fieldcode

WHITEPAPER

Achieving environmental sustainability in the Field Service Industry

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Introduction

Climate change is an existential threat to the future of the entire planet. Decades in the making, we are now reaching a tipping point beyond which our planet Earth may never recover.

High polluters are already legally bound to declare annual CO_2 footprint, or to purchase carbon credits to offset their emissions. But as the opportunity to prevent an environmental catastrophe rapidly recedes, every organization –including field service management providers– has a role to play in limiting climate change.

HOW SERIOUS IS CLIMATE CHANGE FOR OUR WORLD?

The consensus of the scientific community is that we are fast approaching a point of no return. Without significant effort on the part of government, industry and individuals, we are almost certain to miss the maximum 1.5°C global temperature increase target laid out in the Paris Climate Agreement.

If we do not minimize the ongoing global warming caused by greenhouse gas emissions, it will result in irreversible damage to our climate and ecosystems on which we depend.

If heating continues unchecked, it could have a devastating impact on the planet, causing food shortages, rising sea levels and sparking extreme weather. But humanity can avoid the worst of those effects. The key is to limit global warming to an average of 1.5°C above pre-industrial levels.

For reference, human-induced warming reached the 1°C mark around 2017. Hitting that 1.5°C mark will require the world to cut greenhouse gas emissions by 30 gigatons annually by 2030.

- UN Environment Programme[1]

1 The Six Sector Solution to Climate Change – United Nations Environment Programme – https://www.unep.org/interactive/six-sector-solution-climate-change/

Failing to deal with climate change now is likely to have severe and significant consequences in the near future.

RISING SEA LEVELS

A new study published in Nature journal shows how greenhouse gas emissions are driving temperature increases in the Arctic. According to their calculations, the Greenland Ice Sheet is already melting at a record rate, with 60% of current rises in sea water levels being caused by the increased runoff. Computer models suggest that the rate of melting will continue to accelerate over the course of this century[2].

Were the entire ice sheet to melt, sea levels would rise by more than 7 meters, devastating low-lying coastal communities. Similar melting of the West Antarctic Ice Sheet would see a further 3-meter increase[3]. Even if global temperature rises are contained within the 1.5Co target, sea levels will still increase 48cm[4].

INCREASING EXTREMES OF WEATHER

As global average temperatures increase, the weather becomes unstable and more extreme. Arid areas will become more dry whereas humid areas become more wet. Severe droughts in dry regions will last longer, exposing more than 132 million people to water shortages [5].

Elsewhere, rainfall will increase by 2% raising the prospect of more flooding, creating damage to homes and communities.

CROP SHORTAGES

Changing weather patterns are also affecting crop growth, potentially leading to food shortages in some parts of the world. A 1.5°C global temperature increase could lead to a 6% reduction in maize crop yields, and 5% for wheat[6].

The effects on crop yields will be felt most keenly in tropical regions where maize yields may drop by 9% or more[7].

EVERY ASPECT OF LIFE WILL BE AFFECTED

Loss of natural habitats, damage to communities, food and water scarcity – the effects of climate change will be felt by everyone. On a purely economic level, GDP will be 8% lower by 2100 [8] – and costs of damage caused by annual flooding alone will top $10.2 trillion.

These potentially devastating consequences are quickly becoming a certainty if there is no swift action to reduce greenhouse gas emissions.

2 Greater Greenland Ice Sheet contribution to global sea level rise in CMIP6 – Nature – https://www.nature.com/articles/s41467-020-20011-8

3 Explainer: Nine 'tipping points' that could be triggered by climate change – CarbonBrief – https://www.carbonbrief.org/explainer-nine-tipping-points-that-could-be-triggered-by-climate-change

