

# THE FUTURE OF COOKING IS ELECTRIC.

Why burning dangerous fuels in our kitchens will become a thing of the past.



GLOBAL  
COOKSAFE  
COALITION



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# ABOUT US

## Safe, healthy, fossil-fuel-free cooking for everyone.

The Global Cooksafe Coalition (GCC) exists to promote universal access to safe and sustainable cooking. That means affordable, fossil-fuel-free cooking, using energy-efficient appliances, powered by rapidly decarbonizing grids or distributed renewable energy.

Member and partner organizations are leaders in the spheres of public health, property and the built environment, fair food, renewable energy, energy efficiency, aid and development, and climate change science and advocacy. Member groups are not-for-profit organizations; partner groups are businesses and corporations.

Bringing together unparalleled experience from diverse sectors of expertise, the GCC works to ensure we can all breathe cleaner air in our homes. And by getting fossil fuels out of our kitchens, the GCC is leading urgent action to combat the climate crisis.

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### Global Cooksafe Coalition members and partners support:

- By at least 2030, all new kitchens in OECD countries will use energy-efficient electric cooking appliances, powered by a rapidly decarbonizing grid or distributed renewable energy.
- By 2035, all new kitchens worldwide will use energy-efficient electric cooking appliances, powered by a rapidly decarbonizing grid or distributed renewable energy.
- By at least 2040, all existing kitchens in OECD countries will use energy-efficient electric cooking appliances, powered by a rapidly decarbonizing grid or distributed renewable energy.
- By 2045, all existing kitchens worldwide will use energy-efficient electric cooking appliances, powered by a rapidly decarbonizing grid or distributed renewable energy.
- An immediate, urgent increase in public finance allocated to electrification of cooking in lower- and middle-income countries.
- Fiscal policy supporting households and small businesses to transition to energy-efficient electric appliances.
- Fiscal policy assisting vulnerable health cohorts to access effective rangehoods.
- Improved ventilation standards in national buildings codes.

# GLOBAL COOKSAFE COALITION FOUNDING MEMBERS AND PARTNERS

## Members

### The European Public Health Alliance

The European Public Health Alliance, or EPHA in short, is a member-led organization made up of public health NGOs, patient groups, health professionals and disease groups, working to improve health and strengthen the voice of public health in Europe.

### Green Building Council Australia

GBCA represents more than 600 Australian members including government and educational bodies, major real estate developers, professional services firms, banks, superannuation funds, product manufacturers, retailers, utilities and suppliers with a collective annual turnover of more than \$46 billion Australian dollars (approximately \$32 billion United States dollars).

### The World Green Building Council

WorldGBC catalyzes the uptake of sustainable-built environments for everyone, everywhere. Transforming the building and

construction sector across three strategic areas—climate action, health and wellbeing, and resources and circularity—it is a global action network of over 70 Green Building Councils around the world.

### CLASP

CLASP improves the energy and environmental performance of the appliances and equipment we use every day to expand access to clean energy and mitigate climate change.

### The Climate Council

The Climate Council is Australia's leading climate change communications organization. It provides authoritative, expert advice to the Australian public on climate change and solutions based on the most up-to-date science available.

### Nightingale Housing

Nightingale Housing is an Australian not-for-profit organization that provides apartments that are socially, financially and environmentally sustainable.

### Modern Energy Cooking Services

Modern Energy Cooking Services (MECS) is a seven-year program funded by UK Aid. The program works to integrate modern energy cooking services into planning for electricity access, quality, reliability and sustainability to address the clean cooking challenge.

### Asthma Australia

Asthma Australia is Australia's peak asthma body, dedicated to improving the lives of over 2.7 million Australians who live with asthma.

## Partners

### GPT

GPT is a vertically integrated diversified property group that owns and actively manages a AU\$26.9 billion (US\$18.6 billion) portfolio of high-quality Australian office, logistics and retail assets.

### Lendlease

Lendlease is a globally integrated real estate group with a AU\$117 billion global development pipeline. Lendlease has played a role in creating landmark spaces around the world, with a focus on safety, innovation and sustainability.



# EXECUTIVE SUMMARY

The energy revolution has happened. The price of renewables continues to fall each year, with the International Energy Agency branding solar power the “cheapest electricity in history”.<sup>1</sup> Sixty-two percent of new renewable energy projects provided cheaper power than the cheapest fossil fuel in 2020.<sup>2</sup> But cooking—that daily essential and cultural bedrock that makes our kitchens the heart of the home—has been left in the cold, lagging behind in the transition to safe, clean energy.

Gas, a polluting fossil fuel, remains the dominant cooking fuel globally. The World Health Organization (WHO) estimates that 50% of the global population currently relies on gas, including LPG, as their primary cooking fuel, representing almost 70% of all urban dwellers and 30% of rural populations.<sup>3</sup> In low- and middle-income countries, the situation is starker, with 3.2 million premature deaths each year from illnesses attributable to the household air pollution caused by cooking with solid fuel and kerosene.<sup>4</sup>

Gas use is growing globally, despite decades of scientific, peer-reviewed research that demonstrates that cooking with gas is bad for our health and the climate.

The gas we burn in our homes releases toxic pollutants including nitrogen dioxide, carbon monoxide and formaldehyde. While many parents today would not expose their children to second-hand cigarette smoke, the effect of gas cooktops on the burden of childhood asthma is comparable to the impact of passive smoking in the household.<sup>5</sup> A 2013 meta-analysis found that children across the globe living in a home with

a gas stove had a 42% increased risk of having current asthma.<sup>6</sup>

There are additional health risks associated with gas stove leaks. Unburned gas contains harmful air pollutants including toluene, hexene, xylenes, and benzene—a pollutant that has been linked to anemia, reproductive disorders, and various forms of cancer.<sup>7</sup>

The negative health impacts of gas are compounded by its impact on the global climate. Methane is the primary component of gas, and as stated by Harvard University, “while CO<sub>2</sub> has longer-lasting effects, methane has more than 80 times the warming power of CO<sub>2</sub> in its first 20 years in the atmosphere, setting the pace for near term warming.”<sup>8</sup>

According to the International Energy Agency’s (IEA) World Energy Outlook, “Cooking is the activity most dominated by fossil fuels in buildings today.”<sup>9</sup> The IEA estimates that cooking resulted in 498 Mt of CO<sub>2</sub> emissions in 2020. The agency does not attribute these emissions to individual fuels, but given these figures do not include emissions from biomass combustion, and the dominant use of gas and LPG in cooking globally, these fuels are likely responsible for a significant proportion of these emissions.<sup>10</sup> And these figures are just the tip of the iceberg, as they fail to account for indoor “fugitive emissions”. A Stanford University study showed that 75% of methane leaking from gas stoves happens when the stoves are off.<sup>11</sup>

The good news? Dramatic advances in renewable energy and electric cooking technologies means we have a safe, affordable alternative to burning toxic fuels in our kitchens.

Induction technology has advanced to offer the most sophisticated cooktop experience today. Induction technology is safer, cooler and easier to clean, which is why it is championed by leading

chefs globally, from Denmark’s Rene Redzepi to the United Kingdom’s Sat Bains.

While gas prices skyrocket around the world, solar power is the cheapest energy source in history. This has the power to transform safe cooking solutions for low and middle income countries.

Historically, electricity hasn’t been considered a practical solution for communities experiencing energy poverty. But expert research shows that solutions like electric pressure cookers and low wattage induction cooktops are cheaper than LPG in many regions.<sup>12</sup> This is not to diminish the efforts of communities working to deliver the most immediately available cleaner cooking solutions in local contexts, from ethanol and rocket stoves to community-scale biomass digesters; but to recognize that renewable power is transforming energy markets. This offers the opportunity to integrate safe cooking solutions into national energy plans and affordable, longer term solutions connected to delivery of United Nations Sustainable Development Goals.

*Dramatic advances in renewable energy and electric cooking technologies means we have a safe, affordable alternative to burning toxic fuels in our kitchens.*

Affordable energy-efficient electric appliances also have the potential to alleviate energy poverty in higher income countries like the UK and US, where gas prices have more than tripled and analysis shows all-electric single-family homes in all regions of the US have lower energy bills than comparable mixed fuel-homes (i.e., electricity and gas).<sup>13</sup>

