walk it back with RE-EARTH INITIATIVE

POLICY DIALOGUE PAPER

Best practices for city-led carbon removal?

GETTING TO NET NEGATIVE:

NOVEMBER 2022

CONTENTS

EXECUTIVE SUMMARY 01

"We need urgently to take action on the carbon that is already up there to give current and future generations a true chance in making the world a liveable place"

—Theresa Rose Sebastian,
Re-Earth Initiative

The climate clock is ticking. Last year, global average atmospheric carbon dioxide reached a record 414.72 parts per million[1]. IPCC scenarios[2] indicate that to keep the world on a pathway to 1.5C a carbon budget of less than 10 years remains[3].

Existing Net Zero plans alone are not enough. To stay within safe planetary limits, we will likely need to be removing 10 gigatonnes of carbon dioxide from the atmosphere annually by 2050[4]. The IPCC is among those pushing for national carbon plans to include the removal of excess CO2, saying: "carbon dioxide removal is necessary to achieve net-zero CO2 and GHG emissions both globally and nationally [and] essential to limit warming to 1.5C"[5].

Cities, which produce more than 60% of global greenhouse gases and yet occupy just 2% of the Earth's land surface[6], are pivotal for the transition to a carbon neutral world. As well as the many opportunities for greening urban infrastructure, including reforesting parks and brownfield sites, greening walls and roofs, and nurturing biodiversity corridors, more novel technologies such as carbon-capturing concrete, enhanced weathering and direct air capture methods provide cities a new frontier for removing carbon at scale. These emerging technologies not only offer the chance to create more livable cities with cleaner air, but they also present opportunities for new jobs and local economies.

[1] Global Monitoring Laboratory (GML) of the National Oceanic and Atmospheric Administration https://gml.noaa.gov/
[2] Climate Change 2021: IPCC The Physical Science Base: Summary for Policymakers
https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM_final.pdf#page=33
[3] Mercator Research Institute on Global Commons and Climate Change https://www.mcc-berlin.net/en/research/co2-budget.html
[4] Climate Change 2021: IPCC The Physical Science Base: Summary for Policymakers https://report.ipcc.ch/ar6wg3/pdf/IPCC_AR6_WGIII_SummaryForPolicymakers.pdf
[5] Ibid.
[6] UNHABITAT: https://www.un.org/en/climatechange/climate-solutions/cities-pollution

However, carbon removal is neither a quick fix nor a simple remedy. Critical questions remain as to how much carbon can be stored, and for how long, which technologies are appropriate and affordable for different contexts, and how new solutions can scale safely and fairly. Carbon removal options cannot be treated as a single package, rather each approach offers different opportunities, risks and challenges. More research, innovation and development is desperately needed to fill some of these evidence gaps and we urgently need cities to step in to lead this crucial agenda.

Re-Earth Initiative and walk it back have come together because we want to deepen knowledge and catalyse investment towards safely removing carbon in cities. We are seeing glimpses of leadership all over the world. New York has developed a state-level bill aimed at advancing carbon removal deployment through government purchase of CO2 removal; Basel has become the first city in the world to make green spaces a legal requirement on new buildings resulting in 1 million square metres of green roofs; Stockholm has built its own biochar facility; and Helsinki is piloting novel air capturing technology. Start-up companies pioneering second generation carbon removal solutions are popping up in capitals around the world, from Edinburgh to Amsterdam, and from Delhi to Beijing.

However, to date, there has been little coordinated action around carbon removal strategies for cities at a research, practical or policy level. As a result, there are significant gaps in knowledge and evidence, as well as missed opportunities to build on existing solutions.

Awareness and social acceptance of technological carbon removal is low in many countries. In too many cases, conversations around carbon removal have been happening behind closed doors. As the recent negotiations at COP27 have demonstrated – it is time to bring those discussions into the light.

