriwp.21.00151.

²⁰ UNEP, 2025. [Adaptation Gap Report 2025: Running on empty. The world is gearing up for climate resilience — without the money to get there](#) [Neufeldt, H., Hammill, A., Leiter, T., Magnan, A., Watkiss, P., Bakhtiari, F., Bueno Rubial, P., Butera, B., Canales, N., Chapagain, D., Christiansen, L., Dale, T., Milford, F., Niles, K., Njuguna, L., Pauw, P., Singh, C. and Yang, G.]. Nairobi.

²¹ World Meteorological Organization (WMO), 2024. [State of the climate in Africa 2023](#). Geneva: WMO.

²² WMO, 2025. [State of climate in Africa 2024](#). Geneva: WMO.

disasters²³. This creates a serious financial challenge. Adaptation needs in Africa are estimated at ~US\$70 billion per year, yet actual adaptation finance reaching the continent was only ~US\$15 billion in 2023²⁴. That leaves a very large gap at a time when many African governments are still working to meet urgent development needs such as housing, health care, education, sanitation and basic services. At the municipal level, the challenge becomes very practical. Local governments must already stretch limited budgets across roads, stormwater, housing, public health, water infrastructure, sanitation and many other essential services. Expecting municipalities to absorb the full cost of unchecked climate change through adaptation alone is unrealistic.

There are also limits to adaptation. Some impacts can be reduced. Others become extremely difficult, disruptive or expensive to manage once warming reaches higher levels. Relocating settlements, redesigning entire infrastructure systems or responding to repeated extreme events year after year is far more difficult than limiting warming in the first place. This is why climate scientists and policymakers talk about climate change mitigation **and** adaptation, not adaptation instead of mitigation. Mitigation means reducing greenhouse gas emissions so that the scale of future climate impacts stays within what societies can realistically manage.

Bottom line: Adaptation is essential, but it cannot replace reducing GHG emissions. The safest and most affordable path is to do both.

Conclusion

Climate change is often made harder to understand by misinformation, selective arguments and misleading language. That is why myth-busting matters. When people have access to clear, trustworthy information, it becomes easier to understand the issue, see the risks more realistically and recognise why action is necessary.

The science is clear on several important points. Climate change is real. Human activity is the main cause. The impacts are already being felt. Every fraction of warming matters. Action is still worthwhile. Individual choices matter as part of collective change. And adaptation on its own will not be enough.

For Stellenbosch Municipality, climate change is not an abstract global issue. It is already shaping local heat, drought risk, water security and resilience planning. Understanding these facts is an important step toward building a municipality and a community that are better prepared for the future. This MythBusters page forms part of Stellenbosch Municipality's broader effort to strengthen climate awareness, improve local understanding of climate risks and support a more resilient future for all residents.

²³ WMO, 2024. [State of the climate in Africa 2023](#). Geneva: WMO.

²⁴ Global Center on Adaptation (GCA) and Climate Policy Initiative (CPI), 2025. [Adaptation finance flows to Africa](#).