

# Climate-adaptive beauty

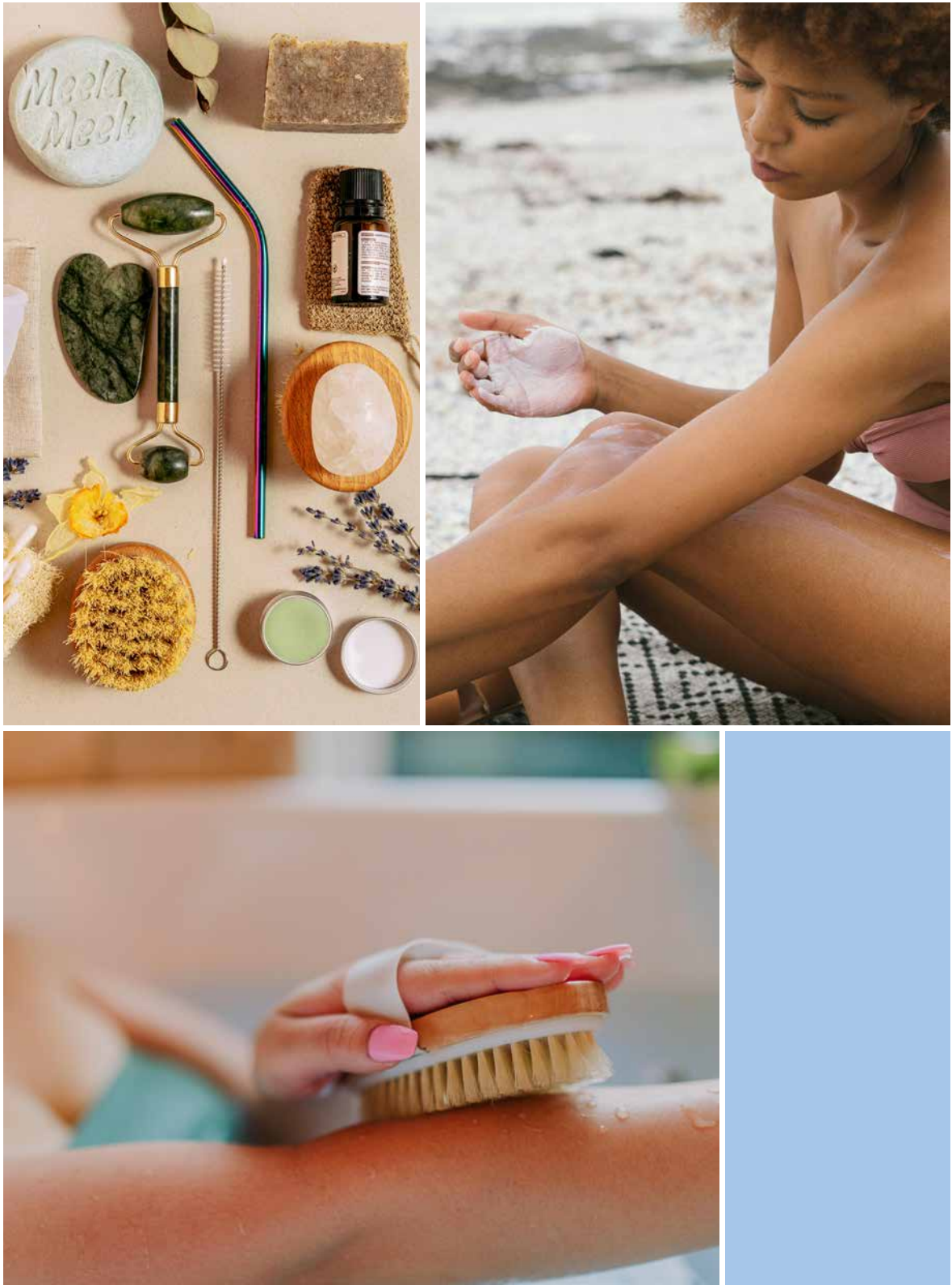
With rising temperatures and more extreme weather events, protecting our skin is no longer just a cosmetic concern, it's a climate one. The beauty industry is adapting but we, as consumers, have a role to play in choosing products that protect both our skin and the planet.

Words by Emma Nuttall

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We're not just navigating acne or ageing anymore, we're facing climate-related skin challenges – pollution-triggered breakouts, barrier damage, eczema and hyper-sensitivity.