OUR MISSION IS TO MAKE SURE THAT POLITICAL LEADERS STAY COMMITTED TO LEARNING AND INTEGRATING CONTEXT SPECIFIC AND SAFE CARBON REMOVAL TECHNOLOGIES. TOGETHER, WE URGE CITY DECISION MAKERS TO COMMIT TO TRANSPARENT AND INCLUSIVE CONSULTATION PROCESSES TO ASSESS THE FULL ARRAY OF NATURE AND TECHNOLOGY BASED CARBON REMOVAL STRATEGIES

01 Include defined carbon removal commitments in their Net Zero city strategies. Carbon removal solutions should support and galvanise Net Zero commitments and ambitions, not replace emission reductions.

02 Allocate 30 - 40 % of city surface areas towards green and blue infrastructure ensuring that opportunities for safe carbon removal are maximised.

03 Catalyse investment and drive innovation. Drive finance and innovation into carbon removal projects, pilots and research.

04 Establish transparent governance processes and robust standards to verify carbon removal projects Convene relevant stakeholders including civil society, marginalised communities, planners, scientists, real estate owners, investors, academia, and citizens to understand the local contexts, apply rigorous scientific evidence and hold carbon removal project owners to account over the long term.

COME JOIN THE MOST INCLUSIVE DIALOGUE ON CARBON REMOVAL TO DATE

Working with decision makers, civil society and the private sector, Re-Earth Initiative and the walk it back campaign hope to identify how a portfolio of removal options that include both nature and science-based technology strategies can transform this crucial area of climate action.

With partners, we have honed in on a number of solutions that we believe offer significant opportunities for cities. Over the next year, will be hosting an ongoing dialogue around carbon removal options on the following solutions and how the they might be applied in city contexts:

* Carbon mineralisation for building materials
* Enhanced weathering
* Biomass burial
* Soil Carbon Regenerative Agriculture
* Direct air capture
* Soil amendment
* Biochar
* Biomass to oil
* Afforestation
* Kelp sequestration

This paper is intended as a call to collaborate and an invitation to share your expertise. We are gathering insights around three key questions:

01 What are the challenges facing your city in meeting its Net Zero commitments?

02 What are the best opportunities for carbon removal in your city?

03 What support, investments and governance standards are needed to scale safe and fair carbon removal solutions in your city?