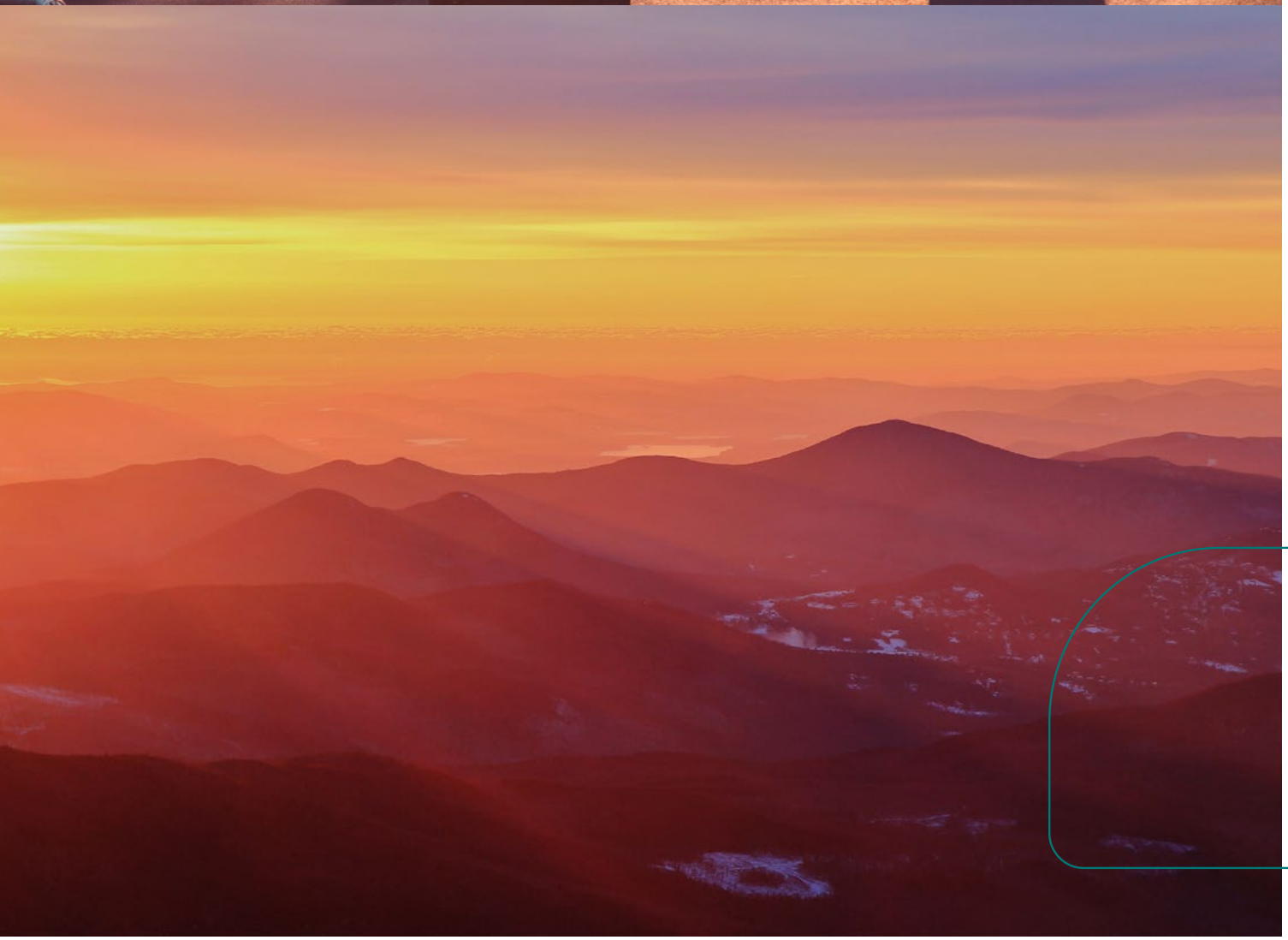
4 Extreme sea level implications of 1.5 °C, 2.0 °C, and 2.5 °C temperature stabilization targets in the 21st and 22nd centuries – Environmental Research Letters – https://iopscience.iop.org/article/10.1088/1748-9326/aaac87

5 Global Freshwater Availability Below Normal Conditions and Population Impact Under 1.5 and 2 °C Stabilization Scenarios – Geophysical Research Letters – https://agupubs.onlinelibrary.wiley.com/doi/full/10.1029/2018GL078789

6 Differences, or lack thereof, in wheat and maize yields under three low-warming scenarios – Environmental Research Letters – https://iopscience.iop.org/article/10.1088/1748-9326/aaba48

7 Differential climate impacts for policy-relevant limits to global warming: the case of 1.5 °C and 2 °C – Earth System Dynamics – https://esd.copernicus.org/articles/7/327/2016/esd-7-327-2016.html

8 Uncertain impacts on economic growth when stabilizing global temperatures at 1.5 °C or 2 °C warming – The Royal Society – https://royalsocietypublishing.org/doi/full/10.1098/rsta.2016.0460



What role does the FSM industry have to play in climate change?

