

London 2095

A magnifying glass graphic with a dark blue lens and a black frame is positioned over the text 'London 2095'. The lens is centered over the 'o' in 'London' and the '0' in '2095', making the text appear slightly blurred and magnified through the glass.

EXHIBITION GUIDE

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MA Design Products
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View this exhibition online.



Map source: Climate Central & Google



London 2095

Welcome to London in 2095.

This research project, employing the lens of design futurology, primarily aims to augment public understanding and awareness of the tangible implications of climate change on daily life. The prevailing issue is the perception of climate change effects as distant or nebulous, leading to a disconnection between the global issue and personal stakes. This project, therefore, is motivated by the need to bridge this perceptual gap, translating abstract climate change concepts into tangible future scenarios that resonate with personal experiences and lifestyle choices.

The endeavour strives to cultivate imaginative engagement with climate change impacts, developing a plausible depiction of life in the late 21st century. The core areas of exploration include, but are not limited to, potential transformations in residential

structures, transportation systems, dietary preferences, and clothing necessitated by climate change.

The projection of these future realities serves to stimulate a heightened sense of urgency and personal responsibility, prompting individuals, communities, and policymakers to engage proactively in climate change mitigation strategies.

Thus, the project is not merely predictive but proactive in nature. It serves as a critical tool for visualising potential futures dictated by current anthropogenic activities and inspiring conscientious choices towards a sustainable and resilient future.

- Zhaoning Yuan (Designer)

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KEY EXHIBITS

Tube Map

The Tube map is an iconic symbol of London, a visual manifestation of the city's heartbeat, connecting communities and facilitating the city's incessant pulse of life. This revered artefact of urban navigation is not only a practical tool but also an embodiment of the city's history, growth, and dynamism. It represents London's rich narrative of evolution, reflecting its character as a global city that has always managed to adapt and thrive amidst changing times.

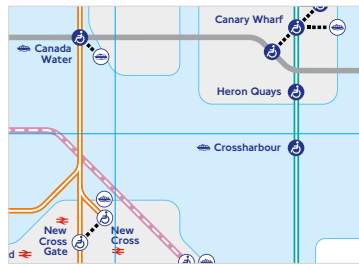
In the 'London 2095' exhibition, the 2095 tube map serves as a potent symbol of the transformative effects of climate change. It offers an interpretive lens through which you can explore the dramatic environmental and infrastructural shifts London might endure, driven by the forces of climate change.

Opting to use the official TfL map of 2023 as the foundation for this map reinforces the starkness of the changes projected for 2095. Rather than reimagining London's transit system from scratch or adding new routes per city plan, this choice emphasises the reality of the existing city, highlighting the magnitude of change that could occur due to climate change. By retaining the original layout and format, it is ensured the map is not only recognisable to the audience but also underscores the continuity of time, underlining the temporal proximity of the predicted changes.

Every nuanced alteration to the map corresponds to the impacts of

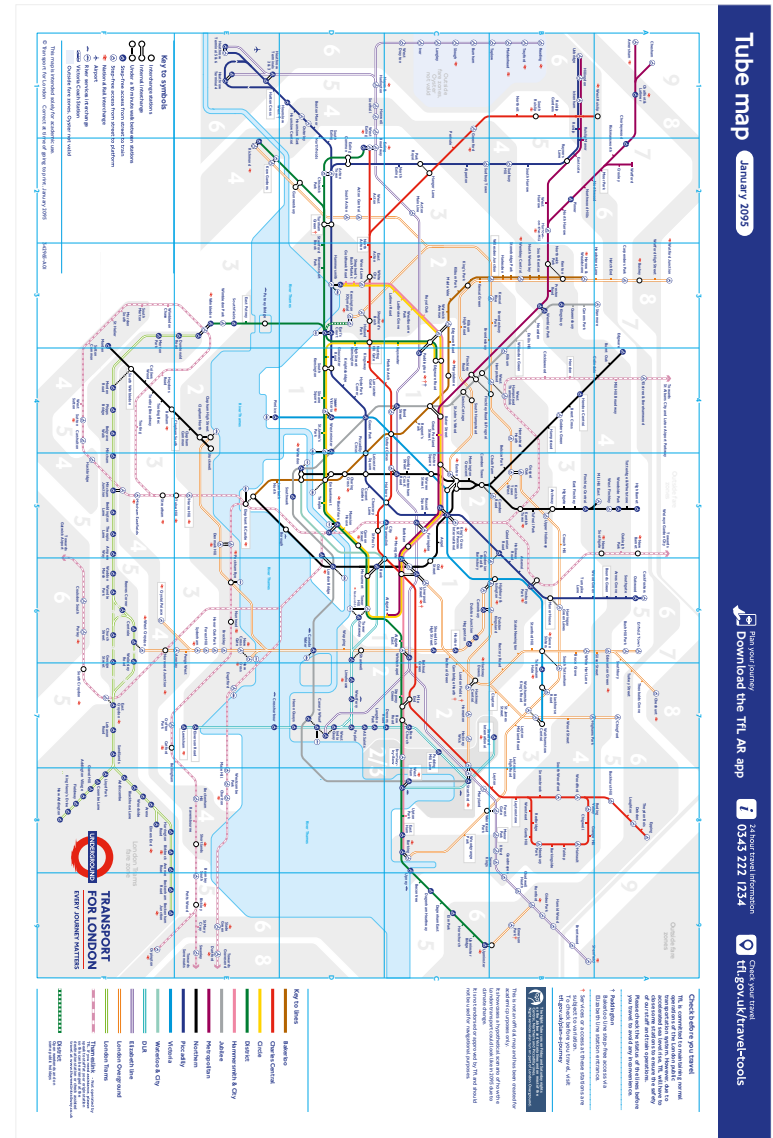
climate change, embodying both subtle and profound shifts. East London's flooding, for instance, marks the consequence of sea-level rise, resulting in a distinct reconfiguration of the city's infrastructure, with the adaptation of transport systems and the emergence of new piers.

Through this visual representation, the map makes abstract notions of climate change tangible, grounding them in the urban fabric of a world-renowned city. As such, it serves as a call to awareness, compelling audiences to confront the consequences of inaction, and the urgency of mitigating climate change.



↑ A detailed area on the map.

This map is filled with details, awaiting your exploration.



↑ The design of London Tube Map 2095.

Tube map January 2095

Download the TfL app
 0203 222 1234
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New Piers



The “Canada Water Pier, 2095” is a simulated photograph that illustrates a significant reshaping of London’s urban topography as a result of sea-level rise.