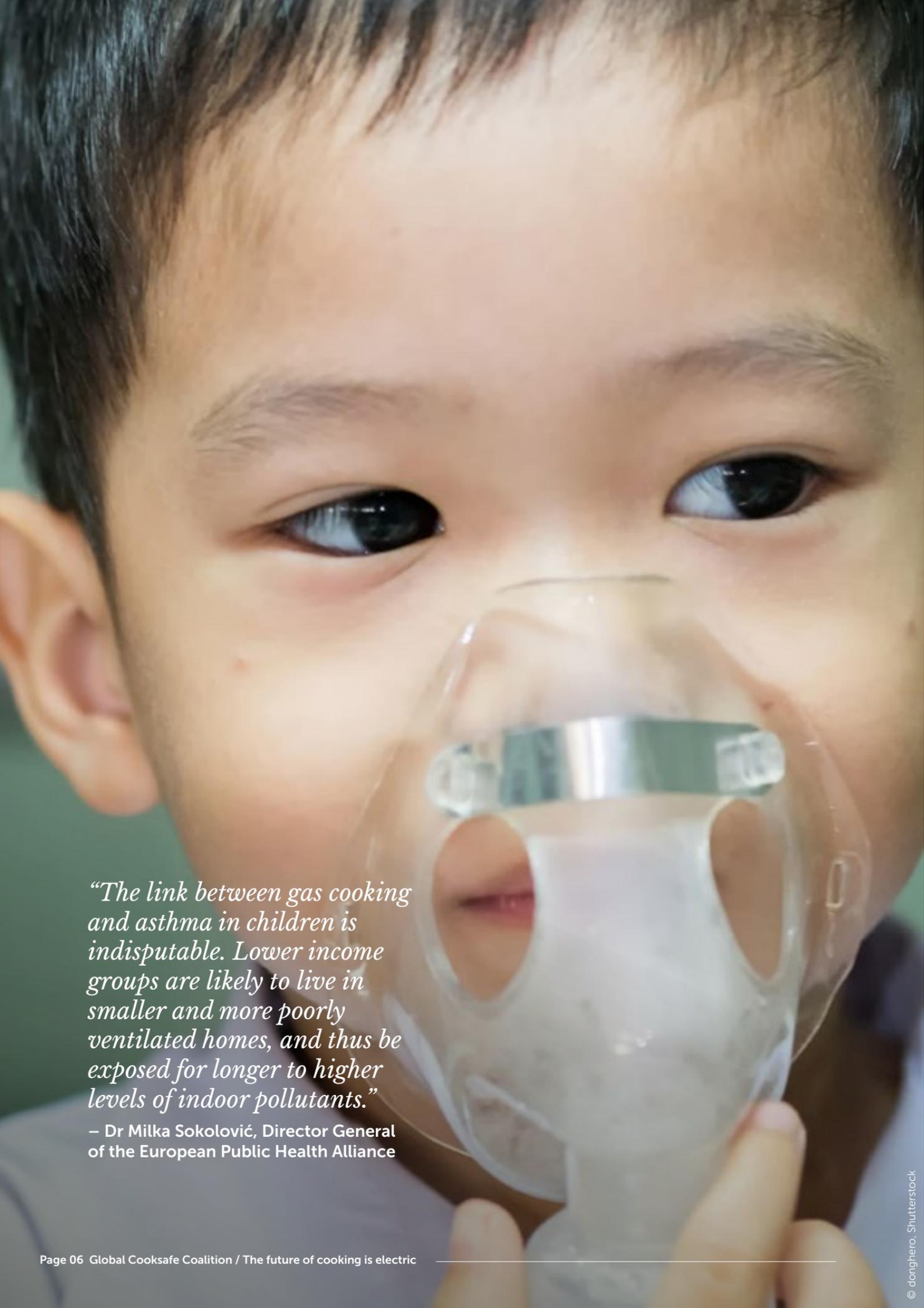
These savings are transforming decisions by property developers in the commercial retail sector. Industry modeling shows all-electric kitchens save significant amounts in construction and operations, and secure against stranded fossil-fuel assets.

## WHAT’S THE TAKE-AWAY MESSAGE?

**We have the ingredients we need for safe, affordable cooking for everyone.**

- Cooking with energy-efficient electric appliances is better for our health and for the climate.
- Renewable energy is providing the cheapest power in history, which means electric cooking is increasingly cheaper than cooking with fossil fuels.
- Induction technology outperforms gas, providing the most sophisticated cooktop experience on the market.
- The renewable energy revolution is transforming clean cooking solutions for low- and middle-income countries. Electricity is increasingly considered a cost-effective, longer-term solution to safe cooking deficits, and allows safe cooking to be harnessed to the delivery of broader United Nations Sustainable Development Goals.
- Because electric cooking is safer, healthier and cost-effective, the commercial retail sector globally is increasingly shifting to all-electric kitchens.

**The world is overdue for a safe cooking revolution. Burning harmful fuels in our kitchens must become a thing of the past.**



*“The link between gas cooking and asthma in children is indisputable. Lower income groups are likely to live in smaller and more poorly ventilated homes, and thus be exposed for longer to higher levels of indoor pollutants.”*

– Dr Milka Sokolović, Director General of the European Public Health Alliance

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# THE HEALTH IMPACTS OF COOKING WITH GAS

Over the past four decades, multiple studies have investigated the health risk posed by cooking with gas stoves.

The results are alarming.

This should come as no surprise given the burning of gas releases several toxic pollutants, notably nitrogen dioxide, carbon monoxide and even formaldehyde directly into our kitchens and homes.

Those most vulnerable to such pollutants are also those who have little choice in the matter: children. Children have higher breathing rates and physical activity, a smaller lung-to-body ratio and still-developing respiratory and immune systems,

making them particularly vulnerable to exposure to fossil fuel pollutants.<sup>14</sup>

According to the US EPA, strong evidence exists for a relationship between long-term exposure to nitrogen dioxide and the development of asthma in children.<sup>15</sup> This evidence has led the American Medical Association to pass a resolution warning physicians, health care providers and the public that cooking with gas causes indoor air pollution and increases the risk of childhood asthma.<sup>16</sup>

A 2013 meta-analysis examined 41 studies and found that children living in a home with gas stoves have a 42% increased risk of having current asthma, and a 24% greater chance of being diagnosed with asthma at some point in life.<sup>17</sup> The study found no significant regional

## Gas stoves can emit elevated indoor Nitrogen Dioxide (NO<sub>2</sub>) levels often exceeding indoor guidelines and outdoor standards

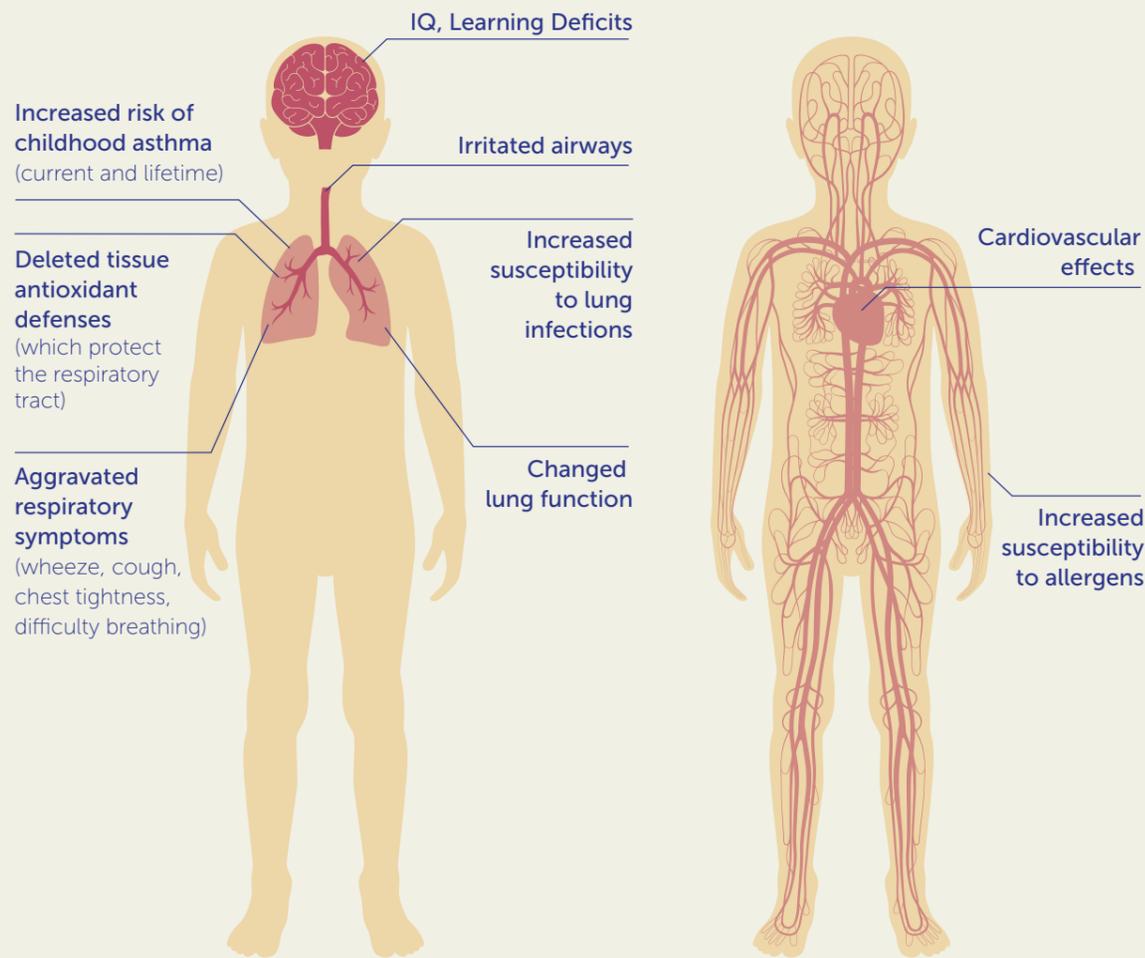
Outdoor Standards for NO <sub>2</sub> 1-hr average (ppb)	
US National Standard (EPA)	100
Canadian National Standard	60
California State Standard	180
Indoor Guidelines for NO <sub>2</sub> 1-hr average (ppb)	
Canada	90
World Health Organization	106
Measured NO <sub>2</sub> Emissions from Gas Stoves Peak (ppb)	
Baking cake in oven	230
Roasting meat in oven	296
Frying bacon	104
Boiling water	184
Gas cook top - no food	82–300
Gas oven - no food	130–546



Source: Rocky Mountain Institute <https://rmi.org/insight/gas-stoves-pollution-health>

## Health Impacts of Nitrogen Dioxide (NO<sub>2</sub>) on Children

Gas stoves can produce elevated levels of NO<sub>2</sub>, a toxic gas.