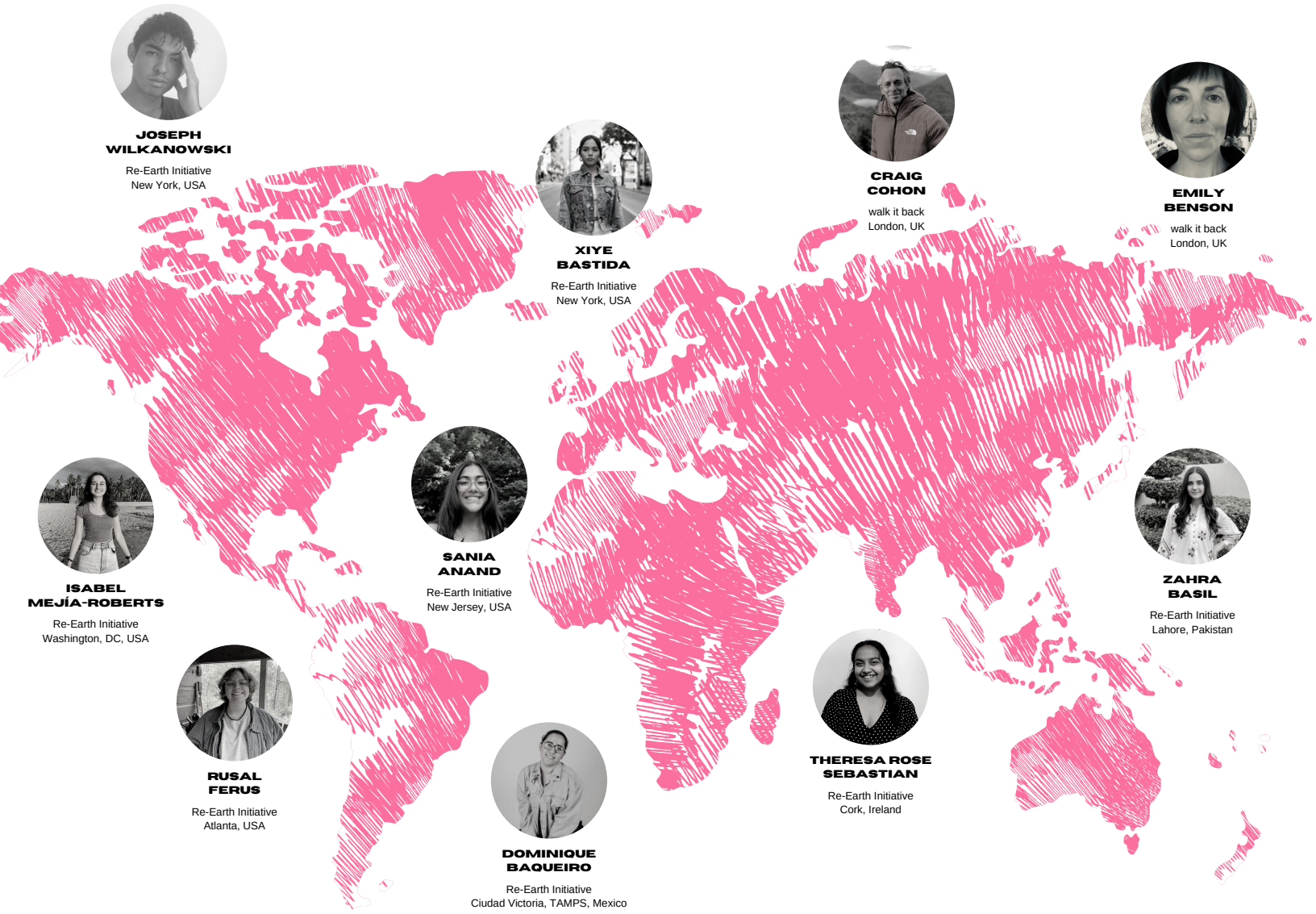
ABOUT US 02

walk it back is a new global campaign aimed to foster dialogue, share knowledge and inspire action on the next frontier of climate action: carbon removal. The campaign was inspired by its founder, Craig Cohon, who has undertaken a personal 'lifetime carbon audit', the first of its kind, and is now on a mission to remove that carbon from the atmosphere.

Starting in January 2023 Craig will walk from London to Istanbul, via 82 towns and cities across Europe, to raise awareness and understanding of carbon removal. He will be joined along the way by business leaders, politicians, students, practitioners and researchers in an ongoing conversation around different carbon removal methods. With thousands of people joining him as he walks, and engaging with city leaders at a series of events, the walk it back campaign aims to generate the most inclusive global dialogue on carbon removal to date.

"WE HAVE NO TIME TO WASTE. WE HAVE TO FIGURE OUT HOW TO GET THE MORE THAN TWO TRILLION TONS OF CARBON WE'VE PUT UP INTO OUR ATMOSPHERE BACK DOWN AGAIN; WALK IT BACK IS HOPING TO SPEED THIS URGENT WORK UP AND GET CONVERSATIONS ABOUT IT OUT INTO THE OPEN"