This site, once firm land, has been repurposed as a crucial node for London’s Water Taxi service, a response to the inundation of tube and rail lines. The image depicts a larger pier, indicative of its importance as a transport hub.

This image captures how urban life is forced to adapt, morphing existing infrastructures to meet the challenges of a climate-altered future.



TfL to Introduce New Pier for Enhanced Water Taxi Service

London, 23 July 2091

Transport for London (TfL) is proud to announce an innovative addition to London’s transport network, aimed at significantly improving accessibility and convenience for our valued passengers.

In response to the challenges posed by climate change and the rising sea levels, TfL has been making consistent efforts to reimagine and restructure London’s transport landscape. As part of this ongoing initiative, we are excited to unveil plans for a new pier in Hammersmith. This new facility will augment our recently introduced water taxi service, providing a crucial link between London’s terrestrial and aquatic transportation networks.

The Hammersmith Pier will be strategically located, offering easy accessibility from multiple points across the city. Notably, it will feature a direct interchange with Hammersmith Station, ensuring seamless transitions for passengers switching between the subway and water taxi services. Passengers will be able to conveniently transfer to the water taxi, bypassing the surface streets, providing a quicker and more efficient travel experience.

Construction on this project is set to begin in the autumn of 2091, with completion aimed for summer 2093. As always, TfL is committed to minimising disruptions during construction and ensuring safety measures are in place to protect the well-being of our passengers and staff.

TfL’s Head of Infrastructure, Jamie Kingston, said: This initiative marks a significant milestone in our efforts to adapt London’s transport system to our changing environment. The new Hammersmith Pier and its direct interchange with Hammersmith Station exemplifies our commitment to innovation and sustainability. We are excited about this venture and the prospects it holds for a more resilient and connected London.

In the wake of changing climate patterns, TfL remains dedicated to implementing adaptive and forward-thinking solutions. By integrating our land and water-based transport systems, we continue to uphold our mission: to keep London moving, come rain, shine, or high water.

For more information about TfL’s initiatives, visit www.tfl.gov.uk

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MAYOR OF LONDON



The "Hammersmith Pier, 2095" represents a community-level adaptation to the same circumstances. This simulated photograph showcases a smaller, intimate pier servicing the water taxi routes.

In the shallower waters of this area, the Hammersmith Pier stands as a testament to how local communities continue to maintain connectivity in the face of adversity.

Both photographs, in their depictions of London's future waterscapes, provide insights into the potential adjustments required for city living in the wake of climate change.



Weather Forecast

The "Holographic Weather Forecast" for June 18-19, 2095, serves as a stark embodiment of the pervasive and severe impacts of climate change. It's a tactical immersive tool employed in the exhibition to deepen the engagement of the audience, moving away from impersonal data charts to a visceral, emotionally resonating experience. It helps to bridge the cognitive gap between the abstract understanding of future weather extremes and the tangible sense of what living under such conditions might feel like.

This installation introduces the anticipated highest temperature ever recorded in London - a scorching 49.8 degrees Celsius on June 19th, 2095. By manifesting these predictions into a palpable, tangible format, it facilitates audiences to perceive the physical reality of such extremes. The heat, the relentless sun, and the erratic weather patterns punctuated by intense storm events on the previous day will be brought to life within the confines of the exhibition space.

The weather forecast acts as a stark testament to the future implications of climate change, reinforcing the necessity for the adaptive design solutions presented in the exhibition, such as the Personal Climate-Controlled Suits (PCCS) and the Urban Survival Kit. It amplifies the urgent need to understand and respond to the future we might be heading towards if significant action is not taken.

It should be noted that due to technical constraints, the "holographic projection" technology is simulated via reflective projection off a screen. While this may not provide the full 3D immersive experience of true holography, it nonetheless effectively conveys the message and engages audiences with the projected future realities of climate change.

Urban Survival Kit Essential

The 9th Generation “Urban Survival Kit” (USK) by BIOX serves as a vital tool for adapting to the severe climate conditions projected in 2095, as depicted in the ‘London 2095’ exhibition. This Essential Kit offers a meticulously curated selection of items designed to help individuals navigate their daily lives amidst the harsh environmental conditions. It represents a key artefact within the exhibition, exemplifying how the intersection of design and technology can contribute to survival and resilience amidst a changing climate.

In the USK, the array of high-SPF sunscreens with varying strengths highlights the serious UV radiation risks associated with a warming climate. The inclusion of sunscreen remover demonstrates the integrated approach towards user comfort and practicality. The thermometer and timer serve as essential tools for personal health monitoring, acknowledging the increased risk of heat-related health complications.

Safety essentials like the cut-resistant gaiters and ankle braces highlight the necessity of physical protection in an era where extreme weather conditions may pose serious safety threats. The safety

cable and powerful snip serve as versatile tools for emergency scenarios, underlining the need for preparedness in an unpredictable environment. The whistle serves as a classic emergency signal tool, reflecting how traditional safety mechanisms continue to hold relevance even in a future shaped by high technology. The inclusion of the FFP3 masks underscores the projected severity of air pollution. This item, in particular, serves as a poignant symbol of the daily struggles future Londoners may face due to degraded air quality.

The USK, in its entirety, represents an adaptive response to the future climate scenario portrayed in the ‘London 2095’ project. As an exhibit piece, it manifests the pragmatic reality of living amidst climate change, providing an evocative material representation of future daily life. It also exemplifies the role of innovative design in enhancing resilience, emphasising the crucial role of design and biotech solutions in navigating a climate-altered future.

↓ Urban Survival Kit Essential



*BIOX, a fictional super-biotech company in this project, draws partial inspiration from real-life counterparts such as Bayer and Apple. For more information about BIOX, please refer to the subsequent “Worldview” section, page 51.



PRESS RELEASE January 18, 2095

BIOX introduces the new Urban Survival Kit Essential with breakthrough personal protection

Better and stronger outdoor survival protection for more ordinary people

Worse than predicted 70 years ago, the global climate system has completely collapsed. By December 2094, global temperatures had risen 3.5°C above pre-industrial levels. Solar radiation is at an unprecedented intensity, floods and droughts are occurring on the same day, and force 15 winds are ready to clear everything from city streets - although this had become an everyday situation, the human body had not evolved to adapt to such conditions. The 137th UN General Assembly in 2082 has resolved to stop climate intervention in favour of pooling the efforts of all humanity to build overground bunkers and underground cities. Due to the extreme cost and duration of construction, the overground bunkers and underground cities have been auctioned off at high prices. According to statistics, 82.1% of the world's population will not be able to receive any protection.