Source: Rocky Mountain Institute <https://rmi.org/insight/gas-stoves-pollution-health/>

variations. A 2018 study estimated that cooking with gas is responsible for up to 12% of the burden of childhood asthma in Australia.<sup>18</sup>

Many parents today wouldn't expose their children to secondhand cigarette smoke, particularly inside their home. However, the effect of gas cooktops on the burden of childhood asthma is comparable to the impact of passive smoking in the household.<sup>19</sup>

This finding is backed by several studies. Jayes et al (2016) analyzed 71 studies from around the world and found that children exposed to household smoking were 1.14 to 1.30 times

(14%-30%) more likely to develop asthma.<sup>20</sup> Vork et al (2007) conducted a global meta-analysis which found that children exposed to household secondhand smoke were 1.33 times more likely to develop asthma during childhood.<sup>21</sup> This is a similar range to the 32% increase in likelihood found in the global meta-analysis by Lin et al (2013), above.<sup>22</sup>

In the same year, a US study found that even low levels of NO<sub>2</sub> pollution in the home—well below US EPA's standards for outdoor air quality—exacerbate symptoms among asthmatic children, and that symptoms grow progressively more severe as NO<sub>2</sub> concentrations rise.<sup>23</sup>

*“We found that the emissions from a gas stove while it is off can produce, in some cases, concentrations of benzene in your house that are equivalent to living with a smoker. For cancer, it's pretty clearly stated by the World Health Organization that there's no safe level of benzene exposure.”*

– Dr Eric Lebel PhD, senior scientist at PSE Healthy Energy

Though the impact is felt most acutely by children and adults with underlying health conditions, anyone with a gas stove can be exposed to indoor air pollution. Proper ventilation can reduce air pollution, but even when used effectively, it does not eliminate the risks.

Risk to the general public also comes in the form of exposure to carbon monoxide (CO). This invisible gas is undetectable by humans and is produced by the incomplete combustion

of fuels. In homes without gas stoves, average CO levels are between 0.5 and 5 ppm. Homes with gas stoves that are properly adjusted are often between 5 and 15 ppm, whereas levels near poorly adjusted stoves can be twice as high: 30 ppm or higher.<sup>24</sup> In 2020, the US Consumer Product Safety Commission (CPSC) reported that about 170 people die every year from CO poisoning caused by non-automotive products, including stoves and ovens.<sup>25</sup> While CO poisoning is well understood, there has been little study of the impacts of chronic, long-term exposure to small amounts of CO in our homes.

Another risk stems from leaks. A 2022 study published by Stanford University found that three-quarters of methane emissions occurred while stoves were turned off, pointing to systemic undisclosed flaws in these appliances.<sup>26</sup> The researchers found leaking gas in a huge diversity of stoves, ranging over 18 different brands and aged from three to 30 years old. Methane is not only a potent greenhouse gas, but also a precursor of ground-level ozone, which in turn contributed to an estimated 365,000 deaths globally in 2019.<sup>27</sup>

Additionally, recent research by Harvard University's T.H Chan School of Public Health found unburned gas leaks contain 21 different

## THE HEALTH IN ALL POLICIES PRINCIPLE



**Dr Milka Sokolović,**  
Director General of  
the European Public  
Health Alliance

The European Public Health Alliance (EPHA) has long been engaged in tackling environmental determinants of health, including air pollution, with a strong emphasis on a genuine implementation of the Health in All Policies principle. This means that we advocate for health implications to be meaningfully integrated in regulations covering all policy areas, such as those for buildings and home appliances.

The disproportionate effect that gas cooking and poor indoor air quality has on vulnerable population groups is also of concern for us at EPHA, given the focus on health equity throughout our work. The link between gas cooking and

asthma in children is indisputable. The lower income groups are likely to live in smaller and more poorly ventilated homes, and thus be exposed for longer to higher levels of indoor pollutants. For respiratory disease patients, even short-term exposure to increased levels of NO<sub>2</sub> is dangerous, as it may lead to respiratory symptoms such as coughing, wheezing or difficulty breathing, and even to hospital admissions. Inequalities among European countries are also glaring. The World Health Organization data tell us that the same trend we have seen for ambient air quality remains true for indoor air quality: there are more deaths attributable to indoor air pollution as we progress east, to Central and Eastern Europe.

Despite decades of research into the health risks and impacts of gas cooking, this issue is yet to be appropriately addressed at the EU level. Phasing out gas cooking is needed in order to protect the health of European citizens and address European health inequities.



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# COOKING THE PLANET

The World Health Organization states [climate change is the biggest health threat facing humanity](#).<sup>37</sup>

It estimates that between 2030 and 2050, climate change is expected to cause approximately 250,000 additional deaths per year, with direct costs to health estimated between US\$2-4 billion per year by 2030.<sup>38</sup>

Major international research-driven organizations agree. The Intergovernmental Panel on Climate Change (IPCC) has concluded that to avert catastrophic health impacts and prevent millions of climate change-related deaths, the world must limit temperature rise to 1.5°C.

Past emissions have already made a certain level of global temperature rise and other changes to the climate inevitable. Global heating of even 1.5°C is not considered safe, however, as every additional tenth of a degree of warming will take a serious toll on people's lives and health.

As the International Energy Agency's executive director Fatih Birol [explained](#) in 2021: "if governments are serious about the climate crisis, there can be no new investments in oil, gas and coal, from now – from this year."<sup>39</sup>

Clear evidence [shows](#) that oil and natural gas systems are a major contributor to methane emissions, which account for roughly 30% of global warming since pre-industrial times.<sup>40</sup> The main component of gas, methane, is a greenhouse gas more than 80 times more potent than carbon dioxide in the short term. Along the entire gas supply chain large quantities of methane are [emitted](#).<sup>41</sup>

The climate impacts of cooking with fossil gas are significant in part due to its widespread popularity in the home. Gas remains the most common cooking fuel globally, used by around half of the world's population in 2019, and almost 70% of people in urban areas, [according to the WHO](#).<sup>42</sup>

Cooking is the activity most dominated by fossil fuels in buildings today.<sup>43</sup> The IEA estimates that cooking resulted in 498 Mt of CO<sub>2</sub> emissions in 2020.<sup>44</sup> The agency does not attribute these emissions to individual fuels, but given these figures do not include emissions from biomass combustion and the dominant use of gas and LPG in cooking globally, these fuels are likely responsible for a significant proportion of these emissions.<sup>45</sup> And these figures, which account only for when fossil fuels are burned, likely underestimate emissions from gas cooktops that include gas leaks.

hazardous air pollutants, including benzene,<sup>28</sup> toluene, ethylbenzene and hexane. The health impacts of chronic exposure to these harmful pollutants is unknown.

As senior author and Stanford University professor [Dr Rob Jackson](#)<sup>29</sup> explained, "I don't want to breathe any extra nitrogen oxides, carbon monoxide or formaldehyde. Why not reduce the risk entirely? Switching to electric stoves will cut greenhouse gas emissions and indoor air pollution."

These findings have been confirmed by an additional study released in October 2022, which found harmful benzene in 99% of samples taken from gas stoves in 159 Californian homes.<sup>30</sup> Leaking unburned gas contained toxic chemicals, including toluene, hexene, xylenes, and especially benzene—a pollutant that has been linked to anemia, reproductive disorders, and various forms of cancer.

According to the study's lead author, Dr Eric Lebel, "We found that the emissions from a gas stove while it's off can produce, in some cases, concentrations of benzene in your house that are equivalent to living with a smoker. For cancer, it's pretty clearly stated by the World Health Organization (WHO) that there's no safe level of benzene exposure."<sup>31</sup>

For many pollutants, [research](#) shows that indoor air quality can actually be worse than outdoor air quality.<sup>32</sup> The [US EPA](#) states that indoor levels of pollutants may be two to five, and occasionally more than 100 times, higher than outdoor air pollution levels.<sup>33</sup>

[Research](#) has also found that lower income houses can be at higher risk. Factors, including smaller unit size, more people inside the home (occupant density), and inadequate stove top ventilation, contribute to elevated concentrations of NO<sub>2</sub> in lower-income, multi-family buildings.<sup>34</sup>

Government regulations have not kept pace with the health findings on indoor air pollution. No country globally has indoor air quality legislation which requires nitrogen dioxide levels in our homes to remain at safe levels. In the US for example, while outdoor emissions of six criteria air pollutants have decreased by 74% since the passage of the Clean Air Act in 1970, no federal regulations or guidelines have addressed indoor air pollution.<sup>35</sup>

As concluded by researchers at the Rocky Mountain Institute in a 2020 [analysis](#), "There is a significant and solvable health problem in plain view: gas stoves may be exposing tens of millions of people to levels of air pollution in their homes that would be illegal outdoors under national air quality standards."<sup>36</sup>

## Global warming potential of methane relative to carbon dioxide

This table shows the relative shift in the energy balance of the atmosphere from the emission of one tonne of methane relative to one tonne of carbon dioxide.

	Time horizon	Default value (IPCC AR5)	Carbon cycle feedback	After Etminan et al. (2016) revision
Fossil methane	20 years	85	87	99
	100 years	30	36	40
Biogenic methane	20 years	84	86	98
	100 years	28*	34	38

\* Federal government's preferred value for all sources of methane.

Source: The Climate Council, "Passing Gas" P17 [www.climatecouncil.org.au/wp-content/uploads/2020/12/FINAL-CC\\_MVSA0245-CC-Report-Gas\\_V5-FA\\_Low\\_Res\\_Single\\_Pages.pdf](http://www.climatecouncil.org.au/wp-content/uploads/2020/12/FINAL-CC_MVSA0245-CC-Report-Gas_V5-FA_Low_Res_Single_Pages.pdf)

## FOSSIL FUELS ARE THE NEW SMOKING



**Dr Kate Charlesworth,**  
public health physician  
and **Climate Councillor**

Gas, just like coal and oil, is a [fossil fuel that's driving climate change](#).<sup>46</sup> Research led by Harvard University

has shown that air pollution from fossil fuels is responsible for more than 8 million deaths globally each year. That's the same number of deaths as from cigarette smoking. Fossil fuels are therefore doubly harmful to health by directly causing air pollution but also by driving climate change, which is having increasingly dangerous health impacts here in Australia and around the world.