—Craig Cohon, walk it back



JOSEPH WILKANOWSKI
Re-Earth Initiative
New York, USA

XIYE BASTIDA
Re-Earth Initiative
New York, USA

CRAIG COHON
walk it back
London, UK

EMILY BENSON
walk it back
London, UK

ISABEL MEJÍA-ROBERTS
Re-Earth Initiative
Washington, DC, USA

SANIA ANAND
Re-Earth Initiative
New Jersey, USA

ZAHRA BASIL
Re-Earth Initiative
Lahore, Pakistan

RUSAL FERUS
Re-Earth Initiative
Atlanta, USA

DOMINIQUE BAQUEIRO
Re-Earth Initiative
Ciudad Victoria, TAMPS, Mexico

THERESA ROSE SEBASTIAN
Re-Earth Initiative
Cork, Ireland

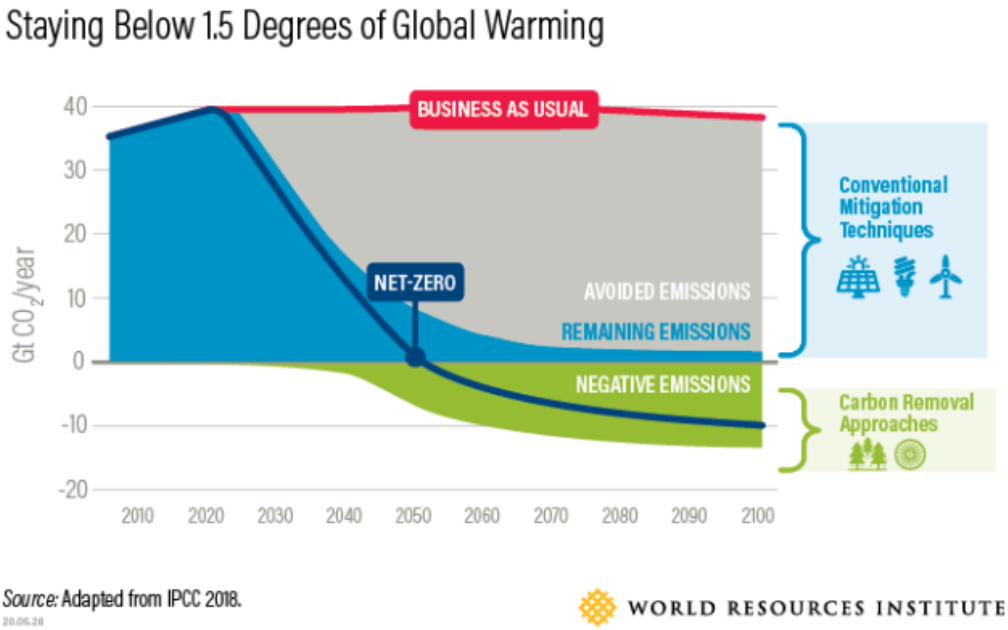
Re-Earth Initiative is a global, youth-led organisation on a mission to make the climate movement accessible to all. Re-Earth Initiative creates educational content and campaigns to galvanise young people around the world to raise awareness on environmental justice issues and to involve them in the fight to make this world a livable place for all.

Over the last three years the network has mobilised thousands of people to take action in digital protests and pledges. Now their main focus is on educating the youth about climate change and environmental justice through their informational content and campaigns like Live on the Frontlines, which highlights the experiences of communities living on the front lines of climate change. Their collaboration project, Love Letters to the Earth, aims to bring the plight of young people to the forefront of climate conversations, where their voices are rarely heard.

THE CHALLENGE 03

The science is clear. To hold global temperatures below 1.5°C above pre-industrial levels, the global community needs to reach Net Zero emissions by 2050 and net negative emissions soon after that. Even with rapid investment in emission reductions, the world will likely need to remove about 10 billion tonnes of CO2 from the atmosphere every year by mid-century and 20bn tonnes of CO2 per year by 2100[7].

Achieving this will require accelerating emissions reduction efforts as well as removing carbon directly from the atmosphere. Diverse organisations agree. The World Economic Forum's Net-Zero to Net-Negative report states that to limit global warming to safe levels in line with the Paris Agreement requires we must "speed up the deployment of carbon removal… " as a complement to "drastic reduction of emissions[8]." The IPCC describes carbon removal as "a piece of every scenario that brings temperature back down". Oxfam acknowledges that "carbon removals are an important part of the solution of the climate crisis, hundreds of gigatons of CO2 will likely need to be removed from the atmosphere this century with the help of a wide range of negative emission technologies"[9].



[7] Anderson, A., Byrum, Z., Dellesky, C., Hausker, K., Lashof, D., Lebling, K., Leslie-Bole, H. & Riedl, D. (2022). Carbon Removal, World Resources Institute. https://www.wri.org/initiatives/carbon-removal
[8] World Economic Forum (2021). Net-Zeroi to Net-Negative: A Guide for Leaders on Carbon Removal, World Economic Forum. chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www3.weforum.org/docs/WEF_Net_Zero_to_Net_Negative_A_Guide_for_Leaders_on_Carbon_Removal_2021.pdf
[9] OXFAM (2020). Removing Carbon Now: How can companies and individuals fund negative emissions technologies in a safe and effective way to help solve the climate crisis?, Oxfan Discussion