In the humanitarian spirit, BIOX, the world's leading biotechnology company, launched the Urban Survival Kit (USK) in 2087 to provide ordinary people with survival protection for outdoor travel. After eight years, the USK has been selected by over 1,000 global media as a must-have for urban living on the ground. Today, BIOX is proud to announce the launch of the 2095 USK Essential to provide even better and stronger outdoor survival protection for more ordinary people.

Richer Content

In addition to our everyday SPF 600 and SPF 900 sunscreens, USK Essential includes the latest Ultra UV Protection SPF 1200 - the world's strongest physical sunscreen, offering the ultimate protection like never before. We have also upgraded our sunscreen remover to provide an even fresher feel.

The Urban Mass Extinction of the 2070s and the reduction in human activity provided the perfect environment for rats to thrive. Today, urban mega-rats have become a threat that must be given priority. We have included Cut-resistant gaiters and ankle braces in the USK Essential to provide users with dual lower limb protection from mega-rats.

As always, a thermometer and timer are included in the USK Essential, allowing the user to take body temperature at regular intervals. Safety cable, a powerful snip and a whistle allow users to secure their position or cut off deadly tangles when strong winds and floods strike, in time to be found by rescuers. The FFP3 masks allow users to breathe freely in dusty conditions caused by strong winds.

Today, BIOX has cumulatively provided protection for over 300 million people living on the ground, and by 2100, plans to protect over 1 billion people. BIOX's more than 100,000 employees are dedicated to making the best products on earth, and to leaving the world better than we found it.

BIOX

↑ BIOX press release for the launch of the 9th generation of USK in 2095

Personal Climate-Controlled Suit

The Personal Climate-Controlled Suit (PCCS) is a key artefact of survival and adaptability in the face of extreme climatic change. It is a part of the "Urban Survival Kit" Pro by BIOX.

The PCCS maintains a close affinity with the familiar lines and silhouettes of current urban attire, serving to keep the viewer grounded in the realm of the conceivable. However, beneath the exterior lies an interplay of advanced technology and innovative material application.

PCCS leverages the application of (PCMs), substances that absorb or release thermal energy during the phase change process. The PCMs are embedded within the fabric in micro-encapsulated form, facilitating a dynamic response to the wearer's body temperature and external weather conditions.

In extreme heat and humidity, the PCMs absorb excess body heat, melting into a liquid state to provide cooling. Conversely, in super cold temperatures, the PCMs solidify and release stored heat to maintain a warm environment. This dynamic temperature regulation system allows the suit to provide a comfortable microclimate for the wearer for **up to 90 minutes of continuous use**.

Donning the PCCS is as simple as wearing a regular jacket. However, for optimal performance, the suit needs to be "charged" by exposing it to ambient room temperature

after every use. This allows the PCMs to return to their original state, ready for the next use. This simplicity in usage belies the sophistication of the technology within.

Maintenance of the suit is minimal and designed for durability and longevity. It requires occasional light cleaning using specialised cleaning agents to preserve the integrity of the embedded PCMs.

As for cost, the PCCS is more expensive than conventional clothing due to its advanced materials and technology. However, with the pressing demand for such protective clothing amidst the worsening climate, **rental services** have emerged to make PCCS accessible to the majority. These services provide timely access to PCCS for those who may not be able to afford ownership, ensuring that this life-preserving technology remains within reach of most urban residents in this speculative future.

* This product falls under the category of conceptual design, and the models exhibited in the exhibition are solely intended for visual display purposes and do not possess practical functionality.



↑ The conceptual design of the PCCS.



↑ The design of PCCS labels (partial)

Podcast

The “BBC News Virtual Podcast 2095” serves as a significant pillar of the exhibition, encapsulating the future reality of a world profoundly altered by climate change. As an artefact from the year 2095, the podcast provides a snapshot of daily life, societal adaptations, and the manifold impacts of a dramatically warmer world. It forms a bridge between the present and the future, compelling the audience to confront the repercussions of human-induced climate change.

As an immersive auditory experience, the podcast employs the powerful medium of sound to generate an immediate and visceral response, effectively creating an intimate connection between the listener and the content. Through

this medium, the exhibition masterfully conveys the urgency and immediacy of climate change issues.

The podcast reports are meticulously designed to mirror “real-world” news broadcasts, thereby grounding the narrative in a familiar context while simultaneously illuminating the drastic shifts in society.

An essential aspect of this podcast is its capacity to humanise the impacts of climate change, making them tangible and relatable to the audience. By illustrating how future generations will adapt their behaviours, lifestyles, and societal structures in response to the climate crisis, the podcast gives a voice to the resilience of humanity.



← Cover of the Podcast

Transcript

Sea Levels Swallow East London: A City Grappling with Climate Change in 2095

In the face of the growing climate crisis, London finds itself confronting the stark reality of flooding across many parts of the city. As we stand on the brink of the 22nd century, large areas of East London are now submerged beneath seawater, highlighting the urgency of addressing climate change and its devastating consequences.

The relentless rise in sea levels, a direct result of melting polar ice caps and glaciers combined with the thermal expansion of seawater, has left low-lying areas of the city, particularly in the east, prone to inundation. The River Thames, once a symbol of London's prosperity, now threatens its very existence.

Increased precipitation and extreme weather events, fuelled by climate change, have further exacerbated the situation. Flash floods have become a common occurrence, overwhelming London's drainage systems and submerging vast areas of the city.

The Thames Barrier, once a marvel of engineering and a testament to the city's resilience, now struggles to hold back the surging tides. With climate change driving more frequent and severe storm surges from the North Sea, London's existing flood defences are woefully inadequate to protect its citizens and infrastructure.

The consequences of this flooding are far-reaching, with thousands of residents displaced from their homes and businesses grappling with the loss of valuable assets. The city's economy is under immense strain, as the loss of real estate, transportation disruptions, and the relocation of communities take their toll.

As London confronts this existential crisis, the need for proactive measures and bold policy decisions has never been more urgent. The city must invest in advanced flood defences, upgrade existing infrastructure, and adopt sustainable urban planning practices to mitigate the effects of flooding.

Additionally, London must join forces with global partners in a concerted effort to combat climate change. Reducing greenhouse gas emissions, transitioning to clean energy sources, and promoting climate resilience will be vital in safeguarding not just London but the entire planet from the catastrophic impacts of our rapidly changing climate.