Compared to power generation and manufacturing industries, the carbon footprint of the field service sector might seem relatively inconsequential – but it cannot be ignored. According to European Union statistics, vehicles account for 15% of total CO_2 emissions [9].

Every industry in the EU has managed to reduce carbon emissions – with the exception of transport. In fact, transport emissions are currently increasing. Indeed, emissions caused by transport are set to double by 2050[10]. At the same time, deaths from exposure to exhaust fumes will more than double by 2030[11].

Most of this is attributable to private cars, but light duty trucks and vans – like those commonly used in the field service industry – still account for 12% of total transport emissions. Efforts to reduce carbon emissions by the field service sector hence do play a role in helping nation states meet their Paris Agreement obligations. Indeed, any business operating a fleet of vehicles (including 'grey' fleets) will come under pressure to reduce CO_2 emissions – particularly as the EU Parliament has voted to reduce emissions by up to 40% to help achieve the 1.5°C cap[12].

9 Reducing car emissions: new CO_2 targets for cars explained – European Parliament – https://www.europarl.europa.eu/news/en/headlines/society/20180920STO14027/reducing-car-emissions-new-CO2-targets-for-cars-explained

10 CO_2 emissions from cars: facts and figures (infographics) – European Parliament – https://www.europarl.europa.eu/news/en/headlines/priorities/climate-change/20190313STO31218/CO2-emissions-from-cars-facts-and-figures-infographics

11 The Six Sector Solution to Climate Change – United Nations Environment Programme – https://www.unep.org/interactive/six-sector-solution-climate-change/

12 Reducing car emissions: new CO_2 targets for cars explained – European Parliament – https://www.europarl.europa.eu/news/en/headlines/society/20180920STO14027/reducing-car-emissions-new-CO2-targets-for-cars-explained

Positive action for fighting climate change

Moral and legal obligations aside, there is a clear business case for embracing carbon reduction. Green issues are increasingly important to customers – they are interested in carbon footprints and will often choose the 'greener' provider when there is a choice. It makes sense then for service management companies to accelerate their carbon reduction efforts. And given the urgency of the climate crisis, they can even investigate to go beyond carbon neutrality. Adopting a CO_2 negative strategy where they remove more carbon from the atmosphere than they are emitting. The required changes will take time to implement, but there are steps that can be taken sooner rather than later.

ECO-DRIVING

Fuel costs are a major burden for any business operating a fleet of vehicles. Reducing fuel consumption helps to not only control costs, but also to lower CO_2 emissions.

Eco-driving, changing driving style to maximize miles per gallon fuel, is a no-cost technique that can have an immediate effect on your carbon footprint. Among the improvements one can make are:

- Ensuring that field engineers never carry more equipment than is strictly necessary for their role.
- Reduce the weight of any equipment carried wherever possible.
- Smarter driving – smooth and gentle acceleration, fewer complete stops, optimized gear changes, travelling at (or below) the speed limit – to reduce fuel consumption.
- Regular servicing and maintenance to ensure the vehicle is performing optimally.

Obviously not all of these tips can be applied to field service providers who operate grey fleets. However, a firm is still responsible for emissions created by their employees' personal vehicles used for work. So it is a good idea to consider training workers to drive in the most fuel-efficient manner. According to figures from Transport Scotland, eco-driving creates fuel savings of up to 15% - and reduces accident rates by as much as 25% [14].

13 Consumers Expect the Brands They Support to be Socially Responsible – Markstein & Certus Insights – https://markstein.co/wp-content/uploads/2020/03/Markstein-Social-Responsibility-20191002.pdf