Climate-health impacts come directly from deaths, injuries, illness from increasing frequency and severity of extreme weather (heatwaves, storms, floods, droughts, bushfires). There are also all the indirect health impacts: shifts in infectious diseases, rise in allergens, food and water

insecurity, mental health impacts etc. Climate change acts as a threat multiplier, worsening many existing health issues, as we are seeing now play out in real-time here in Australia and globally.

The World Health Organization (WHO) has stated that climate change is the greatest health threat of our time, and medical leaders—who don't use the term "emergency" lightly—are calling for an emergency response to the climate crisis of similar magnitude to the COVID pandemic response.

The good news is that getting off gas and other fossil fuels will have a double health benefit: cleaner, [safer air](#) immediately and also averting climate breakdown which would be catastrophic for human health.<sup>47</sup> It would also be a win for our hip pockets – at a time when cost of living pressures are mounting – as gas is the most expensive form of energy generation in Australia. In fact, a [recent Climate Council analysis](#) found that getting off gas could save households up to AU\$1,900 a year.<sup>48</sup>

[Research from Stanford University](#) in the US shows that methane leaking from gas stoves, especially when the stoves are turned off, is an underestimated climate threat.<sup>49</sup> In the US, methane leakage from more than 40 million gas stoves is comparable to the climate pollution from half a million cars on the road.

Unfortunately, the direct emissions from gas cooking are just the tip of the iceberg. Direct emissions from heating and cooling in buildings are higher than direct emissions from cooking. But according to property developers and leasing agents, consumer demand for gas for cooking is a primary driver of new gas connections.

*Gas cooking is therefore having a multiplier effect, leading to gas appliance use and emissions beyond the direct use of gas cooking appliances.*

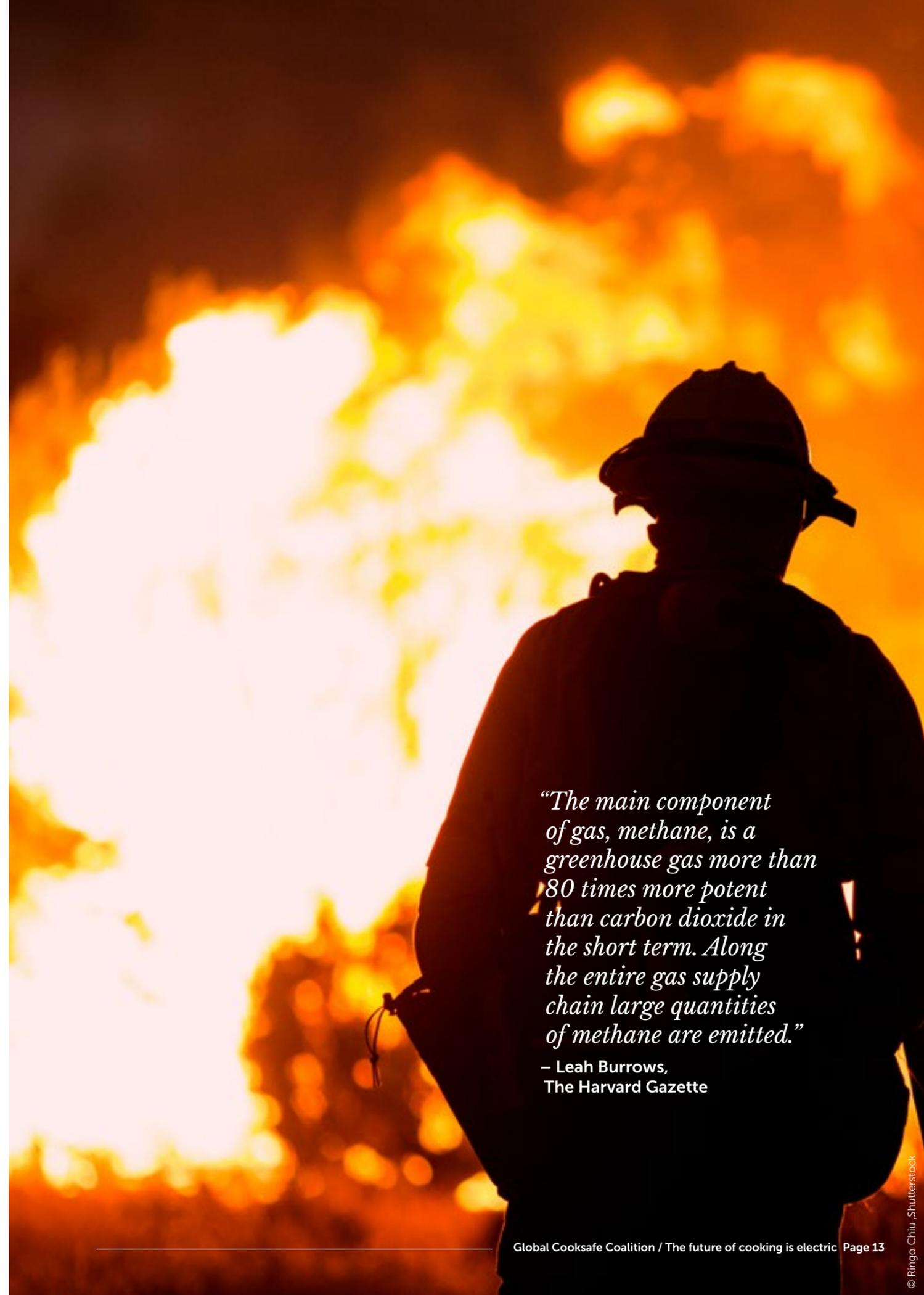
The buildings and buildings construction sectors combined [are responsible](#) for 30% of total global

final energy consumption and 27% of total energy sector emissions.<sup>50</sup> Between [10% and 30% of these emissions](#) are as a result of the use of fossil gas.<sup>51</sup>

In homes and buildings, while renewable energy became the fastest-growing energy source between 2010-18, unfortunately, fossil gas use [rose](#) 8% during the same period.<sup>52</sup>

This demand drives new fossil gas pipelines and developments. If completed, projects under construction or in pre-construction development will expand the global oil and gas pipeline systems by 37,000 km and 175,000 km respectively, amounting to US\$1.07 trillion in capital expenditures. While this pipeline is losing some steam, it is projected to support a lifetime increase in oil and gas CO<sub>2</sub> emissions of 170 GT, [only 15% less](#) than the projected lifetime CO<sub>2</sub> emissions of the currently operating global coal plant fleet.<sup>53</sup>

Removing harmful gas from our kitchens is therefore a crucial step in the urgent energy transition required to avoid worsening climate change, providing safer homes for everyone.



*“The main component of gas, methane, is a greenhouse gas more than 80 times more potent than carbon dioxide in the short term. Along the entire gas supply chain large quantities of methane are emitted.”*

– Leah Burrows,  
The Harvard Gazette

# ELECTRIFYING EQUITY

The health impacts of cooking with polluting fuels in OECD countries pale in comparison to the **3.2 million premature deaths** the WHO attributes to cooking with solid fuel and kerosene, and the impact of fuel collection for cooking on deforestation.<sup>54</sup>

Funding to provide alternatives to solid fuels has been tragically neglected by the international community. Despite years of efforts, investment in clean cooking has remained insignificant compared to the sums required to achieve universal access. The Clean Cooking Alliance (CCA) estimates that in 2019 the main clean cooking businesses attracted total investments of just US\$70 million.<sup>55</sup> This is wholly inadequate to meet the Social Development Goals (SDG) on energy access and a small fraction of the overall investment in modern energy access (cooking and electrification).

Over the last 40 years, cleaner cooking solutions have predominantly focused on improved cookstoves using biomass. LPG now has the greatest current and historical scale-up activities. But the clean cooking landscape is changing rapidly, because of the revolutionary potential of renewable energy.

*“IEA modelling for Africa shows that solar PV—already the cheapest source of power in many parts of Africa—outcompetes all energy sources continent-wide by 2030.”*

— Africa Energy Outlook 2022

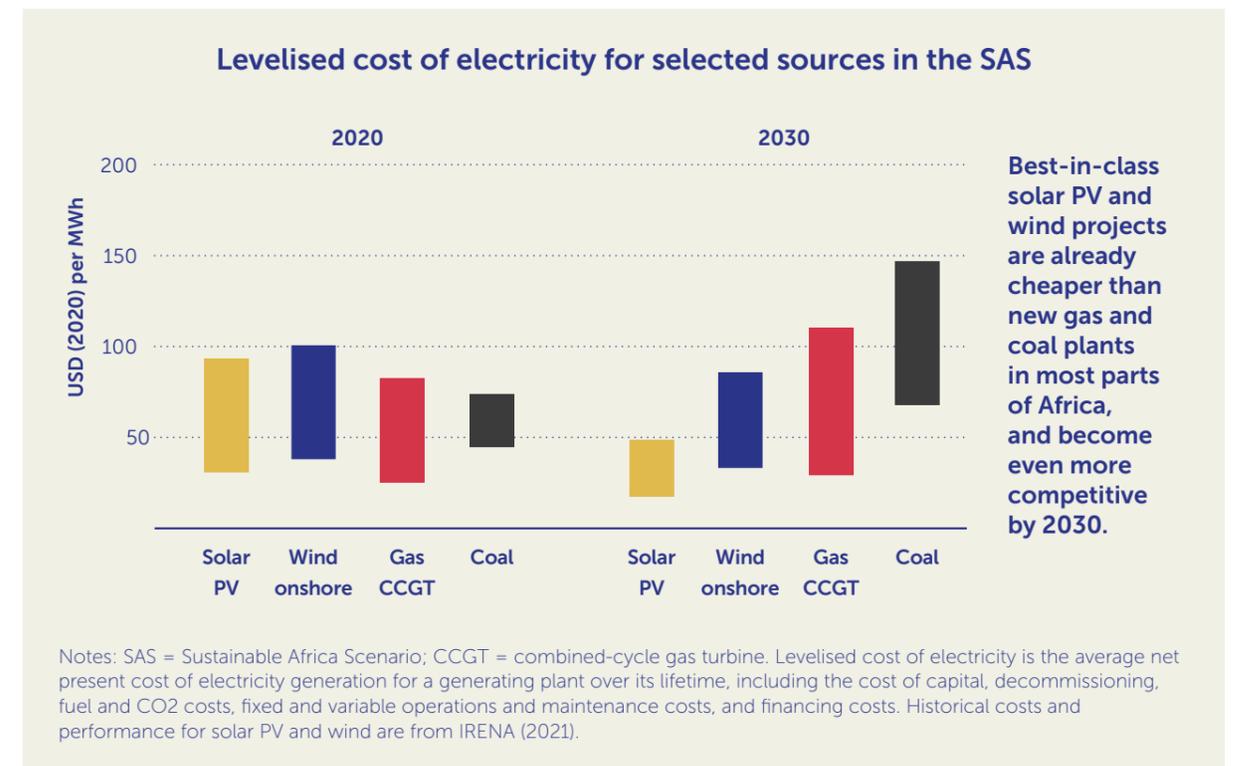
Until recently, electricity has been considered an impractical solution for low- and middle-income countries urgently needing to transition communities off dangerous solid fuels. But renewable energy, and solar power in particular, is now the cheapest energy source in history. That, alongside major advances in appliance energy efficiency, means electric cooking solutions have become a cost-effective solution in many low- and middle-income countries.