For Londoners, the year 2095 serves as a stark reminder of the profound challenges facing humanity. As the city grapples with the devastating consequences of climate change, the time for decisive action is now. Only through unified, global efforts can we hope to preserve our cities and secure a sustainable future for generations to come.

London Unveils "Aqua District": A Floating Neighbourhood Pioneering Resilient Living in the Face of Rising Sea Levels

In a bold response to rising sea levels, London has officially unveiled its first floating neighbourhood – "Aqua District."

Designed with the city's climate future in mind, Aqua District is located in East London, an area significantly affected by flooding. The neighbourhood consists of several hundred floating homes, community centres, parks, and even a school, all designed to rise and fall with the tides.

The homes, built on floating platforms, are equipped with modern amenities and are sustainably powered by solar energy and tidal power. Communal green spaces feature local, flood-resistant plant species, and transportation is provided by a fleet of solar-powered water taxis.

"Adaptation is the way forward," said Mayor Amir Khan at the neighbourhood's opening ceremony. "We can't change the fact that our city is partially submerged. But we can change the way we live with water. Aqua District is a testament to London's resilience and our commitment to building a sustainable future."

Aqua District is not just a neighbourhood; it's a blueprint for future developments in a world where water is not just a resource but an ever-present reality. Londoners have shown again that they can adapt, innovate, and thrive, even in the face of climate change.

City of London Unveils "Neptune Network": AI-Powered Flood Defence System to Safeguard Against Rising Sea Levels

In response to the rising sea levels and increased flooding, the City of London has unveiled an AI-driven flood defence system, a milestone in the city's ongoing efforts to safeguard its communities and infrastructure against climate change.

The system, dubbed the "Neptune Network," uses advanced AI algorithms to predict and respond to flood risks. The AI analyses a wealth of data – including weather forecasts, tidal patterns, and river flow rates – to anticipate potential flooding events and initiate preemptive measures.

Upon detecting a flood risk, the Neptune Network can activate flood barriers, reroute water flow, and alert emergency services. It can also issue evacuation notices to residents in at-risk areas through an integrated emergency alert system.

"We've created an intelligent flood defence system that can anticipate and respond to threats with remarkable accuracy and speed," said Dr. Lydia Chen, Chief Technology Officer for the City of London. "The Neptune Network represents a significant leap forward in our ability to protect London from the escalating threat of flooding."

The Neptune Network is set to be fully operational by the end of June, offering a promising solution to London's flooding challenges.

BIOX Introduces Personal Climate-Controlled Suit: A Revolution in Climate Adaptation Technology

In response to a world grappling with ever-intensifying climate change, London-based company BIOX has unveiled its latest innovation: the Personal Climate-Controlled Suit (PCCS). This ground-breaking product is set to dramatically transform how individuals interact with their environment, ensuring personal comfort and health amidst the most extreme weather conditions.

The PCCS, an advanced piece of wearable technology, enables users to regulate their body temperature precisely, despite the external environment. This self-regulating mechanism is made possible through the integration of cutting-edge Phase Change Materials and artificial intelligence, allowing the suit to adapt in real-time to both environmental changes and the wearer's personal needs.

"Our intention with the PCCS is to provide a personal climate solution that ensures comfort and safety, regardless of external conditions," says a representative from BIOX. "This product is the culmination of years of research and development, and we believe it signifies a major breakthrough in climate adaptation technology."

Interestingly, the PCCS is not just functional, but also fashionable. BIOX has collaborated with top designers to create a product that is sleek and stylish, challenging the notion that climate-adaptive clothing should compromise on aesthetics.

The advent of the PCCS heralds a new era in personal climate control solutions. As climate change forces us to redefine our relationship with our environment, BIOX's innovative product equips individuals with the tools they need to navigate a rapidly changing world, helping them adapt and thrive amidst adversity.

By offering a tailored approach to climate adaptation, the PCCS underscores the fact that although climate change is a global issue, its impacts are experienced on a very personal level. BIOX's latest offering stands as a testament to human ingenuity, reminding us that even in the face of daunting challenges, technological innovation continues to provide hope for a resilient future.

The Personal Climate-Controlled Suit is set to launch later this year and will be available worldwide.

BIOX's Breakthrough Artificial King Prawn Combats Protein Crisis

In a promising development, biotech giant BIOX has unveiled its latest innovation in the fight against the global protein crisis, brought on by the extinction of coral reefs. The company has successfully developed an artificial king prawn that not only mirrors the flavour of the real thing but also surpasses it in terms of nutrition and scalability.

The extinction of coral reefs has led to a precipitous decline in the biodiversity of the oceans, affecting not just the marine ecosystem but also humanity's access to critical sources of protein. As seafood stocks have dwindled, nations around the globe have grappled with the challenge of providing their citizens with adequate nutrition.

The new artificial king prawn, however, offers a beacon of hope. Engineered using cutting-edge synthetic biology techniques, the prawn mimics the taste and texture of its natural counterpart remarkably well. Consumer taste tests report an even richer and more indulgent flavour, marking a new high in the field of food biotechnology.

BIOX has not just prioritised taste, though. These new artificial prawns also boast a higher nutritional profile, packing more protein and essential amino acids per serving than conventional prawns. The product is also free from antibiotics and other pollutants often associated with traditional aquaculture, offering a cleaner, healthier option for consumers.

Perhaps most significantly, these artificial king prawns are highly scalable. Thanks to the streamlined production process, BIOX can produce large quantities of prawns in a fraction of the time and space required for traditional seafood farming. This efficiency could be key to addressing the looming protein crisis and ensuring global food security.

"We are incredibly proud of this achievement," says Dr. Isabel Chen, CEO of BIOX. "We see this as a critical step forward in the fight against the protein crisis. It's not just about offering a sustainable food source, but also ensuring that food is delicious, nutritious, and accessible to all."