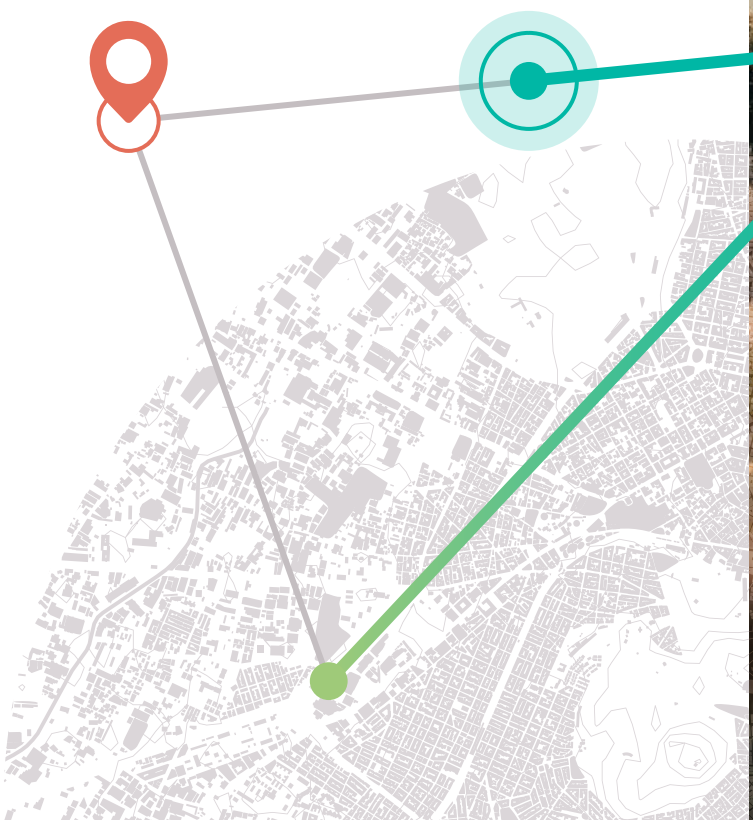
14 Our Approach: Climate change – Transport Scotland - https://www.transport.gov.scot/our-approach/environment/climate-change/#43504

INTELLIGENT ROUTING

Because of the costs involved, your business will already seek to limit the number of field visits made. But the very nature of the business means that you must travel to customer sites periodically.

This is where choice of field service management system comes into play. The right software will help to calculate optimized routes, ensuring that jobs are automatically allocated to the most appropriate field operative.

The system should also calculate schedules to reduce distances travelled between jobs. It should furthermore support real-time updates and re-routing so that urgent support tickets can still be completed in the most eco-friendly method possible.



70 % of consumers are actively interested in what companies are doing to address environmental issues.

– Certus Insights[13]