With the increased affordability of electric options comes immense opportunities for addressing the neglect of both safe cooking and energy poverty. Electrifying clean cooking means that cooking solutions can be integrated into broader energy access initiatives under SDG7, allowing for policy and funding that deliver across multiple goals, from health to education and gender equity. In contrast to the assessment by the Clean Cooking Alliance cited above that millions have been invested in clean cooking, billions have been invested in electricity infrastructure, with significant progress made over the last 10 years on that aspect of SDG7.

This is not to diminish the importance of cleaner cooking solutions that are working now to meet the needs of diverse local communities, from ethanol and rocket stoves to community-scale biomass digesters. Communities facing the worst poverty don’t have the luxury of waiting for the international community to invest fairly in the best long-term energy solutions.

Affordability has increased in two major ways. For one, the plummeting price of renewable energy has destabilized energy markets, and analysis of programs, from Kenya to Cambodia, now demonstrates the opportunities renewable energy brings to safe cooking solutions.

In addition, with lower priced solutions comes an economy of scale for appliance makers that makes electric appliances not just more



Source: IEA. All rights reserved. Africa Energy Outlook 2022, P95 <https://iea.blob.core.windows.net/assets/6fa5a6c0-ca73-4a7f-a243-fb5e83ecfb94/AfricaEnergyOutlook2022.pdf>

affordable, but also compatible with diverse energy supply scenarios. Local Indonesian companies, for example, are making 300W induction stoves for the Governments’ LPG-to-induction conversion program, making induction technology an option for lower income households.

Expansion of gas pipeline infrastructure is costly for low- and middle-income countries and advocating its expansion in a world facing catastrophic climate change is counterproductive. Electric cooking is also cheaper and more energy-efficient than LPG in many regions.

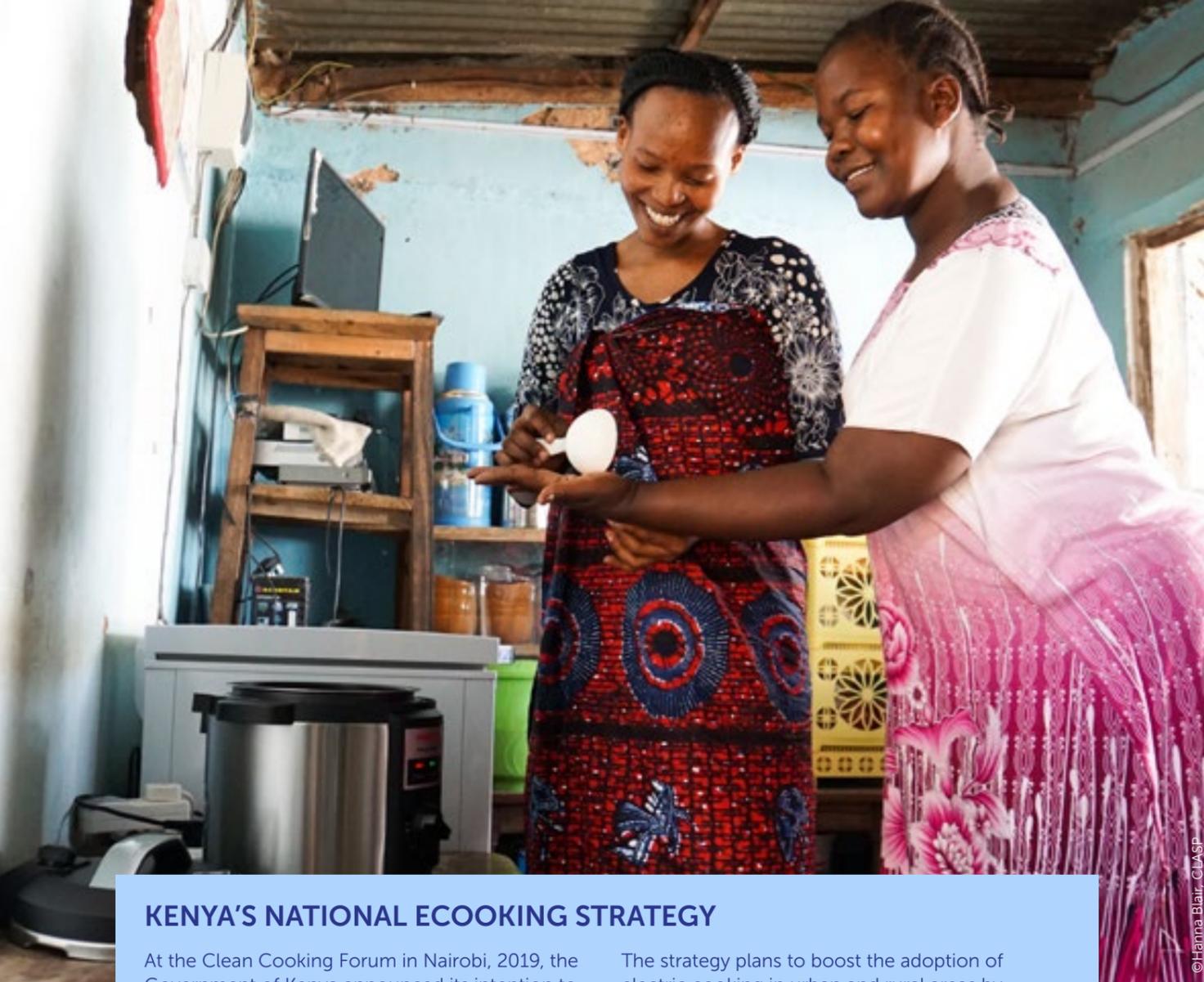
According to the IEA Africa Energy Outlook 2022, five million people were no longer able to afford cooking fuels such as LPG at the beginning of 2022. However, recent price spikes are making LPG “unaffordable for 30 million people across Africa.”<sup>56</sup>

Modern Energy Cooking Services (MECS), based at Loughborough University and with funding from UK AID, have used data and fuel prices from Africa and Asia to compare energy consumptions

and costs. Their expert analysis found that, on average, LPG used four times the energy and was three times the price of cooking with an electric pressure cooker.<sup>57</sup> This was before recent price spikes in LPG, which have only made electric pressure cookers more competitive.

MECS research in Kenya suggests that electric pressure cookers are capable of cooking 60-80% of popular dishes, with only foods requiring a shallow pan or manual heat control (e.g. chapati or mandazi) not possible on most models available on the market today. A 100% electric cooking scenario would be to complement the EPCs with a hotplate, or infrared or induction stove to cook the remaining dishes.

IEA modeling for Africa shows that solar PV—already the cheapest source of power in many parts of Africa—outcompetes all energy sources continent-wide by 2030.<sup>58</sup> This analysis is supported by the Kenya Renewable Energy Association (KEREAA). In 2022, the [KEREAA Energy Price Index](#) established the average cost of the grid electricity tariffs at 15.30 Kenyan shillings per Kwh and that of fossil fuels at KSh15.52.<sup>59</sup>



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## KENYA'S NATIONAL ECOOKING STRATEGY

At the Clean Cooking Forum in Nairobi, 2019, the Government of Kenya announced its intention to enable universal access to clean cooking by 2028. Hon. Simon Kachapin, the Chief Administrative Secretary in the Ministry of Energy, told delegates at the close of the forum that: “[This] means we have to do things differently, disrupt our way of thinking, as business as usual will not enable us to achieve our global and national aspirations.”<sup>60</sup>

The country has made enormous progress on electrification, with coverage increasing from 29% to 73% in just five years. The Last Mile Electrification program has extended the national grid into rural areas and densified the network to reach low-income households. The majority of Kenya’s grid electricity, i.e., over 70%, is generated from renewable sources, with geothermal being the most significant source,<sup>61</sup> and the grid has surplus generating capacity compared to current demand.

Kenya’s leading eCooking strategy also addresses the need for engaging communities on a cultural level to support the transition to electric cooking.

The strategy plans to boost the adoption of electric cooking in urban and rural areas by overcoming cultural barriers through cooking classes, recipes for how to cook local cuisine in electric cookware, demonstrations on time-saving techniques and contests to compare dishes. The Kenya Power and Lighting Company campaign “Pika na Power” uses television advertisements, social media campaigns and live cooking classes to demonstrate the ease and affordability of using electricity for cooking.