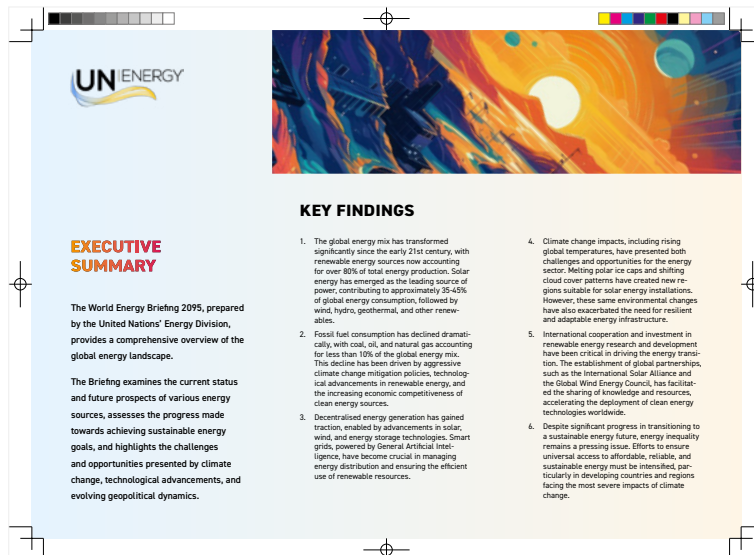
BIOX's breakthrough marks an important milestone in the application of synthetic biology to food production. As the world continues to grapple with the devastating impacts of climate change, such innovations may well be the key to securing a sustainable and resilient food system for future generations.

World Energy Briefing 2095

Energy plays a vital role in shaping social and economic landscapes. Analysing future energy scenarios allows us to identify potential social and economic impacts. Understanding the energy challenges that may arise in the future allows us to build resilient systems capable of adapting to changing circumstances.

The 2095 World Energy Brief presents a speculative projection of the global energy landscape 70 years into the future, based on current technological development trends. The following are the underlying logics behind six key findings.

1. **Renewable energy dominance:** In the decades leading up to 2095, growing concerns over climate change, technological advancements, and supportive government policies have propelled renewable energy sources to the forefront. The shift towards renewables has been driven by the need to reduce greenhouse gas emissions and achieve global sustainability goals. Investments in research and development have led to significant improvements in the efficiency and cost-effectiveness of renewable energy technologies, making them more competitive with traditional fossil fuels.



↑ The printed edition of the World Energy Brief 2095.

2. **Decline in fossil fuel consumption:** The decline in coal, oil, and natural gas consumption is a result of concerted efforts by governments, businesses, and individuals to transition towards a more sustainable energy future. Climate change mitigation policies have included carbon pricing, stricter emissions standards, and phasing out of subsidies for fossil fuels. Additionally, the falling costs and increasing efficiency of renewable energy technologies have made them more economically viable, contributing to the decline in fossil fuel consumption.
3. **Decentralized energy generation:** The increased adoption of decentralized energy generation can be attributed to advancements in renewable energy technologies, particularly solar and wind power, and improvements in energy storage systems. Decentralized energy generation allows communities and individuals to produce their electricity, reducing the strain on centralized power grids and improving energy security and resilience. General Artificial Intelligence has facilitated the efficient management of energy distribution and optimized the use of renewable resources in decentralized energy systems.

4. **Climate change impacts:** The increasing frequency and severity of climate change-related events have highlighted the need for adaptable and resilient energy infrastructure. Rising global temperatures have created new opportunities for solar energy installations in regions previously unsuitable for such projects, like areas exposed by melting polar ice caps. However, these environmental changes also emphasize the importance of investing in infrastructure that can withstand extreme weather events and other climate-related challenges.
5. **International cooperation and investment:** The energy transition has been fueled by global partnerships and collaborations that facilitate knowledge sharing and resource allocation. Initiatives like the International Solar Alliance and the Global Wind Energy Council have enabled countries to work together, pooling resources and expertise to develop and deploy renewable energy technologies more rapidly. This spirit of international cooperation has been crucial in addressing the global challenge of climate change and transitioning towards a sustainable energy future.
6. **Energy inequality:** Despite the significant progress made in transitioning to a sustainable energy future, energy inequality remains an ongoing issue. Access to affordable, reliable, and sustainable energy is essential for economic development and poverty alleviation. Developing countries and regions disproportionately impacted by climate change may face even greater challenges in ensuring energy access for their populations. It is crucial to address these disparities and work towards universal access to clean energy to create a more equitable and sustainable global energy landscape.

King George VII's 80th Birthday Commemorative Mug

The commemorative mug is used as part of the exhibition, contributing to the creation of a 2090s atmosphere for the viewer, along with other artefacts.

The mug represents a specific cultural identity associated with monarchy and the British royal family, symbolising the longstanding history and traditions of London. By featuring such an artefact, the exhibition acknowledges the city's heritage and the role it has played over centuries. It highlights the idea that even in the face of significant

changes due to climate change, London's rich history remains an essential part of its identity.

Meanwhile, souvenir items often evoke nostalgia and emotional attachment. The mug taps into people's emotions, fostering a deeper connection and engagement. This emotional response helps initiate conversations and reflections on the potential impact of climate change on a beloved city.



↑ The Graphic Design of the King George VII's 80th Birthday Commemorative Mug

**WORLD
VIEW**

Climate

This project subscribes to the fundamental worldview of Climate Change that emphasises the grim environmental consequences associated with the rise of global temperatures. Referencing the United Nations Environment Programme's "Emissions Gap Report 2019," it highlights that even if the Paris Agreement's unconditional commitments are fully met, global temperatures are predicted to escalate by approximately 3.2°C. Such a surge in temperature is anticipated to spawn more widespread and damaging climate repercussions.

The Intergovernmental Panel on Climate Change (IPCC) cautions that a temperature increase exceeding the critical threshold of 1.5°C will substantially enhance the frequency and severity of climate disasters. Yet, despite a decade of raising awareness through the "Emissions Gap Report," global carbon emissions persist in their upward trajectory, as per UN Secretary-General António Guterres' remarks.

