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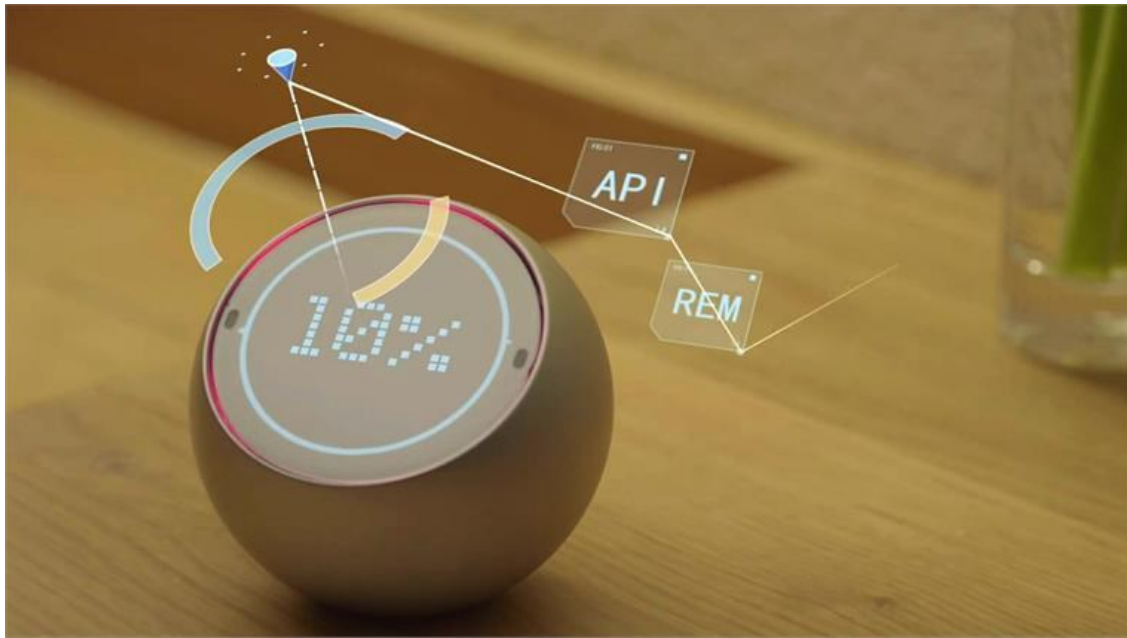
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Urban Defence

Growing urbanisation – and the accompanying rise in pollution levels – is making it hard for city-dwellers to stay healthy. New tools that track and counter pollution, from "digital nervous systems" to probiotic bacteria mists, are gaining ground, particularly among consumers in China.



Airnut indoor station

SUMMARY

URBAN JUNGLE By 2050, 56% of Africa's population will live in cities, as will 64% of Asia's population and 86% of that of Latin America ([United Nations](#), 2014). The scale of this urbanisation presents a clear need to rethink product and service design for tomorrow's city-dwellers.

RISING CONCERN Consumer concern over air and water pollution is rising – nearly half of Chinese consumers are worried about catching incurable diseases due to environmental pollution ([Intel](#), 2014).

DATA POWER Tech advances – such as bio-inks and low-cost sensors – are beginning to enable people to gather information about their local environment, while on the go.

PURIFYING PRODUCTS Armed with more accurate knowledge of their local environment, consumers are turning to high-performance products that protect against the hazards of city living – in style.

POSITIVE SPACE Forward-thinking designers are exploring how public spaces might enhance simple pleasures, such as fresh air and extra space on the pavement, to alleviate the cramped conditions many urban citizens face.

HEAL & SOOTHE As consumers become more aware of the effects of pollution on their skin, they are looking to beauty and beverage brands for healing.

Dirty Cities

The world's urban centres are rapidly expanding – by 2050, there will be 40 megacities worldwide, each with more than 10 million inhabitants ([United Nations](#), 2013). However, this explosive growth is creating a number of problems. In March 2014, the Chinese government was forced to declare a "war on pollution" as air pollution in the country's major cities reached hazardous levels. Only eight of China's 74 biggest cities [passed](#) the government's basic air quality standards in 2014. Meanwhile, in Delhi, India, levels of PM2.5 – small particulate matter that penetrates deep inside the lungs – are regularly 15 times the limit considered safe by the [World Health Organisation](#).