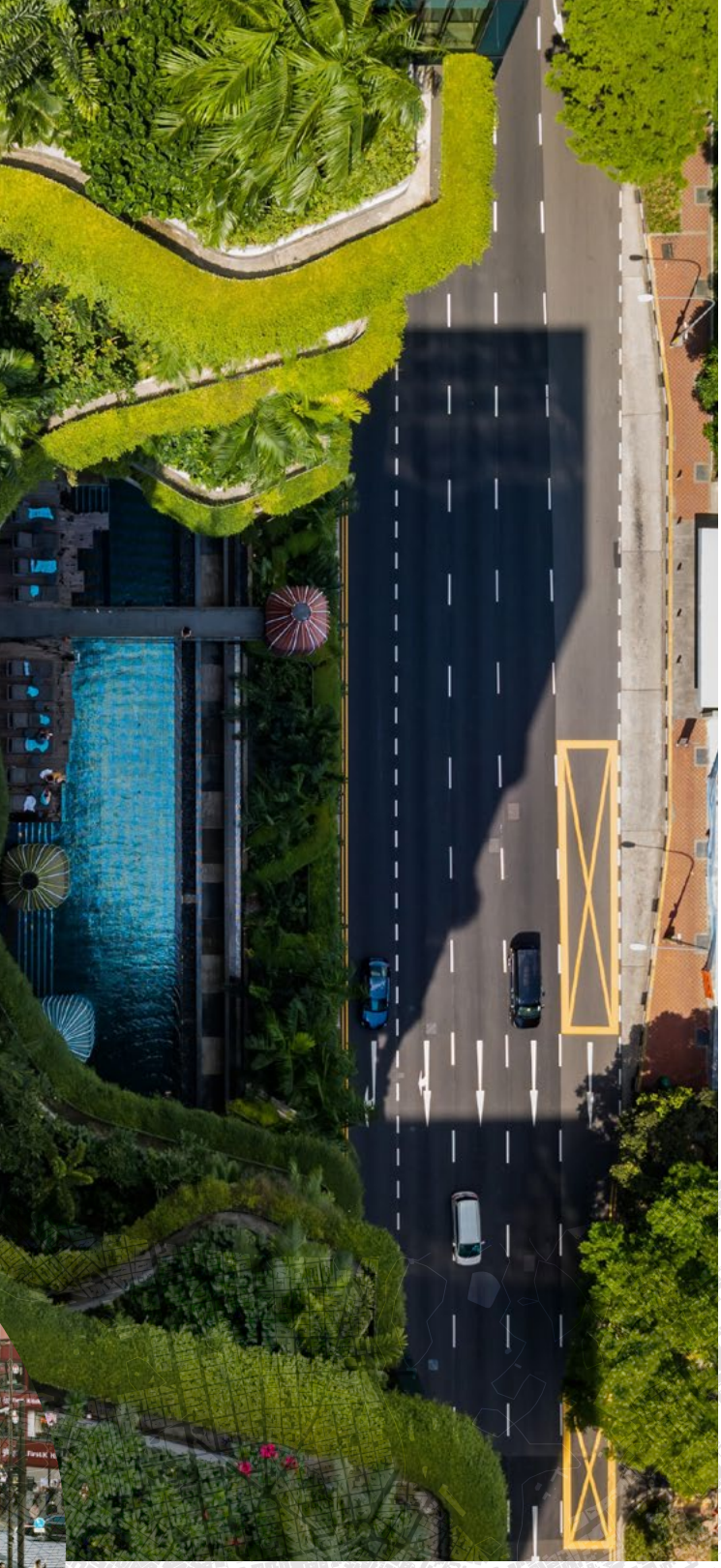
NEXT-GEN VEHICLES

As you refresh your fleet, you must decide whether to deploy fossil fuel or battery-powered vehicles. Given that many countries are implementing future bans on the sale of new diesel vehicles, it may be that you need to accelerate the electrification of your fleet.

Electric vehicles offer zero emissions during operations, helping to dramatically shrink your carbon footprint. Amazon has recently set a new standard, ordering 100,000 electric delivery vans as part of their efforts to make their operations more sustainable. These vehicles have even been designed by Amazon to balance their emission reduction targets with the needs of their delivery drivers[15].

Few organizations have the resources available to design their own electric fleet, but there are viable generalist solutions available. Mitie has recently launched a zero-emission road gritting service using an electric van built on a standard chassis to which the gritter has been retrofitted. The gritter uses a specially calculated route to ensure maximum coverage between charges[16].

The European Union is demanding a 90% reduction in road transport emissions by 2050. Achieving this ambitious target will require virtually all 63 million vehicles currently on the road to be transitioned to battery-powered alternatives. Given that 40% of all miles driven in the EU are by corporate owned vehicles[17], fleet operators will find themselves pressured (or incentivized) to switch to zero-emission electric vehicles sooner rather than later.



BACK OFFICE OPERATIONS

Vehicle emissions are by far the most significant source of CO_2 released by field service providers – but there are other functional areas that offer opportunities to reduce your carbon footprint. Computer data centers account for 3% of the global electricity demand and 2% of greenhouse gas emissions[18], rising to 5.5% by 2025, and 14% by 2040[19].

No matter how small your IT set-up, your business is contributing to that total.

Moving towards cloud-based applications offers an opportunity to bring IT-related emissions under control – and not by simply outsourcing the problem to the cloud provider. Major public cloud providers like Amazon and Microsoft are switching to sustainable data centers that draw on solar and wind generation to supply the electricity they need.

Research by Accenture suggests that migrations to the public cloud can reduce CO_2 emissions by 59 million tons per year. That is equivalent to taking 22 million cars off the road[21], helping to offset at least some of the emissions from other aspects of providing field services.

15 Go behind the scenes as Amazon develops a new electric vehicle – Amazon – https://www.aboutamazon.com/news/sustainability/go-behind-the-scenes-as-amazon-develops-a-new-electric-vehicle

16 Mitie launches zero-emission gritting service – Commercial Fleet - https://www.commercialfleet.org/news/truck-news/2021/02/09/mitie-launches-zero-emission-gritting-service

17 Accelerating fleet electrification in Europe: When does reinventing the wheel make perfect sense? – Ernst & Young – https://cdn.eurelectric.org/media/5200/accelerating-fleet-electrification-in-europe-28012021-h-E3350FA0.pdf

18 Global warming: Data centres to consume three times as much energy in next decade, experts warn – The Independent – https://www.independent.co.uk/climate-change/news/global-warming-data-centres-to-consume-three-times-as-much-energy-in-next-decade-experts-warn-a6830086.html

19 Total Consumer Power Consumption Forecast – Anders S.G. Andrae paper presented at the Nordic Digital Business Summit – https://www.researchgate.net/publication/320225452_Total_Consumer_Power_Consumption_Forecast

20 The green behind the cloud – Accenture - https://www.accenture.com/gb-en/insights/strategy/green-behind-cloud

Achieving negative emissions – The Olivine Research project

Reducing carbon emissions as described above is a first important step to slow down the current climate change crisis. But even when no new greenhouse gasses are being released, large amounts of historically emitted CO_2 remain in the air. So in order to stop ongoing global warming, we have to reach beyond becoming carbon neutral and actively remove more CO_2 from the air than we are emitting. Creating negative carbon emissions for a positive climate future!