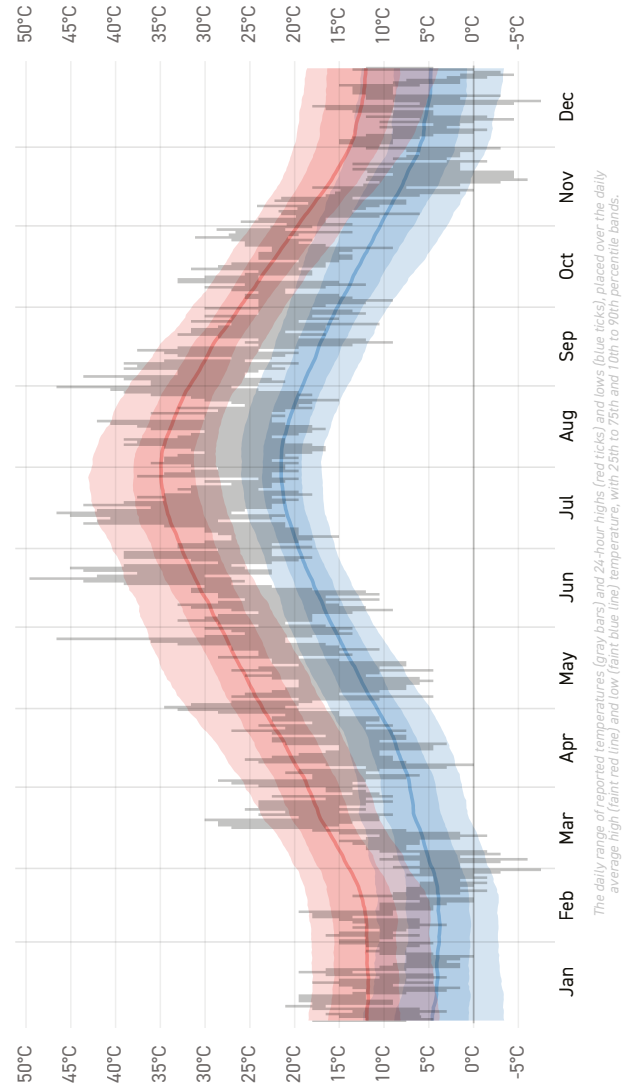
In the project's scenario, the notion of controlling climate change is deemed illusory, arguing that international cooperation often falters when faced with competing national interests. The envisaged future sees **an accelerated transition towards catastrophic climatic alterations with a projected global temperature increase of 3.5°C by century's end**. This escalation includes key areas like polar regions, forests, and oceans. The urban heat island effect would further exacerbate temperature increases in cities, pushing averages between 6-10°C. Climate disasters, within this projected future, would become commonplace, necessitating human adaptation for survival.

By 2095, under this scenario, **London experiences its hottest summer on record with temperatures peaking at 49.8°C**, and the city sees no snowfall for three consecutive winters.

"We are not on track to meet climate change targets and rein in temperature increases," said **WMO Secretary-General Petteri Taalas**. "Greenhouse gas concentrations are once again at record levels and if the current trend continues **we may see temperature increases 3-5°C by the end of the century**. If we exploit all known fossil fuel resources, **the temperature rise will be considerably higher**," he said.

London Temperature History 2095

2095 Weather History in London, United Kingdom.
The data for this report comes from the London Heathrow Airport.



The daily range of reported temperatures (gray bars) and 24-hour highs (red ticks) and lows (blue ticks), placed over the daily average high (faint red line) and low (faint blue line) temperature, with 25th to 75th and 10th to 90th percentile bands.

Society

The society, in response to the escalating climate crisis, has evolved into three distinct factions: the Abandonment Faction, the Adaptation Faction, and the Salvation Faction. Each faction's beliefs and strategies for dealing with climate change differ but are not wholly exclusive.

The Abandonment Faction

The Abandonment Faction is mired in a sense of despair and helplessness, contending that global climate change has reached an irreversible stage. They argue that neither individual nor collective efforts can halt climate change's progression, rendering attention to other concerns more meaningful. This sentiment is borne from prior failures to tackle climate change effectively and challenges engendered by existing economic, political, and social structures.

This faction advocates for:

1. Acceptance of natural climate patterns: They argue that changes in temperature arise from natural phenomena like shifts in solar radiation and the Earth's orbit, not human activities. Hence, Ice ages and interglacial periods are natural cycles unlinked to human influence.
2. Abandonment of contemporary environmental policies: They call for relinquishing environmental

regulations, greenhouse gas emission limits, and clean energy promotions, believing them to be futile gestures incapable of affecting the natural environment but detrimental to businesses and individuals.

3. Cessation of climate change-related investments: They oppose the use of public funds for climate change research or carbon-neutral initiatives, viewing such efforts as pawns of special interest groups. Instead, they suggest redirecting these resources towards social welfare, healthcare, education, and the like.
4. An end to discriminatory fossil fuel policies: They criticise clean energy as expensive, inefficient, and reliant on government subsidies. Consequently, they demand an end to fossil fuel surcharges, thus promoting the unhampered use of traditional, low-cost fossil fuels.

The Adaptation Faction

The Adaptation Faction accepts climate change as a fait accompli that has wrought significant impacts. Therefore, they advocate for climate change adaptation through measures such as infrastructural upgrades, lifestyle modifications, technology and resource developments, and research.

The Adaptation Faction promotes:

1. Resilient infrastructure development: They endorse the creation of robust infrastructure to withstand climate change impacts, like flood barriers and coastal protective installations.
2. Agricultural adaptability: They encourage improved farming and breeding techniques, drought-resistant irrigation facilities, and other adaptive measures for climate change effects.
3. Enhanced urban planning: They favour urban planning that accounts for climate change impacts, like indoor green spaces, rooftop rainwater collection, improved urban drainage, etc.
4. Boosted scientific research and tech innovation: They regard these as vital tools for tackling climate change and thus call for increased funding for relevant research and innovation to devise better adaptation strategies.
5. Limitation of fossil fuel use: They argue that fossil fuel use, given its adverse health impacts, should be banned within city limits to avoid exacerbating air pollution in challenging environments.

The Salvation Faction

The Salvation Faction professes faith in human capacity to reverse climate change through proactive actions and the Earth's ecological recovery ability. They champion scientific research, technological

innovation, greenhouse gas emission reductions, renewable energy use, natural resource protection, and heightened environmental awareness.

The Salvation Faction promotes:

1. Substantial greenhouse gas emission reduction: They assert the existence of unregulated greenhouse gas emissions and urge society-wide investigations to curb emissions, possibly reversing climate change.
2. Expedited energy transformation: They vehemently oppose fossil fuel use, calling for increased governmental investment in renewable energy infrastructure, a UN-led push for nuclear fusion technology, and a total ban on fossil fuels.
3. Sustainable production and consumption: They advocate a circular economy, green consumption, and active public participation in addressing climate change to lessen environmental impact.
4. International cooperation enhancement: They view prior climate actions as meaningful yet insufficient and urge for reinforced international collaboration to collectively tackle climate change.
5. Population reduction: They believe overpopulation exacerbates environmental problems and propose measures like birth control to alleviate human pressure on the environment.

Climate Refugees

Climate refugees, also known as environmental migrants, are individuals or groups forced to leave their homes due to drastic changes in their local environment. These changes, largely driven by climate change, include increased temperatures, sea level rise, extreme weather events, and agricultural instability.

Factors Contributing to Climate Refugees

1. Sea Level Rise and Coastal

Erosion: Sea level rise, a direct consequence of climate change, has led to the inundation and erosion of coastal regions. This has resulted in displacement of communities, particularly those residing on low-lying islands and coastal cities.