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As climate change accelerates, we're not just witnessing impacts to the planet, we're feeling them in our bodies. From heatwaves and wildfires to air pollution and water scarcity, environmental stressors are beginning to shape both our inner health and our outer appearance. Our skin, the body's first line of defence, is already showing signs of strain. Rising rates of inflammation, acne and dermatitis-related conditions are a clear sign that we need more from our skincare.

The beauty industry is responding – think pollution-shielding formulations, packaging that's not just refillable but reimaged, personalised AI-driven solutions and products that adapt to specific climates and conditions. The future of beauty depends on more than the next miracle serum. It's about integrity, transparency and sustainability. We need solutions that genuinely support skin resilience in a changing world, are environmentally responsible and are accessible to a range of consumers, not just those at the premium end of the market.

Why our skin is under siege

A 2024 study by researchers Jinkyung Lee and Ki Han Kwon confirms what many of us are already feeling: heatwaves are becoming more frequent, intense and long-lasting. This ongoing thermal stress disrupts our body's internal balance, with our skin among the first to react. Dehydration, inflammation, redness and increased water loss are all signs that our skin is struggling.

Lee and Kwon remind us that heat isn't the only issue. UV radiation, intensified by ozone depletion, doesn't just accelerate visible ageing. It's a key player in inflammatory skin conditions and cancers such as melanoma and keratinocyte carcinoma. Add in air pollution and you have numerous environmental stressors that trigger oxidative stress, impair our skin barrier and make our skin more sensitive and reactive.

Pascale Brousse, founder of Trend Sourcing and a leading voice in wellness foresight, agrees that pollution is a primary threat to our health. "Following that, the combination of heat and humidity strains our thermo-regulation systems, putting newborns and menopausal women at the greatest risk," she warns.

In a 2024 study published in the *Journal of Clinical Dermatology*, researchers found that atopic dermatitis, one of the most common and burdensome skin conditions worldwide, is strongly shaped by environmental factors like temperature extremes, UV exposure and pollution. We're not just navigating acne or ageing anymore, we're facing climate-related skin challenges – pollution-triggered breakouts, barrier damage, eczema and hypersensitivity.

Richard Cope, senior trends consultant at Mintel, explains that UV exposure degrades collagen and elastin, causing sagging, wrinkles and uneven pigmentation. Meanwhile, high heat and humidity create a breeding ground for fungal infections and cause oil glands to overproduce, exacerbating acne and

congestion. The air is also changing. Dry conditions strip moisture from the skin, leaving it coarse and tight. He points to new research from the University of Michigan warning that rising carbon dioxide levels could increase annual pollen emissions by up to 200 per cent, further aggravating allergies and inflammation.

These environmental aggressors are reshaping the way we need to care for our skin. We need support that is as dynamic and responsive as the environments we now live in. As a natural health practitioner, I know too well that when our bodies are struggling to cope with the outside world, it's harder to feel good on the inside.

Sobering statistics

According to Cope, the World Resources Institute predicts a 30 per cent rise in global water demand by 2050, and the University of Washington links 4.7 million premature deaths annually to air pollution. The United Nations Office for Disaster Risk Reduction (UNDRR) forecasts that instances of extreme temperatures are in the process of tripling in frequency between 2000 and 2030. The case for protective, adaptive skincare couldn't be clearer and these needs will grow.

Climate dermatology

Climate dermatology is an emerging field that is beginning to address some of these challenges. "Climate change will amplify most existing health, dermatological and beauty concerns, from allergies to mosquito-borne diseases, wound healing complications to makeup stability," Brousse warns. Dermatologists will increasingly be required to address patients' needs for cooling, hydration, UV protection, cancer prevention and allergy management.

How the beauty industry is evolving

Climate-adaptive beauty isn't just another fleeting trend. It's a necessary response, driven by science and shaped by consumer awareness. Fortunately, beauty and skincare brands are beginning to act. "Not only because consumers are asking for better protection and comfort, but also because ingredient sourcing is becoming harder under climate pressure," Brousse explains.

Brands are starting to take cues from climate data, partnering with tech companies to create skincare that responds to the environment. Ingredients are being selected for both performance and resilience and grown through regenerative practices or using bio-synthetic ingredients with minimal environmental impact. Brousse points to indoor and waterless cultivation of rare ingredients as an example.