FIELDCODE CLIMATE POSITIVITY MISSION

There are many different ways to slow down, stop and reverse the climate change humanity has caused in a safeguard way to preserve a bright future for all of us. Companies are becoming aware of the important role they play in this global challenge and look for suitable ways to do so. Here at Fieldcode we know our customers' needs, their core business and how they inadvertently contribute to CO_2 release through transportation.

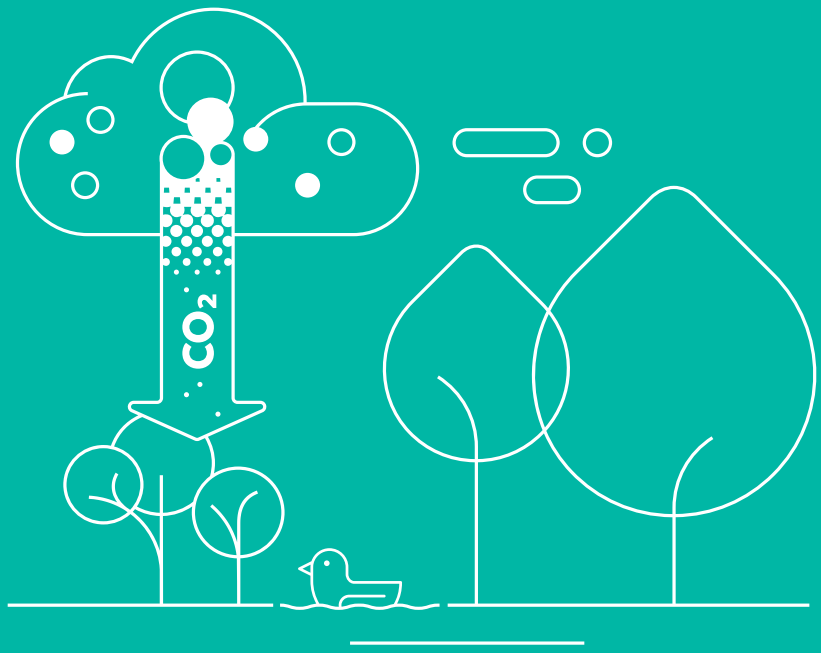
Our progressive vision is to help them overcompensate for these emissions whilst at the same time maintaining their top quality service. We are removing all of the CO_2 emitted for an intervention plus 10% from the air on behalf of our customers.

We started with immediate CO_2 capture through our reforestation project in Zimbabwe. And in Greece we are moving forward with our research into a longer term solution of CO_2 removal, which is scaling up enhanced weathering in our "Olivine Project".

The Olivine quest: On the field research for a promising CO_2 removal strategy

One of nature's ways to remove CO_2 from the air and store it for a very long time in carbonate rocks is through the chemical breakdown of silicate rocks in combination with water. This process is on earth's and not human time scales, but if we speed it up and maximize its efficiency it becomes a tool for climate change mitigation. Olivine is the fastest reacting mineral and present in many areas in Greece, so we have set up an ambitious 2021 field trial to test CO_2 removal by olivine dust mixed in the soil of a cotton field in Thessaly, Greece.

Cotton was being chosen because this plant needs a lot of water to grow, the biosphere around plant roots speeds up the olivine breakdown and if successful this method can be scaled up across large areas in Greece which produces 80% of EU cotton.