2. Extreme Weather Events: The frequency and intensity of extreme weather events such as hurricanes, typhoons, and heavy precipitation have escalated. These events have led to significant loss of life, property, and livelihoods, forcing people to migrate.

3. Drought and Desertification:

Certain regions have experienced severe droughts and desertification due to changing weather patterns. This has disrupted agricultural activities and water supply, driving rural populations to migrate in search of better living conditions.

4. Heatwaves: Record-breaking temperatures have made certain regions uninhabitable, particularly areas already prone to high temperatures. Such extreme heatwaves directly impact human health and productivity, forcing relocation.

Implications of Climate Refugees

The rising number of climate refugees poses considerable social, economic, and political challenges. Countries receiving these refugees must deal with the strain on resources, infrastructure, and services. Furthermore, integrating these refugees into new societies can lead to socio-cultural tensions.

However, the plight of climate refugees also underscores the urgent need for global cooperation to mitigate climate change. This includes efforts to reduce greenhouse gas emissions, develop climate-resilient infrastructure, and implement effective disaster management strategies. It also highlights the need for legal frameworks to recognise and protect the rights of climate refugees.

Energy

The global energy mix has transformed significantly since the early 21st century, with renewable energy sources now accounting for over 80% of total energy production. Solar energy has emerged as the leading source of power, contributing to approximately 35-45% of global energy consumption, followed by wind, hydro, geothermal, and other renewables.

Fossil fuel consumption has declined dramatically, with coal, oil, and natural gas accounting for less than 10% of the global energy mix. This decline has been driven by aggressive climate change mitigation policies, technological advancements in renewable energy, and the increasing economic competitiveness of clean energy sources.

Decentralised energy generation has gained traction, enabled by advancements in solar, wind, and energy storage technologies. Smart grids, powered by General Artificial Intelligence (AGI), have become crucial in managing energy distribution and ensuring the efficient use of renewable resources.

Climate change impacts, including rising global temperatures, have presented both challenges and opportunities for the energy sector. Melting polar ice caps and shifting cloud cover patterns have created new regions suitable for solar energy installations. However, these same environmental changes

have also exacerbated the need for resilient and adaptable energy infrastructure.

International cooperation and investment in renewable energy research and development have been critical in driving the energy transition. The establishment of global partnerships, such as the International Solar Alliance and the Global Wind Energy Council, has facilitated the sharing of knowledge and resources, accelerating the deployment of clean energy technologies worldwide.

Despite significant progress in transitioning to a sustainable energy future, energy inequality remains a pressing issue. Efforts to ensure universal access to affordable, reliable, and sustainable energy must be intensified, particularly in developing countries and regions facing the most severe impacts of climate change.

Further details can be found in the exhibit "World Energy Briefing 2095"

World Economic

The global economic landscape in 2095 has witnessed profound transformations, largely shaped by the severe ramifications of climate change. This report examines the critical trends, challenges, and adaptations that have redefined economic structures and instigated substantial socio-political shifts.

1. Climate Impacts on Infrastructure and Real Estate

A significant rise in sea levels has led to widespread inundation of coastal infrastructure, including cities, ports, and industrial zones. Such disruptions have caused shifts in economic geography, with inland regions gaining prominence, while the previous coastal economic powerhouses witnessed a sharp decline.

2. Agricultural Adaptation and Technological Innovation

Traditional farming has become less viable due to climate-induced irregularities in rainfall and temperature patterns. To counteract this, countries have embraced advanced agricultural technologies. Vertical farming, genetically modified climate-resilient crops, and efficient irrigation systems have taken centre stage, leading to the creation of a new-look agricultural economy.

3. Energy Transition and Economic Realignment

A shift from traditional fossil fuels to renewable sources has become inevitable. Oil and gas have become scarcer and costlier, prompting increased investment in wind, solar, and other forms of renewable energy. The growing focus on renewable energy has created a wave of innovation, job creation, and restructured economies across the globe.

4. Transportation Transformation

Rising sea levels and erratic weather patterns have dramatically reshaped transportation infrastructure, particularly in coastal areas. A resurgence of water-based transport has occurred in many regions, necessitating the growth of associated industries.

5. Government Policies and Investments

Climate-induced economic changes have necessitated alterations in public policies and investments. There has been increased government spending on adaptive infrastructure, sustainable technologies, and climate change research, particularly in the most affected countries. However, disparities in government capacities have led to uneven adaptation efforts globally.

6. Global Economic Power Reshuffling

Adaptation to climate change has become a determiner of economic power in 2095. Countries effectively managing the climate crisis have gained an upper hand in the global economic order, while those struggling with adaptations have faced economic decline.

7. Rising Economic Inequality

Despite successful adaptations in parts of the world, economic inequality has escalated, both within and among nations. Coastal communities and low-income countries have disproportionately borne the brunt of the climate crisis.

8. Outlook

The world economy in 2095 is marked by rapid adaptation, technological innovation, and a race against climate change. The coming decades will test the resilience of economies, the effectiveness of climate policies, and the adaptability of societies to new economic realities.

UK Economic

The world in 2095 is vastly different than the one we know today. Climate change and other environmental crises have accelerated socioeconomic changes worldwide, with the United Kingdom being no exception.

As climate change led to drastic weather changes and sea levels rose, much of the country's infrastructure, especially along the coast, was inundated. This caused a shift in economic geography, with inland regions gaining prominence. This shift resulted in substantial changes to property values, with previously desirable coastal properties becoming nearly worthless and inland properties becoming increasingly expensive.

In the agricultural sector, traditional farming became less viable due to unpredictable weather patterns and prolonged periods of drought and flood. To address this, the UK increasingly turned to advanced agricultural technology, such as vertical farming and genetically modified crops resistant to extreme weather conditions. These changes led to a transformation of the UK's agricultural economy, with an increased focus on technological innovation and development.

The increased severity of weather also resulted in increased energy demand, especially for heating and cooling. Traditional energy sources like oil and gas became increasingly scarce and expensive, leading to an increased focus on renewable energy. Wind and solar power,

already significant contributors to the UK's energy mix, became even more crucial, with technological improvements making them more efficient and less expensive. The increased emphasis on renewable energy led to the growth of related industries and job opportunities, becoming a key part of the UK's economy.

Moreover, the rise in sea levels had a significant impact on transport infrastructure. This led to an increased reliance on water taxis and other water-based transport modes, with services along the Thames becoming especially critical. This, in turn, led to the growth of industries related to water-based transport.