Extensive media coverage is stoking consumer concern over air and water pollution. [Under the Dome](#) – a 2015 documentary about air pollution in China, made by former state news anchor Chai Jing – received more than 200 million views online in less than a week, before it was taken down by state censors. Unsurprisingly, some 47% of Chinese consumers aged 20-49 are now concerned about catching incurable diseases due to environmental problems, while 40% buy items designed to protect them from the effects of environmental pollution ([Intel](#), 2014).

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Under the Dome



Some 47% of Chinese consumers aged 20-49 are concerned about catching incurable diseases due to environmental problems



Only eight of China's 74 biggest cities passed the government's basic air quality standards in 2014

Tracking Tools

Improvements in sensor technology, coupled with the rise of big data, are fuelling the development of new tools that help consumers collect information about their surroundings, while on the go.

- **Digital Nervous System:** [Speck](#), designed by scientists at Carnegie Mellon University in the US, is a \$200 indoor PM2.5 monitor that aims to create a "digital nervous system" for its users by collecting and tracking environmental data. In response to user feedback, Speck's creators ensured that the device was mobile-friendly and offered instant feedback. "My aim is to make air pollution visible, so we can make intelligent decisions about what to do," Illah Nourbakhsh, Speck's creator, told delegates at this year's [South by Southwest Interactive](#) festival. The device is due to ship this month.



My hope is to use the power of data to enable people to make a difference to their quality of life [by tracking air pollution].

ILLAH NOURBAKSH, FOUNDER, SPECK

- **DIY Data:** In February 2015, nanoengineers at the University of California, San Diego, invented a new breed of bio-inks that let people draw sensors onto any surface. The innovation could enable people to draw pollution sensors onto leaves, smartphones or even buildings, using a standard ballpoint pen. Scientists are currently working to connect the sensors wirelessly to monitoring devices. The next step will be to trial the sensors in real-world situations.
- **Drink Up:** In April 2014, Chinese e-commerce site Alibaba began recruiting shoppers to take part in a survey to map water quality across the country, using \$10 water pollution kits sold on the site. Founder Jack Ma hopes the results, which are uploaded to a digital map, will put pressure on the Chinese government to improve water quality in China. More than 70% of groundwater in the northern China plain is now too polluted to even touch, according to Hong Kong-based non-profit China Water Risk.
- **Real-Time Updates:** In May 2014, Moji China, one of the country's most popular weather apps, launched Airnut, a pair of smart weather stations that deliver weather and air quality metrics to users' smartphones. The Airnut indoor station can connect to appliances such as air filtration units, turning them on when air quality dips below a certain level. The Airnut mini outdoor weather station allows visitors to check the weather and air quality at popular tourist spots such as the Great Wall of China. Moji suggests restaurants and retailers could use real-time weather information from the stations to engage customers in new ways.



Airnut indoor station



Bio-ink sensors



Speck

Clearing the Air

Armed with more accurate knowledge of their local environment, consumers are turning to products and services that help protect them against the hazards of city living.

- **Stylish Smog Masks:** British entrepreneur Chris Dobbing is to launch a series of pollution masks in China in 2015, which will apply filtration technology used by the British Special Air Service (SAS) and Swedish army. The masks will come in a range of colours and styles to appeal to fashion-conscious consumers. The impact of Chai Jing's *Under the Dome* documentary has been immense, Dobbing told Stylus: "It's really educated a whole country. Anyone who was interested or who'd heard about it was able to watch it. Suddenly, the level of understanding and knowledge of air pollution has been completely transformed."



Customers are becoming more educated and they are starting to understand the need to invest in good-quality products – really good air purifiers, masks and water filters.