"It is abundantly clear that existing Net zero plans alone are not enough for us to have any hope of inheriting a liveable planet.
We urgently need decision-makers to step up and address the evidence gaps and governance questions that are holding this critical agenda back"

—Joseph Wilkanowski, Re-Earth Initiative

However, carbon removal is not a simple remedy or a quick fix. Firstly, there is the question of how effective different methodologies, particularly some of the emerging technological options, are at removing carbon. In some instances, carbon removal technologies require land, energy, water and other material resources to build and maintain. In other cases, the methods are too expensive to be scaled up.

Secondly, there is the question of where to put removed carbon and how long it will remain there. Carbon storage options, either in the atmosphere, geosphere or biosphere, all have limits and consequences, some of which are difficult to predict. Thirdly, carbon removals can also create unintended social and environmental harm, for example, by driving people in low-income countries off their land or by negatively affecting biodiversity[10].

Fourthly, as COP27 has demonstrated[11], agreed standards and definitions of long term carbon removal remain hazy in the global discussions around voluntary carbon markets in Article 6 of the UNFCCC negotiations. Finally, there is still little coordination around carbon removal at a global level, as a result data gaps loom large, evidence is lacking, and funding is scattered and inconsistent.

[10] OXFAM (2020). Removing Carbon Now: How can companies and individuals fund negative emissions technologies in a safe and effective way to help solve the climate crisis?, Oxfan Discussion
[11] Ghantous, N. (2022). Carbon markets at COP27: What's holding up negotiations on ARticle 6?, Energy Monitor. https://www.energymonitor.ai/policy/carbon-markets/cop-27-carbon-markets-article-6-is-contentious

04 THE OPPORTUNITY

Cities, which produce more than 60% of global greenhouse gases and yet occupy 2% of the Earth's land surface[12], are pivotal in the transition to a net zero world. As hubs of finance and innovation, urban centres can be catalytic in accelerating efforts to remove carbon from our atmosphere:

Firstly, as stewards of the built environment, city decision makers can lead a green infrastructure revolution. Green roofs and walls, urban agriculture, reforested public spaces and regenerated soils are all effective at removing carbon.

Investing in green infrastructure brings societal and economic returns in addition to carbon removal. Access to regenerated urban green spaces has proven positive impacts for health and wellbeing. Green infrastructure can also dramatically reduce urban temperatures. For example, Medellin in Colombia has planted 30 green corridors along 18 roads and 12 waterways which has reduced the local temperature by more than 2C.

> "It is not just possible, but essential we scale up carbon removals while protecting ecosystems, human rights and land rights. Cities, world experts in complex implementation, are incredibly well placed to lead the way"
>
> *—Emily Benson, walk it back*

[12] UN (2022). Generating power, United Nations Climate Action. https://www.un.org/en/climatechange/climate-solutions/cities-pollution

Secondly, cities are centres of finance and innovation and as such can drive investment towards new carbon removal projects and technologies. Amsterdam, Copenhagen, Helsinki, Oslo and Stockholm have some of the most ambitious carbon reduction targets in the world, and all of them are piloting carbon capture and removal strategies within and beyond their boundaries, while creating new jobs and supporting alternative green markets at the same time. In Oslo for example a single waste-to-energy plant is responsible for 17% of the city's emissions, and is the biggest single emitter of CO2 in the city. Thanks to new carbon removal technologies, from 2026, up to 400,000 tonnes of CO2 will be captured each year[13].

- The New York Carbon Dioxide Removal Leadership Act (CDRLA) marks the first of its kind: a state-level bill aimed at advancing CDR deployment in the immediate term to ensure it's ready to be scaled up. The act authorises the creation of a state-run advance market commitment for durable carbon removal, starting with a very small amount (10,000 tonnes in 2024) that doubles each year through 2029.

- In the UK, the Department for Business and Industry launched a nation-wide funding mechanism to support R&D in carbon removal which has led to new technologies in urban areas including methods for pulling carbon dioxide out of the air and sea water, and ways to capture methane produced from cattle developed by labs in Edinburgh.