Initiatives like the Global LEAP results-based financing program contribute to these goals by reducing risk across the off-grid appliance supply chain. LEAP works to lower the cost of procuring large volumes of best-in-class off-grid appliances and facilitate new business partnerships between appliance makers. One appliance manufacturer now has a factory in Kenya and is applying Pay-As-You-Go technology, creating local jobs, while other appliance suppliers are crowding in, in response to the Government’s commitment to improve its ecooking strategy.

## INDONESIAN GOVERNMENT INDUCTION PROGRAM

In 2021, the Indonesian government introduced the induction cooking conversion program from LPG to induction stove to reduce the LPG subsidy while also utilizing excess electricity generation capacity.<sup>62</sup> The Indonesian government’s gas to induction program has a budget of Rp2.4 trillion (approximately US\$160 million) for the distribution of free induction stoves and a subsidy for the use of electricity worth Rp456 billion (approximately US\$30.4 million)<sup>63</sup>. It aims to convert 58 million households to induction cooking by 2050.<sup>64</sup>

“The use of induction stoves can reach 19 million customers by 2030. Thus, it will increase domestic spending and contribute to the national economic growth by 0.5%,” says Secretary at the Directorate General of Electricity of the Energy and Mineral Resources Ministry, Munir Ahmad.

Preliminary assessments of the program show the transition from LPG to induction saved low-income households US\$0.64 per month using a 300W stove. Savings were higher for middle- and high-income households with capacity to run a 1,800W high-efficiency induction stove. Here cooking cost savings were even more significant, up to US\$3.04 per month per household.<sup>65</sup>



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## IGNITING INDIA'S ELECTRIC COOKING REVOLUTION



**Bishal Thapa, Senior Director, CLASP India**

India is poised for a revolution on electric cooking. It could shift millions of Indians to cleaner, safer, and affordable cooking.

Approximately 700 million people<sup>66</sup> use biomass for cooking. Indoor air pollution from such cooking fuels resulted in approximately 500,000 deaths in 2017, a study in The Lancet<sup>67</sup> estimated. With approximately 305 million cooking gas customers,<sup>68</sup> the case for transitioning cooking gas to electric cooking in India is equally compelling.

India’s import dependence on natural gas is projected to increase to 60% by 2040.<sup>69</sup> The price of cooking gas cylinders has doubled over the last five years.<sup>70</sup> Government subsidies on cooking gas reached US\$5 billion in 2020.<sup>71</sup> The shift to

electric cooking could help reduce external supply vulnerabilities, lower costs and free up subsidies for social investments elsewhere.

The ingredients for an electric cooking revolution in India are now all in place. India reported near universal electricity access.<sup>72</sup> There are increased options for off-grid energy solutions with a deep pool of technologies, players, and business models.

Igniting this electric cooking revolution in India now requires greater emphasis on consumer awareness, and enhanced access to electric cooking products, financing, and reliable electricity. In India, CLASP is supporting initiatives that will help raise awareness about electric cooking and make it more affordable for millions of people. We are collaborating with other stakeholders to develop efficiency policies for electric cooking products and supporting the government’s “Go Electric” campaign.

In India, where the Government is phasing out costly LPG subsidies and making huge investments in electricity access, electric cooking is becoming [increasingly financially viable](#) and



there is a new focus on developing devices and systems that can work in weak grid and off-grid contexts.<sup>73</sup>

The higher cost of an LPG cylinder is a major reason that despite around 85% of Indian households having LPG connections, up to 54% of households continue to use traditional solid fuels such as firewood, dung cakes, agriculture residue, charcoal, and kerosene, either exclusively or with LPG.<sup>74</sup>

Several agencies, including the National Mission of Solar PV Cooking by the Office of Principal Scientific Advisor and the Union Ministry's "Go Electric" campaign, are promoting electric cooking, with [plans to provide induction stoves](#) to poor households in rural and urban areas.<sup>75</sup>

In addition, India-based Energy Efficiency Services Limited (EESL) recently announced the bulk purchase of energy-efficient electric cooking appliances. EESL has a track record of stimulating dramatic cost reductions through the bulk purchase of other devices such as LEDs, and the new program seeks to create similar cost reductions in electric cooking appliances.<sup>76</sup>



## ELECTRIC COOKING SOLUTIONS IN SUB-SAHARAN AFRICA



**Nyamolo Abagi, Senior Manager, CLASP East Africa**

Globally, 2.4 billion people lack access to modern cooking technology and instead rely on burning [biomass and kerosene](#).<sup>77</sup>

According to the WHO, an estimated [3.2 million premature deaths](#) occur globally per year as a result of indoor air pollution associated with biomass cooking.<sup>78</sup> Most of these deaths, as well as associated illness and morbidity, affect poor households in Sub-Saharan Africa. Africa also has the highest average per-capita wood consumption in the world due to the need for biomass to support cooking, further exacerbating environmental degradation and poverty. Furthermore, women and children, often tasked with preparing meals, are disproportionately affected by the impacts of biomass cooking.

Electricity access has expanded rapidly over the last 5 years in many emerging countries,

yet electricity is rarely used for cooking. A new generation of super-efficient e-cooking technology is starting to emerge, primarily driven by the electric pressure cooker (EPC). EPCs represent a step change in technology: by combining pressure, insulation, and sensors, EPCs cook food quickly, more conveniently, and with a fraction of the energy required to power other types of e-cooking products such as induction stoves. The process by which EPCs apply heat to food also makes them an ideal alternative for the preparation of many dishes traditionally consumed by households in Sub-Saharan Africa that often require long simmering time like beans and meat stews.

E-cooking is at an inflection point similar to what was seen in the off-grid solar sector with the reduced cost of LED lighting technologies. However, significant investment is still needed, and a concerted effort from policymakers, the private sector, and development agencies to bring to fruition the vision of the modern kitchen in both rural and urban households in the Global South.

The urban-rural gap in electricity access remains. But dramatic improvements in technology—such as solar home systems and renewable-based mini grids—have made off-grid electricity an increasingly effective and affordable alternative. According to the IEA Africa Outlook, in rural areas, where over 80% of electricity-deprived people live, mini-grids and stand-alone systems, mostly solar-based, are the most viable solutions.

With affordable solutions comes an economy of scale for appliance makers that helps to increase affordability and the range of appliances available for diverse energy supply scenarios. Local Indonesian companies, for example, [are making 300W induction stoves](#) for the Government's LPG to induction conversion program, making induction technology an option for lower income households.<sup>79</sup>

While the costs of long-term electricity access solutions have dropped, perversely, so has international public finance flows for these solutions. Tracking of the SDG 7.a.1 indicator shows that international public financial flows to developing countries in support of clean energy decreased for the second year in a row, falling

to US\$10.9 billion in 2019. This level [represents](#) a 23% decrease from the US\$14.2 billion provided in 2018, a 25% decline from the 2010–19 average, and a more than 50% drop from the peak of US\$24.7 billion in 2017.<sup>80</sup>

Under the IEA Net Zero Emissions by 2050 Scenario, around US\$35 billion needs to be spent each year improving access to electricity and almost US\$7 billion each year on clean cooking solutions for people in low-income countries from now to 2030.<sup>81</sup>

To achieve these investment targets, the global community would need to dedicate just a tiny portion of world energy spending and financial assets—just 2% of total energy investment worldwide in 2019. According to [OECD modeling](#), just 1.1% of the total financial assets held by banks, institutional investors or asset managers (US\$4.2 trillion) would be enough to finance the gap for all sustainable development goals.<sup>82</sup> The costs of inaction dwarf the costs of action, measured in both human misery and the opportunities for investment provided by attainment of the SDGs.



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# EQUITY IN HIGH-INCOME COUNTRIES

A transition to electric cooking can also help address energy poverty and cost pressures in higher income countries. Solar and wind power is dramatically cheaper to generate than power from fossil fuels. The resulting deflationary impact will eventually mean lower retail prices everywhere, even when the costs for new transmission infrastructure has been factored in.

Electricity prices are much less volatile than fossil fuel prices, as demonstrated by the huge spike in gas prices globally resulting from Russia's 2022 invasion of Ukraine.

In the UK, gas price spikes have led to dramatic increases in household energy bills. Think tank, the Resolution Foundation predicted up to 9.6 million families could fall into fuel stress.<sup>85</sup> Carbon Brief analysis shows that almost 90% of the increase in bills over the last year is due to the rising price of gas, which has more than tripled over the same period.<sup>86</sup>

The NGO National Energy Action estimates that this price cap rise will result in 24% of UK homes suffering fuel poverty. That's almost a quarter of all households—6.5 million households—that will be unable to heat their homes.<sup>87</sup>

In the US, gas price spikes are creating similar pressures for consumers. The EIA forecast that homes that heat with gas would spend 30% more in winter 2021 than in the previous year.<sup>88</sup> Analysis by the Rocky Mountain Institute shows all-electric single-family homes in all regions of the US have lower energy bills than comparable mixed fuel-homes (i.e., electricity and gas.)

In Australia, analysts are describing solar as "insanely cheap electricity," mirroring IEA analysis that solar

is now the "cheapest electricity in history."<sup>89</sup> South Australia has broken the world record for the proportion of solar and wind supplied to a large grid, with spot prices falling as low as minus AU\$35.95 per megawatt hour in 2021. Even with new transmission costs factored in, the deflationary impacts of renewable energy are bringing retail prices down.