CHRIS DOBBING, FOUNDER, CAMBRIDGE MASK COMPANY

- **Cheap, Clean Air:** In February 2015, scientists at Stanford University in California [developed](#) a pollution filter that removes 99% of the most harmful smog particles passing through it. The virtually transparent low-cost filters could be used immediately to make passive systems such as face masks or window screens, said research lead Yi Cui. In the future, they could even be fitted to car exhausts or smoke stacks to block pollution at the source.
- **Privacy Protection:** While air pollution is a hot topic, consumers are looking to protect themselves against other urban threats. [No Fly Zone](#), a US website launched in February 2015, lets users enter their zip code online and geo-fence the airspace over their home, so drones will avoid flying over it. US tech blog TechCrunch [reports](#) that a number of hardware and software companies have promised to honour the requests, which would prevent unauthorised filming or photography.

Pockets of Peace

Forward-thinking designers are exploring how public spaces might enhance simple pleasures, such as fresh air and extra space on the pavement, to alleviate the cramped conditions many city-dwellers face.

- **Breathe Easy:** Dutch designer Daan Roosegaarde's latest project is a [smog-free park](#) in Beijing, due to open in 2016. Roosegaarde intends to create a "smog vacuum cleaner" by using ionic filters that attract and remove smog particles to leave a patch of clean air. He also plans to produce high-end jewellery, using the pollution gathered from the park. The Smog Ring will feature a centerpiece of condensed smog particles. Sales of the rings will fund the park's upkeep.
- **More Space:** British designer Jack Beveridge's [More Space](#) project gives urban citizens a taste of life with a little more room. The campaign was designed in response to a brief from British charity the National Trust, which asked designers to "reconnect an urban audience with nature". Beveridge's design features a video in which London commuters are surrounded by a giant green hoop, providing personal space through a protective barrier. The campaign could also be extended across print and digital platforms, Beveridge suggested – for example, the National Trust could award internet users more space in their cloud storage for using a green hoop icon. The concept won the D&AD Yellow Pencil Student Design Award 2014.



Smog-free park

Healing Aids

Growing numbers of consumers are recognising the effects of pollution on their skin and looking to brands to heal them. Beauty products that promise to soothe irritation, have antibacterial properties and promote anti-pollution claims are becoming increasingly appealing, according to global research group [Mintel](#).

- **Risk Map:** US skincare brand Avon coined the term "[urban dust](#)" to describe the "environmental aggressors" that threaten our skin. In July 2014, the brand released a study mapping pollution hotspots around the UK to coincide with the launch of its [Anew Clinical E-Defence](#) range.
- **Protective Bubble:** Earlier this year, [1001 Remedies](#), the British luxury aromatherapy company, launched [PurAir](#) – an air-purifying spray that provides the "perfect antidote to pollution". The spray, which costs £24 (\$36), contains antiviral and immunity-boosting essential oils, and can be sprayed straight into the air or onto bed linen. Similarly, [Better Air](#), developed by the Israeli tech firm of the same name, is a spray that mists probiotic bacteria to drive out bacteria that cause mould and bad odours – much like an airborne Yakult yoghurt shot.
- **Next-Gen Detoxing:** Shanghai-based juice company [Farmhouse Juice](#) sells detoxifying cold-pressed juices that emphasise their clean, safe ingredients. The firm tests every batch of fruit and vegetables before processing and washes produce in filtered water before use. "Living in China isn't easy on our bodies. We consume harmful chemicals every day through water, air and food," the company says on its website.

Founded in 2013, Farmhouse Juice is one of a growing number of beverage companies in China offering one-, three- and five-day juice cleanse programmes. Mintel predicts that tomorrow's consumers will turn to food and beverage products with ingredients that promote detox benefits. It advises brands to highlight "pollution-free" ingredient sourcing in marketing material.

For more on pollution-busting beauty, see [Rethinking Beauty: Sustainable Futures](#).



Farmhouse Juice

FUTURE INSIGHTS

EXPLORE NEW MARKETS While air pollution is still a big issue in China, the Chinese government is working hard to fix the problem. The next places where demand for pollution-fixing products could soar are likely to be developing markets such as India and Iran.

TRACK TO WIN Use the latest pollution-tracking sensors to give consumers personalised lifestyle analysis – and tailor your product pitch to match.

BUILD TRUST Brands must work harder to win the trust of sceptical Chinese consumers. Time now to make supply chains transparent and emphasise your brand's expertise and experience.

SOLVE WITH SPACES Take inspiration from Jack Beveridge's More Space campaign and identify one negative aspect of city life your brand might address in a creative way.

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