In regions already grappling with high heat and humidity, skincare innovation is moving quickly. "Asia is currently the most advanced in climate care," notes Brousse. "In the West, even though suncare is booming, awareness around climate-related skincare needs remains relatively low."



An AI skin health diagnosis is conducted using a deep learning algorithm that makes it possible to diagnose the user's wrinkles, redness, elasticity, damage and pigmentation.

Image: Pexels

Trends on the rise

According to Brousse, among the key innovations shaping the next wave of climate-adaptive beauty are thermo-regulating technologies and new-generation cooling skincare textures designed to measurably lower skin temperature. Products will have smart, sorbet-like textures and share claims highlighting the measurable cooling effects they can make on our skin. "They will be smart textures that remain stable and effective across different climates, even when we are travelling," she predicts. Brousse adds that we are also seeing the development of scalp-care solutions tailored specifically for heatwave conditions as well as anti-ageing formulations that adapt to environmental stresses such as rising temperatures and pollution.

Geo skincare refers to products that are tailored to specific climates, ensuring optimal protection and hydration based on the environmental conditions. Think SPF that works in smoggy cities and multifunctional products that address pollution, UV, humidity and temperature all at once. Cope predicts we'll see a rise in adaptive products such as moisturisers designed to function in both dry heat and icy cold and deodorants that release odour-neutralising molecules based on body temperature. "SPF will likely become the basis of all skincare, and we'll see more products formulated to protect against ozone and environmental pollutants," he adds.

Next-generation sunscreens are providing enhanced protection. Hybrid sunscreens that combine chemical and physical UV filters are gaining traction, offering long-lasting coverage with less environmental harm. Additionally, new formulations are incorporating antioxidants and DNA-repair enzymes to counteract sun damage at a cellular level.

In addition to heat and drought, climate-adaptive beauty is also about oceans. As ocean acidification and warming continue to threaten marine life, the "blue beauty" movement is gaining momentum. There is greater focus on reef-safe sunscreens, marine-safe ingredients and plastic-free packaging. Mukti, cosmetic formulator, skin therapist and founder of Mukti Organics, predicts we'll see more sustainably sourced marine ingredients like algae and seaweed, plus greater transparency around where these are harvested and how. According to market intelligence agency Mintel, innovative ingredients such as glycoproteins derived from lobsters will also become more common, developed with processes that support marine conservation.

We are also seeing microbiome-friendly formulations that work in harmony with our skin rather than stripping it. Probiotic and prebiotic skincare, as well as ingestible beauty supplements, provide an holistic inside-out approach, supporting our skin and gut health. These products aim to balance the skin's natural flora, enhancing our resilience against environmental stressors.

Advanced beauty technologies

Customisation is a big part of the future, and AI-based cosmetic devices are making it possible for consumers to create skincare solutions tailored to their unique needs. Lee and Kwon highlight just how far we've come. Today's AI-driven skincare responds to skin and reads the environment too. An AI skin-health diagnosis is conducted using a deep learning algorithm that makes it possible to diagnose the user's wrinkles, redness, elasticity, damage and pigmentation. It then considers such factors as UV index, humidity and air quality to recommend a formula or solution optimised to the individual's needs.

Accessibility and inclusivity

As we marvel at the future of skincare, we also need to acknowledge that personalisation remains a luxury. Many of these innovations are still limited to higher-income consumers and urban populations with access to AI tools, dermatological services and niche products. As the climate crisis accelerates, the equity gap in skincare, like in healthcare, risks widening. In low-income and climate-vulnerable communities where people are more likely to experience the effects of heatwaves, pollution and poor air quality, there may not be equitable access to medical care, let alone sun protection or basic skincare. These communities are also more likely to be overlooked in clinical research, product development and mainstream beauty narratives.

Incorporating the lens of *human security* challenges the industry to think not just in terms of profit and innovation but in terms of responsibility. Climate-adaptive beauty shouldn't just be a luxury reserved for wealthy consumers. We need affordable and effective options for all skin types and tones, across all geographies. As Brousse says, "Delivering truly inclusive, climate-adaptive beauty solutions would also require identifying and addressing the specific concerns of all skin phototypes, including the darkest ones." We, as consumers, can advocate for universal access to skin protection and better protection from environmental harm.