Finally, cities can use their considerable convening power to bring different disciplines together for the first time to share evidence from the ground on the status of carbon removal technologies, and identify context specific risks, gaps and opportunities.

[13] City of Oslo (2022). The City of Oslo ensures realisation of carbon capture and storage [Press release], Oslo. https://www.oslo.kommune.no/politics-and-administration/politics/press-releases/the-city-of-oslo-ensures-realisation-of-carbon-capture-and-storage-ccs#gref

THE METHODS 05

There are an array of different removal options for extracting carbon from the atmosphere, which range from nature based strategies through to engineered and hybrid solutions. In all cases, context is key, and in some instances the technology is still nascent and requires further development before it can be included in Net Zero planning.

The walk it back campaign is focused on ten solutions, all of which offer significant opportunities for cities to simultaneously remove carbon while creating jobs, improving air quality and stimulating local economies.

We should emphasise that we are not focused on carbon capture and storage (CCS) methods, i.e. those that capture carbon dioxide from an emission source like a smokestack or flue, such as in a coal-fired power plant or a cement factory. Instead we are interested in direct air capture methods because these extract historic emissions that are already in the atmosphere. In addition, with the exception of kelp farming, we are not focused on large scale ocean carbon removal technologies.

Reforestation and afforestation: Introducing vegetation back into cities via green infrastructure, parks and nature corridors can prove highly effective. It is not only one of the more affordable strategies for removing carbon, it also generates positive returns including pollution reduction and both physical and mental health benefits. For example, access to restored green spaces can reduce physical health issues including type II diabetes, cardiovascular disease, premature death, preterm birth, stress and high blood pressure[14]. Green infrastructure has also proved critical for combatting urban heat. For example, green roofs have been shown to reduce the need for air conditioning as much as 75% in buildings in Canada[15].

City leaders around the world have started to reintroduce both blue and green infrastructure into urban planning - Linz in Austria has one of the highest densities of green roofs in the world (2.7m2 per citizen), while Sydney aims to plant 5 million trees by 2030.

[14] Science Daily (2018). It's official— spending time outside is good for you, University of East Anglia. https://www.sciencedaily.com/releases/2018/07/180706102842.htm
[15] The National Research Council of Canada

* Medellin in Colombia has planted 30 green corridors along 18 roads and 12 waterways, with 8,300 trees and 350,000 bushes. This has reduced the local temperature by more than 2C[16].

* Basel, Switzerland has become the first city in the world to make green spaces a legal requirement on new buildings. More than 1 million square metres of green roofs have been constructed, making it the leading city in greening its urban spaces.

Kelp sequestration: Seaweed, kelp and other macroalgae in the oceans naturally absorb carbon in their biomass but also in the sediment below where it is grown. Seaweed could also be sunk in the deep sea for the purposes of carbon sequestration. Early models have estimated that no-harvest seaweed farms on just 3.8% of US West Coast waters could store 34.4 million metric tons of CO2 — an amount equal to all direct emissions from California's agriculture industry. In addition, seaweed products offer an alternative to animal feed and industrial fertilisers.

Kelp farming offers an opportunity for coastal cities in particular, and has the potential to drive local economic activity and create jobs.

* Running Tide, a company based just off the coast of Maine in the US grows kelp seeds in hatcheries and then nurtures them on biodegradable buoys. The kelp captures carbon dioxide as the buoys float along on the surface of the ocean, with the buoys sinking deep into the ocean when the kelp reaches a certain weight, likely over a 6-8 month growth season.

Regenerative agriculture: Regenerative agriculture refers to a range of different techniques for restoring the soil to a healthier state, which in turn enables it to absorb carbon. Techniques include reintroducing continuous vegetation cover on the soil; reducing soil disturbance, such as 'no till' or 'no plough' methods; and increasing the amount and diversity of organic residues returned to the soil.

Some cities in the USA, such as Boulder, Colorado and San Francisco are including soil carbon storage in their climate action plans. California pays some farmers for reducing their greenhouse gas emissions, and Maryland legislators are considering new funding for "carbon-smart" farmers.