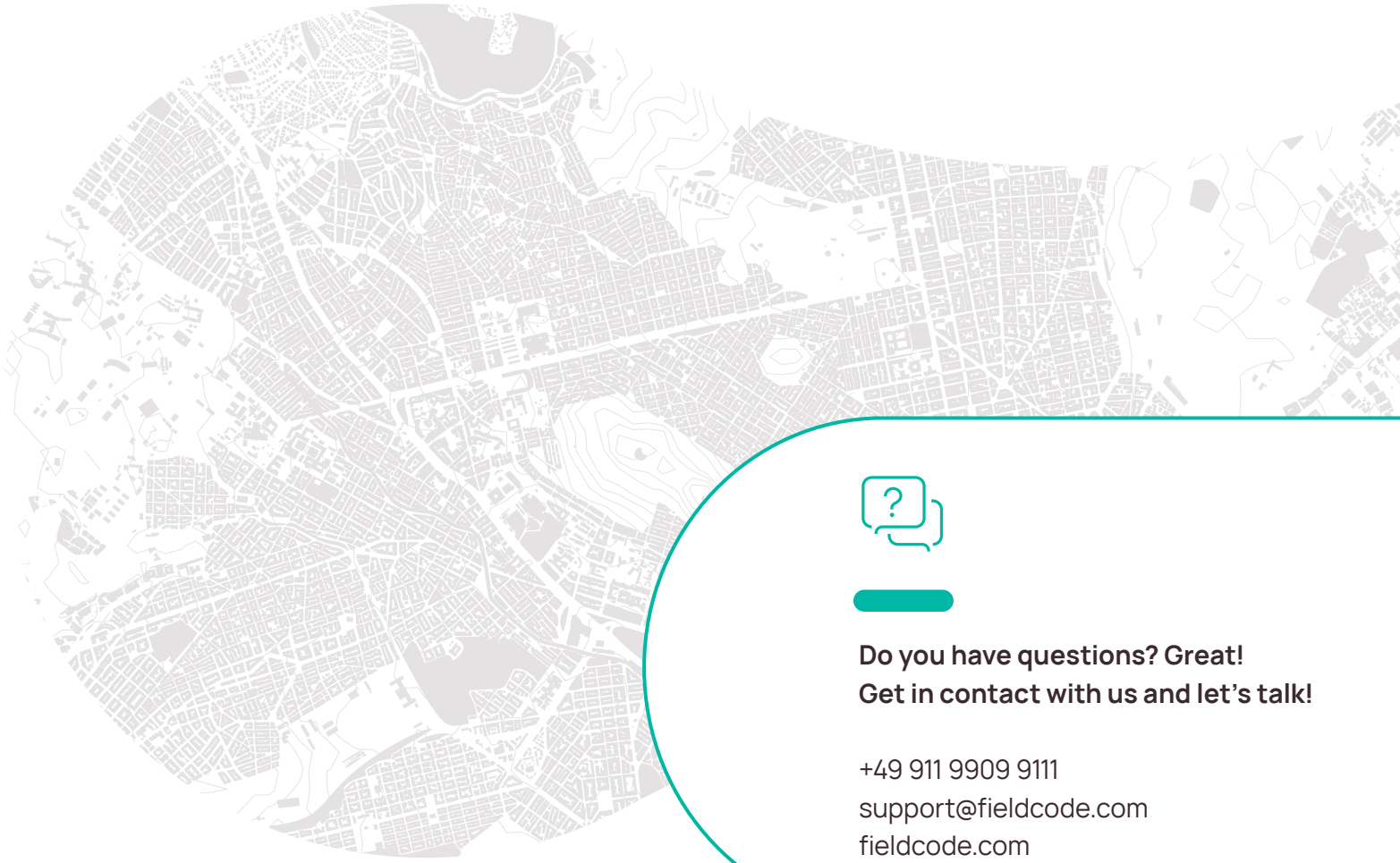
The future is ours to save.

The effects of greenhouse gas emissions on climate change are undeniable – as is the severity of our current situation. When the Paris Agreement reduced the global temperature increase target from 2° to 1.5°, it reflected the urgency of immediate and meaningful positive climate actions.

In order to reach this target and thereby secure a future for our children, it is imperative that everyone plays their part, businesses and individuals alike. Although the field service industry is not one of the worst polluters, it must at a minimum reduce CO_2 emissions if nation states are to achieve their climate change goals.

As this paper shows, there are some changes that field service providers can make right now. Better yet, the costs of these initial steps (eco-driving, improved call routing) are minimal, freeing up funds for those actions which will require more significant investments (electric vehicles).

Carbon neutrality will become an increasingly important target and we at Fieldcode are committed to creating negative emissions in order to help you achieve it.



Do you have questions? Great!
Get in contact with us and let's talk!

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