Sustainable practices and transparency

Sustainability is often reduced to "better packaging", but as Mukti reminds us, not all packaging solutions are equal, or even sustainable in practice. "There's a big trend that I think will continue to rise in the future, and that is refillable packaging," she explains. "Brands are already moving away from single-use plastic, which is a great step. However, I don't think refillable packaging is the answer. There's still a lot of waste involved."

Mukti points out that refillable systems can carry contamination risks and may not be financially or logistically viable. She advises that glass is the better option. "Glass is endlessly reusable and made from natural materials like sand, soda ash and limestone," she explains.





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Glass can be a truly circular option when the right recycling systems are in place as it still takes a lot of energy to produce and recycle. Sustainability advisor Amanda Nuttall points out that as we introduce more renewable energy into the electricity grid, this will greatly reduce the impact. That's why the beauty industry needs to keep looking for smarter, lower-impact options like bio-based packaging or systems that collect and reuse products. "As we adapt products to protect skin in a changing climate, we also need to ensure those same products aren't contributing to the very environmental pressures we're trying to shield ourselves from," Nuttall says.

Another climate-forward shift is a move toward durable and decomposable tools. "Microfibre cloths are a great example. They can be washed and reused without losing their effectiveness," Mukti says. There's also likely to be a rise in products that break down naturally after use, such as biodegradable glitter in cosmetics and compostable sheet masks."

This speaks to a broader mindset shift: rethinking not just what's inside the product, but how we use it, clean it and dispose of it.

**What comes next**

We're in the early stages of this climate-beauty shift, and the beauty and wellness sectors have an opportunity to lead meaningful change. Innovation will need to be paired with greater equity, ensuring that climate-adaptive solutions are accessible through inclusive testing, thoughtful pricing and consumer education. Finally, supporting the health of the planet goes hand in hand with caring for people, through ethical sourcing, biodegradable packaging and the use of regenerative ingredients that protect ecosystems rather than deplete them.

Today's consumers are savvy. They want to know what's in their products, where it comes from and how it affects the planet. "I hope that brands start to provide more detailed information about their supply chains and ingredient sourcing," says Mukti. "Customers deserve full transparency on product origins and environmental impact, and full transparency and traceability is a trend that I hope we see in the future." In an era where greenwashing is rampant, third-party certifications and transparent communication are essential tools for building trust.

**The future is adaptive and imperfect**

Climate-adaptive beauty isn't a passing trend or a marketing tactic. It's a necessary evolution. "Sustainability in beauty is no longer optional;

it's a baseline expectation," notes Mintel in its 2025 Global Beauty & Personal Care Trends Report. If done well, it should be rooted in science, ethics and transparency, not greenwashing or marketing spin.

Innovative design will continue to matter, especially as extreme weather threatens supply chains. More than just swapping out plastic for glass, the entire product lifecycle from extraction to formulation to disposal is important. We are used to asking – is this product right for my skin type? Now we should be asking – is this product right for my skin type, my climate, my values and the planet?

The good news is that brands, founders and formulators are listening. With continued pressure from educated consumers, the industry has the potential to become not only cleaner, but smarter, fairer and more future-fit.

**How we, as consumers, can respond**

We can't afford to stay passive in the face of environmental change, especially when our everyday choices, including where we spend our hard-earned dollars, have real impact. Small, conscious actions, when multiplied across millions of people, can drive industry-wide change.

Educating yourself about what's in your products, where they come from, how they are made and how they impact the environment is the first step. It enables you to choose brands that prioritise transparency, support regenerative practices and innovate with both people and the planet in mind. Ultimately, we need to educate ourselves and we need to care for our environment in real, embodied ways.

Will the future of beauty become less about fixing our flaws and more about embracing our wellbeing and the wellbeing of the planet? Only time will tell, but I'm optimistic we will realise that choosing between loving ourselves and loving our planet is no longer an option, because the two are inseparable. 🌱

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Emma Nuttall is a nutritionist, communications specialist and feature writer, passionate about uncovering wellness trends, making wellness more accessible and translating research into lifestyle advice. Through her platform, Health Served Up, she shares evidence-based wellbeing and behaviour change tools. Visit [healthservedup.com](https://healthservedup.com) or follow @healthservedup.