This analysis is supported by financial modeling by Transition Zero, which showed that meeting the EU Commission's REPower EU plan targets for renewable energy would avoid fuel costs for coal and gas of €203 billion and €428 billion per year. This is more than enough to cover the annual renewable energy investment required to deliver cheaper electricity.<sup>90</sup>



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## WHERE THERE IS NO GRID ELECTRICITY



**Dr Simon Batchelor,**  
Head of Research and Innovation at the UK Aid-funded Modern Energy Cooking Services (MECS) program

The Modern Energy Cooking Services (MECS) program funded by UK Aid is fundamentally a forward-looking research program. Over the last four years, it has demonstrated<sup>83</sup> the energy efficiency and cultural acceptance of electrical cooking and worked with governments and the private sector to pivot to e-cooking as found in Kenya, India and Indonesia, among others.

However, in addition to using the grid to provide clean cooking, partners working with mini grids and solar home systems are seeing price points reach a viable tipping point. In general, mini grids operate at a higher electrical unit cost than the national grid. But even at these higher rates, cooking with energy efficient devices with electricity from the grid is cheaper compared to cooking with charcoal (i.e., in Tanzania) when making dishes that take a long time to cook (e.g. beans).

One of the benefits of using electricity is that it can be easily monitored and measured. As a result, partners are now exploring using carbon credits

and results-based financing to bring costs down even further, with payments based on actual use, as in Cambodia and Bangladesh.

Solar Home Systems (SHSs) have mainly been used over the last 15 years for low power devices such as lights, or for charging mobile phones and powering radios or TVs. While the general next step of the SHS sector is to focus on cooling and productive use, some work has been conducted on using SHS for e-cooking. After consultation with women's groups, Malawi-based social enterprise Kachione<sup>84</sup> has created women-led solar shops offering an integrated range of solar products. By using new lithium-titanium-oxide batteries, it can offer 20-year lifetime guarantees on lights. It has created three-wheeler electric taxis for taking goods to market, offered solar pumps for rent and explored solar-driven tillers. They currently offer SHSs for cooking, including a lunchtime-only model and one for all daily meals. The direct-drive system for cooking costs £200 including installation, and the all-meal version is priced at £300. With credit finance, these options are affordable to the community.

It is highly likely that the price in core equipment will continue to decrease. Coupled with communities' enthusiasm for all things electric, this suggests current systems are just the beginning of a new wave of off-grid possibilities.

# THE FUTURE OF COOKING IS ELECTRIC

*“On almost all counts, induction is faster, safer, cleaner, and more efficient than either gas or electric. And yes, we’ve done exhaustive testing in our labs to support that claim.”*

– Reviewed.com<sup>91</sup>

Electric cooking is ticking boxes on health, equity and climate, but how does it perform in the kitchen? Consumers’ connection to gas cooking is part of the ongoing demand for cooking with fossil fuels. But according to leading chefs and independent product reviews, induction technology has advanced significantly and is now surpassing gas in terms of cooking experience, even for high heat dishes.

While induction cooktops resemble electric smooth-top burners, they don’t have burners underneath the surface. Induction cooking uses electromagnetic energy to heat pots and pans directly. In comparison, gas and electric cooktops heat indirectly, using a burner or heating element, and passing radiant energy onto your food.

That means induction cooktops not only heat up much faster, but their temperature controls are also far more precise. US product testing group Reviewed found in lab testing that induction products delivered a time-to-boil of 3 minutes, 7 seconds, compared with 8 minutes, 34 seconds for gas. On average induction cooktops reached a higher maximum temperature of 665.5°F (352°C), compared to just 428°F (220°C) for gas, and a lower minimum temperature of 100.75°F (38.2°C) compared to 126.56°F (52.5°C) for gas cooktops.<sup>92</sup>

According to the US Government’s [Energy Star rating](#), induction cooktops are also significantly more energy-efficient, transferring energy with approximately 85% efficiency compared with just 32% efficiency for a gas cooktop.<sup>93</sup>

Because induction surfaces do not get hot, they are also safer, provide a cooler cooking environment and are easier to clean, with less chemicals required.

Despite these scientifically established benefits, induction cooktops were more costly than gas and traditional electric appliances when they were introduced to market, so were slow to take off. But falling prices for induction cooktops and increasing consumer awareness are driving significant increases in the induction market. The global induction cooktops market was valued at US\$18,667.8 million in 2020 according to [Grand View Research](#), with solid projected growth driven by the rise in fuel expenses for conventional gas cooktops, the growing trend of modular kitchens and comfort and safety benefits.<sup>94</sup>

Induction cooktops are among the top rated by [US Consumer Reports](#).<sup>95</sup> Currently, every piece of residential and commercial gas-fired food preparation equipment [has a modern, electric counterpart](#) designed to be more efficient, safer to use, and capable of outperforming its gas version.<sup>96</sup> Leading chefs have embraced electric cooking, which can deliver the same diversity of dishes with equal or superior taste.

The Global Cooksafe Campaign is supported by some of the world’s most highly regarded chefs, who are committed to leading an evolution in cooking culture.



*“Electric is definitely the future of cooking in the home and in commercial kitchens. It’s just cleaner, it’s more efficient and it’s definitely more beneficial for the environment. Everything tends to be neater and cleaner without gas.”*

– Neil Perry, Australian chef, restaurateur, author and television presenter



*“Food tastes better in a restaurant because we control the heat very precisely. Good induction means you can replicate this in the home kitchen and get very high heat, very low heat and excellent control. For example, most home gas stoves don’t get hot enough to cook a stir fry, and good induction is a step up.”*

– Palisa Anderson, Chat Thai/Boon Luck Farm



# ELECTRIFYING COMMERCIAL KITCHENS

[Induction cooktops have superior culinary performance, but do they make good business sense? The latest modeling for commercial kitchens shows electrification delivers significant cost savings.](#)

All-electric kitchens save a significant amount of money in new construction projects by eliminating the need for gas utility connections and indoor gas plumbing systems. In a net-zero world, this reduces the risks of stranded assets and increases the longevity of investments for developers. Operational savings are significant. Commercial kitchens are notorious for their energy intensity, [consuming approximately three times more energy](#) per area than the average commercial building.<sup>97</sup> Modeling for California by [Food Service Technology Center](#) found US\$3,935 a year in fuel cost savings (based on October, 2020 gas prices) when comparing a basic efficiency gas kitchen to a high-tech electric kitchen with advanced energy efficiency.<sup>98</sup>

Australian Retail Food Consultants, Brain and Poulter, have modeled capital and operational cost savings. Their analysis found AU\$20,000 per annum in savings when comparing a gas to electric food and beverage tenancy. Cost savings stemmed from factors ranging from reduced fit out costs on smaller exhaust hoods, to [reduced labor costs](#) associated with the greater ease of cleaning electric equipment.<sup>99</sup>

Chef and commercial consultant [testimonials](#) also place a large emphasis on the safer, more comfortable cooking environment advanced

electric appliances like induction offer.<sup>100</sup> All-electric kitchens with no open flames and no gas lines minimize ignition sources and mitigate the risk of gas leaks and gas-induced fires. Because induction hobs transfer heat straight to the pan, cooking surfaces and the surrounding areas stay cooler and safer. Combine this with increased energy efficiency, faster heating and more precise temperature control, and induction technology increases productivity and allows for faster throughput. After a safer, calmer service, kitchen staff can wipe down quickly with soap and water and without chemicals.



## THE ROAD TO NET ZERO



**Davina Rooney,**  
CEO, Green Building  
Council of Australia (GBCA)

As we travel the road to net zero, on the horizon we can see a future where rooftops are a resource and where electrified, energy-efficient homes are powered by renewables. In this future our favorite restaurants are fossil-fuel-free with meals cooked in a kitchen that's safe for us and those working in it.

For this future to crystallize, we must dispel the myths around electrification because despite its dangers, gas is still the most common cooking fuel globally, used by around half of the world's population in 2019.

While we promote the health benefits of all-electric kitchens, we also need to shine a light on these misconceptions:

- heating with electricity always costs more than gas

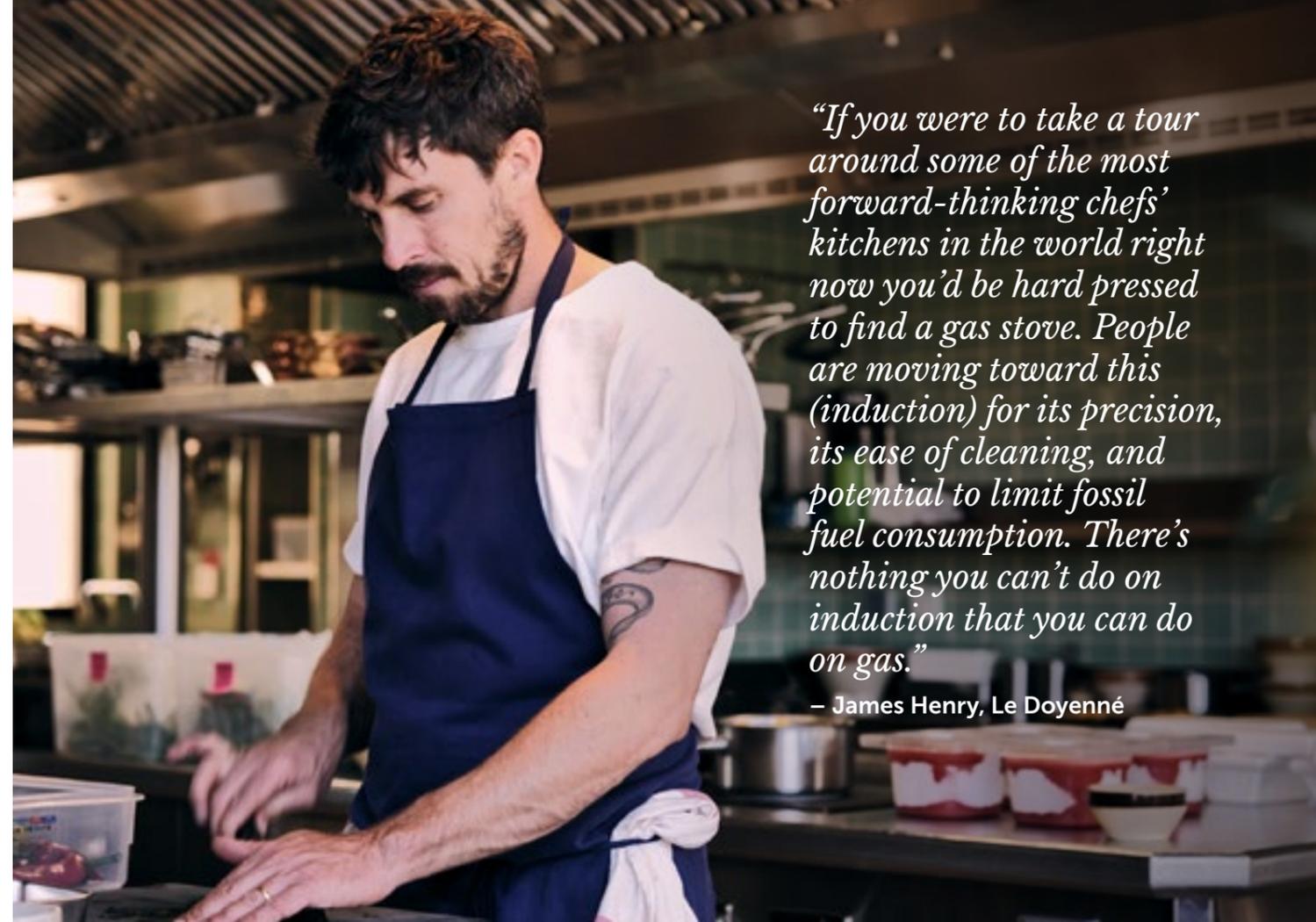
- buildings don't have the space for an electric design, and
- that tenants and consumers only want to cook with gas.