[16] Brown, J. (2021). How cities are going carbon neutral, BBC. https://www.bbc.com/future/article/20211115-how-cities-are-going-carbon-neutral

Soil amendment: One specific method for practising regenerative agriculture is the application of organic material, such as livestock manures and compost, to enable the soil to sequester carbon.

Biomass burial: Biomass is material generated from living organisms, such as plants and animals. One application of biomass is to harvest wood sustainably and then store it semi-permanently for carbon sequestration. By burying woody biomass on a mega-tonne scale in specially engineered enclosures to ensure anaerobic environments, thus preventing wood decay, the buried wood enters a quasi-geological reservoir that can stay intact semi-permanently.

According to some evidence, burying biomass is considered one of the safest forms of carbon removal methods because it has “few theoretical uncertainties, can be implemented immediately on a large scale, has a long sequestration time, low cost, low technical requirements, and relatively little impact on agriculture”[17].

Biomass into Biochar: Another method of removing carbon is to convert biomass into biochar, which is created by combusting biomass at temperatures of 300–600°C without oxygen. This process, known as pyrolysis, enables the carbon in the biomass to resist decay.

The biochar can then be introduced into soils that, under certain conditions, can sequester carbon for many hundreds of years.

According to the IPCC biochar is one of the safest, most durable and fastest ways to draw down carbon today. Whilst biochar has traditionally been associated with rural development, it is a potential route to remove carbon cheaply and efficiently within urban settings.

* In 2017 Stockholm built a biochar plant. The facility uses a high-temperature pyrolysis to turn garden waste into biochar. Since the plant opened, it’s produced more than 100 tons of biochar. The pilot plant has the capacity to lock away carbon at a rate equivalent to removing 700 cars from the city’s roads per year. In addition, the plant is hooked up to the local heating grid, with the capacity to provide renewable heat source for up to 80 apartments each year.

[17] Xu, K. (2022). Wood burial is currently the only fast and effective method of carbon neutrality, Fisheries College, Jimei University. https://doi.org/10.20944/preprints202112.0201.v2

- In Helsinki, a combination of planting trees and mixing biochar into the growing medium was proven to increase the carbon removal rate considerably. In a pilot 520 kg of CO2 was removed per resident over 50 years, of which the biochar addition accounted for 65% of the additional removal capacity. At the city scale, this would lead to 330 000 tonnes of CO2 being stored over 50 years[18].

Biomass to bio-oil: One of the by-products of subjecting biomass to high temperature in the absence of oxygen (i.e., pyrolysis) is a liquid bio-oil or pyrolysis oil. Bio-oil has a high carbon content and solidifies over time, making it a useful substance for permanent storage.

- Instead of letting waste biomass like excess sawdust and wood, sugar cane bagasse, corn stover, rice straw, or almond shells rot - which releases the stored CO2, a US company called Charm makes bio-oil out of it. Once produced, the carbon rich bio-oil is transported to an injection well, prepared for injection and pumped into rock formations to be stored for the longer term[19].

Mineralisation is the acceleration of a natural process that involves trapping carbon dioxide and storing it as solid carbonate minerals in rocks. During this process, CO2 is bound in rocks rich in calcium, iron, and magnesium, such as basalt. Under natural conditions, the process is slow, only removing 0.7 billion tonnes of carbon annually, but the process can be simulated using technology to speed up the rate of removal.

Different carbon mineralisation applications are emerging including:

Carbon mineralisation for building materials: Mineralised carbon can be included in a concrete mix, wherein the CO2 reacts with calcium ions from cement to form a nano-sized mineral, Calcium Carbonate, which becomes embedded in the concrete. This makes the concrete stronger, enabling mix optimization while eliminating the CO2.

- CarbonCure, a Canadian company, equips concrete manufacturers with carbon recycling technology, which injects the carbon captured from industrial waste like flue gas into their concrete mixers. As the concrete is mixed, the CO2 reacts with the existing calcium in the concrete mix, creating a stable calcium carbonate that not only stores carbon forever, but also fortifies the concrete.