Education and collaboration will help, and this is something GBCA has been doing with industry since our inception 20 years ago. Two recent pieces of work to emerge from collaboration are our guides for the electrification of buildings.

These two guides outline the steps involved to deliver all-electric new and existing buildings, showcasing the types of technologies that are being used to replace natural gas systems with electric solutions today.

To eliminate fossil fuels from buildings, workplaces and homes, we need to share knowledge. To take the next step we need technology and guidance. These tools are available and are being used now to drive us in the direction of a healthier, safer, decarbonised future for all.

You can download GBCA's practical guides for electrifying new and existing buildings at [gbc.org.au](http://gbc.org.au)



*“If you were to take a tour around some of the most forward-thinking chefs’ kitchens in the world right now you’d be hard pressed to find a gas stove. People are moving toward this (induction) for its precision, its ease of cleaning, and potential to limit fossil fuel consumption. There’s nothing you can’t do on induction that you can do on gas.”*

– James Henry, Le Doyenné

## THE BENEFITS OF ELECTRIFICATION



**Dale O'Toole**  
Sustainability Innovations  
Delivery Manager  
The GPT Group

GPT is an early mover in acting on GHG emissions, with an Energy Master Plan to deliver net-zero carbon emissions by 2024 on all managed assets. Core to this master plan is action to minimize dependence on fossil fuels, replacing them with more secure investments in energy efficiency, new on-site smart energy hubs (that include large-scale batteries and solar photovoltaic electricity projects) and cost-effective, low price volatility energy supply contracts.

For GPT, signing up to support a transition to fossil fuel-free cooking is an obvious step in securing the medium and long-term value of our assets and our leadership position in sustainability.

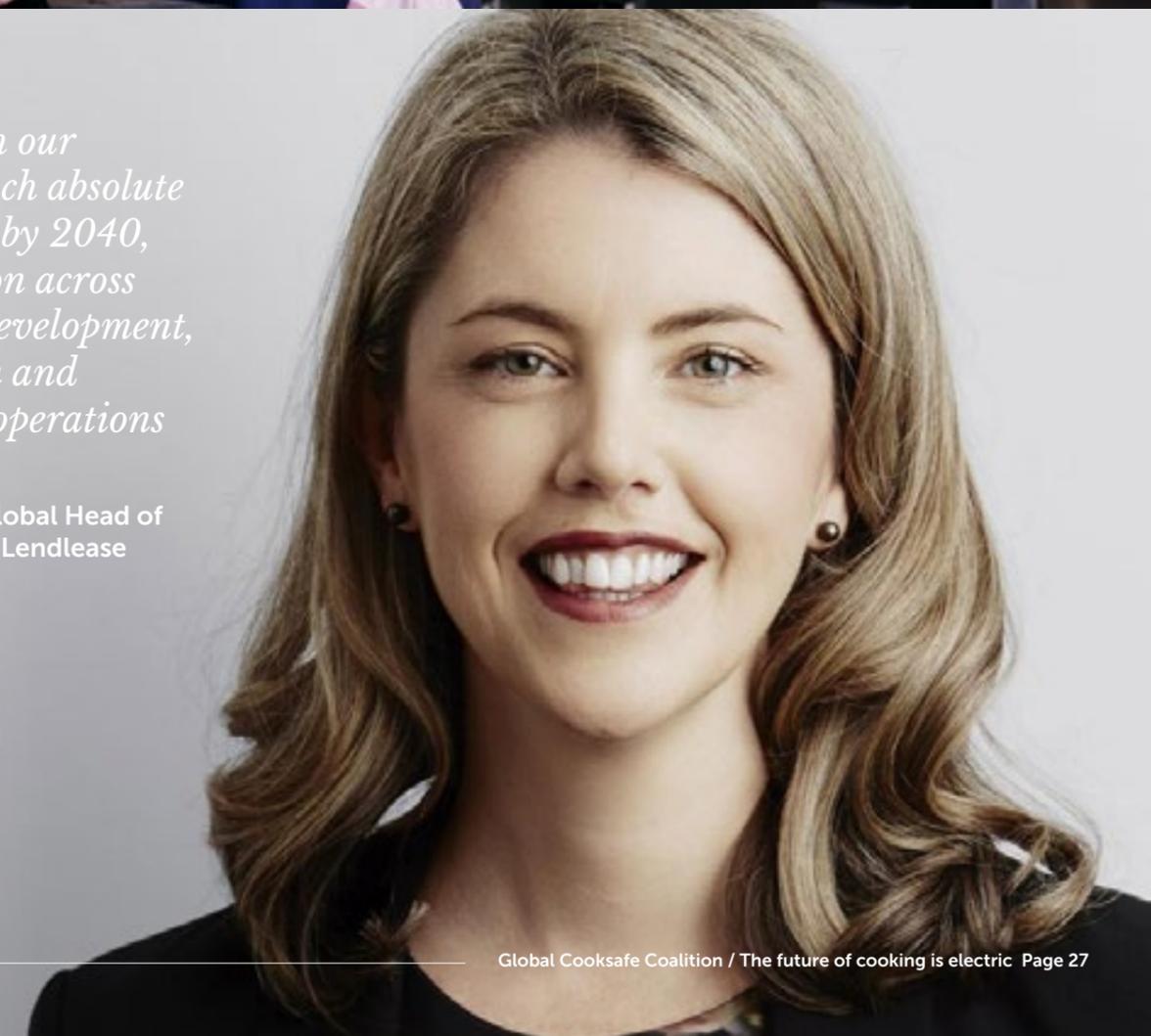
There are significant barriers to electrifying commercial kitchens. Most are cultural, as

users and leasing agents working in diverse environments from restaurants to fast-food precincts and hotels, are used to flame cooking. Many haven't experienced superior electric appliances from induction cooktops to warming and holding appliances. Government incentives for moving away from gas cooking have also been slow to catch-up with the pace of change in energy markets and cooking technology.

The benefits of electrification, however, outweigh these barriers. Benefits come in the form of increased safety, improved kitchen staff efficiency and reduced energy costs. From a commercial landlord perspective, electricity offers greater ease and accuracy in metering usage, avoids costly and disruptive upgrades to run new gas lines, and delivers on corporate ESG commitments by transitioning away from fossil fuels to a renewable energy based asset. And that is before of course, considering the benefits of reduced GHG emissions, which protects our assets and communities from further dangerous climate change impacts.

*“In line with our target to reach absolute zero carbon by 2040, electrification across our global development, construction and investment operations is essential.”*

– Cate Harris, Global Head of Sustainability at Lendlease





# CONCLUSION

Dramatic shifts in energy markets and advances in cooking appliance technology have the power to transform how we cook. Energy-efficient electric appliances, powered by renewable energy, are better for our health, better for our climate, perform better in the kitchen and are increasingly more affordable than less safe fuels, even in low- and middle-income countries. It's time for governments, cooking appliance makers and international funding institutions to catch up with this transformation of the safe cooking landscape and drag cooking out of the cold and into the light of the energy revolution. Because the future of cooking is electric.

## THE COOKSAFE COALITION CALL TO ACTION:

**It's time to make our families and our world safer.**

### Global Cooksafe Coalition members and partners support:

- By at least 2030, all new kitchens in OECD countries will use electric cooking appliances, powered by a rapidly decarbonising grid or distributed solar.
- By 2035, all new kitchens worldwide will use electric cooking appliances, powered by a rapidly decarbonising grid or distributed solar.
- By at least 2040, all existing kitchens in OECD countries will use electric cooking appliances, powered by a rapidly decarbonising grid or distributed solar.
- By 2045, all existing kitchens worldwide will use electric cooking appliances, powered by a rapidly decarbonising grid or distributed solar.
- An immediate, urgent increase in public finance allocated to electrification of cooking in lower income countries.
- Fiscal policy supporting households and small businesses to transition to energy efficient electric appliances.
- Fiscal policy assisting vulnerable health cohorts to access effective rangehoods.
- Improved ventilation standards in national buildings codes.

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