[18] Science Daily (2018). It's official— spending time outside is good for you, University of East Anglia. https://www.sciencedaily.com/releases/2018/07/180706102842.htm
[19] Climacrux (2022). Injecting bio-oil deep underground, Carbon Removed. https://carbonremoved.com/carbon-removal-projects/injecting-bio-oil-deep-underground/

Enhanced weathering: This refers to the acceleration of the natural process of weathering through the spreading of readily dissolvable, finely crushed silicates (such as basalt) across large areas of land to absorb carbon. For example, grinding basalt into powder and spreading the powder over soils, means it reacts with CO2 in the air to form stable carbonate minerals.

* Future Forest collects and processes basalt rocks using renewable energy. The basalt powder is then spread on the forest floor to help to improve the soil as a carbon sink as well to support drainage and acidity levels.

* A Dutch company specialises in collecting green sand, crushed bits of rock rich in olivine, which absorbs its own weight in CO2 when it becomes weathered after exposure to air and water. Green sand can be found naturally on the coastlines of Spain, Norway, Cyprus, Turkey, Iran, Greece. The natural material is then packaged up to use in soil, gardens, and construction projects. The resulting product counteracts the acidification of agricultural soil and water, so it both sequesters carbon and improves the soil and water to which it is added[20].

Direct Air Capture: A chemical process whereby CO2 is extracted from the air. Carbon can be permanently stored in deep geological formations permanently or for long periods of time. The captured CO2 can also be used, for example in food processing or combined with hydrogen to produce synthetic fuels. Technologically, capturing carbon from the air is challenging, and uses a lot of energy as CO2 is in low concentrations in the atmosphere, compared with exhausts from power stations and factories.

According to the IEA, today, more than 10 direct air capture plants are operating in Europe, the United States and Canada[21]. Most of these plants are small and sell the captured CO2 for use – for carbonating drinks, for example. However, there have been some larger initiatives emerging in recent years:

* One of the first large-scale direct air capture plants is now being developed in the United States by a partnership between Carbon Engineering and Occidental Petroleum. The plant will capture up to 1 million tonnes of CO2 each year for use in enhanced oil recovery and could become operational as early as 2023.

[20] GreenSand (2022). 1 kg greenSand clears 1 kg CO_2, greenSand. https://greensand.com/en/pages/onderzoek-bewijs
[21] Budinis, S. (2022). Direct Air Capture, IEA. https://www.iea.org/reports/direct-air-capture

* In 2012, the Carbfix project in collaboration with the Hellisheiði Geothermal Power Station, started to capture carbon from the power station and injected it into the basaltic subsurface, using the in-situ mineralization method. Within two years of inception, more than 90% of the carbon dioxide had been mineralized. Since 2014, Carbix has injected 12,000 tonnes of CO2 annually underground. This method will make up 10% of Iceland's Climate Action Plan objectives by 2030, and will permanently capture and store about one-third of Hellisheiði's carbon dioxide emissions.

"For far too long young people have been left out of these conversations. What we do right now affects our future and we must have a say in what that future looks like. We are here and ready to help make the world a better place, older generations just need to give us a chance"

—Rusal Ferus, Re-Earth Initiative

NEXT STEPS 06

This paper has sought to provide an overview of carbon removal, to highlight ways cities might catalyse a step-change in the acceleration of this urgent work, and to showcase some work already underway in order to inspire their replication. Our metropolises hold the power to avert the climate crisis and we are committed to supporting them in that mission.

Over the next year, Re-Earth Initiative and the walk it back campaign will be hosting an ongoing dialogue around carbon removal options. In particular, we are focused on following solutions and how they might be applied in city contexts:

* Carbon mineralisation for building materials
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This paper is intended as a call to collaborate and an invitation to share your expertise. We are gathering insights around three key questions:

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02 What are the best opportunities for carbon removal in your city?

03 What support, investments and governance standards are needed to scale safe and fair carbon removal solutions in your city?

Please join the conversation, share this document, and follow our journey at ***@2023walkitback*** and ***@reearthinitiative***

ACKNOWLEGMENTS 07

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* Frances Wang - Program Manager, Carbon Dioxide Removal, ClimateWorks Foundation
* Lucy Hargreaves - Policy Executive, Patch

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