These environmental changes and the resultant economic shifts led to changes in government policy and investment. The UK government increased spending on infrastructure to adapt to these new circumstances, resulting in an economic boost in construction and related sectors. There was also increased investment in education and research, particularly in fields related to environmental science and technology.

London Environment



HM Government

MAYOR OF LONDON

2094 London Environment Report

From: The Office of the Mayor of London

Date: 20 January, 2095

Subject: Climate Change Adaptation and Resilience Strategies in London, 2094

As the Mayor of London and the Greater London Authority (GLA), it is our responsibility to address the critical challenges posed by climate change in the face of rising global average temperatures and increasing frequency of climate disasters. This report provides an overview of the current environmental situation in London, the adaptation and resilience strategies implemented, and recommendations for further action to ensure a sustainable, resilient, and prosperous future for our city and its residents.

1. Introduction

London, a city with a rich history spanning over two millennia, has experienced substantial environmental challenges throughout the 21st century as a result of climate change. Global average temperatures have risen by 3.5°C since the pre-industrial era, causing a domino effect of interrelated environmental issues. The increased frequency and severity of climate disasters, such as extreme precipitation, severe droughts, and powerful superwind events, have left an indelible mark on the city's landscape, infrastructure, and communities.

In addition to the increased incidence of extreme weather, London has grappled with the ongoing consequences of rising sea levels, which have caused devastating impacts on low-lying areas. Flooding has become a recurrent issue, necessitating significant investment in flood defences and long-term urban planning strategies. As a result, some communities have been forced to relocate to higher ground to ensure their safety and well-being.

Despite these significant challenges, London has demonstrated remarkable adaptability and resilience. Through strategic planning, investment, and collaboration among public and private stakeholders, the city has implemented innovative solutions and adapted its infrastructure to withstand these unprecedented environmental pressures. Moreover, London has emerged as a global leader in climate change mitigation and adaptation, inspiring other cities around the world to tackle the challenges posed by a rapidly changing climate.

This report offers a comprehensive overview of the current environmental situation in London and presents the adaptation and resilience strategies that have been implemented in response to these challenges. It also provides recommendations for future action, highlighting the ongoing efforts of the Mayor of London, the GLA, and other stakeholders in ensuring a sustainable, resilient, and prosperous future for our city and its residents.

2. Current Situation

2.1. Climate Disasters

Climate disasters have become increasingly common in London due to the impacts of climate change. Extreme weather events, such as heavy precipitation, severe droughts, and powerful superwind storms, are occurring more frequently and with greater intensity. These events have caused significant damage to the city's infrastructure, disrupted public services, and had a substantial impact on public health.

Heavy precipitation events are becoming more common in London, leading to flash flooding, water-logging, and landslides. These events can cause significant damage to buildings, roads, and other infrastructure, as well as disrupting public transport and essential services.

Additionally, severe droughts are becoming more frequent, leading to water shortages, crop failure, and damage to ecosystems. These events can have long-lasting impacts on the city's residents and environment, exacerbating existing social and economic inequalities.

Powerful superwind storms, such as hurricanes and typhoons, are also a growing concern for London. These events can cause severe damage to buildings, infrastructure, and transport networks. The high winds and heavy rainfall associated with these storms can also cause flooding and landslides, further exacerbating the impacts of the event. Additionally, these events can cause significant disruption to the city's economy, leading to lost productivity and economic activity.

To mitigate the impacts of climate disasters, the city has taken a proactive approach to addressing these events. The city has invested in advanced forecasting and warning systems to alert residents and businesses to upcoming weather events. Additionally, the city has implemented measures to protect infrastructure and essential services, such as the construction of advanced flood defences and the retrofitting of public transport systems to handle increased flooding risks.

London has taken a proactive approach to address these challenges, investing in advanced warning systems, protective measures, and resilient infrastructure to reduce the impacts of climate disasters.

2.2 Flooding and Sea Level Rise

Low-lying areas of London, particularly those along the Thames, are experiencing increased flooding due to rising sea levels. This is a result of the melting of polar ice caps and glaciers, as well as the thermal expansion of seawater due to rising global average temperatures. These events have necessitated the implementation of robust flood defences and the relocation of some communities to higher ground.

The flooding of low-lying areas in London is a major concern for the city. It can lead to substantial damage to buildings, infrastructure, and essential services, as well as having a significant impact on public health. In particular, flooding can cause damage to the city's transportation systems, disrupting public transport and emergency services. Additionally, flooding can cause significant economic losses, with businesses and individuals facing significant costs to repair and replace damaged property.

Rising sea levels are also causing long-term damage to the city's infrastructure. The Thames Barrier, a major flood defence system, was built in the 1980s to protect the city from storm surges and rising sea levels. However, the barrier is now becoming increasingly outdated and may not be sufficient to protect the city from the increasing frequency and severity of climate disasters. As a result, the city is investing in advanced flood defences, such as the Thames Barrier 2.0, to protect the city's low-lying areas from flooding.

The relocation of some communities to higher ground is also an essential component of the city's adaptation and resilience strategies. This has been a difficult and complex process, requiring careful planning and coordination with local communities. However, it is essential to ensure the safety and well-being of residents in low-lying areas of the city. The relocation process has also provided an opportunity for the city to rethink and redesign its urban infrastructure, incorporating sustainable and resilient design principles.

Rising sea levels and flooding pose significant threats to London's infrastructure, communities, and public health. The city has implemented robust flood defences, invested in advanced warning systems, and relocated some communities to higher ground to mitigate the impacts of these events. However, it is clear that further action is required to ensure the city's long-term resilience in the face of climate change. The Mayor of London and the Greater London Authority remain committed to addressing these challenges and creating a sustainable, resilient, and prosperous future for the city and its residents.

3. Adaptation and Resilience Strategies

3.1. Infrastructure

London has invested heavily in adaptive infrastructure to cope with the changing climate. The city has recognised the importance of infrastructure in ensuring the city's resilience and sustainability in the face of climate change. This includes the construction of advanced flood defences, such as the Thames Barrier 2.0, to protect the city from storm surges and rising sea levels. Additionally, resilient buildings have been designed to withstand extreme weather events and incorporate green technologies to reduce their environmental impact.

The Thames Barrier 2.0 is one of the most significant infrastructure projects undertaken by the city in recent years. The barrier is a movable flood defence system that can be raised and lowered to protect the city from rising sea levels and storm surges. The new barrier is designed to be more resilient and sustainable than the original barrier, incorporating advanced technologies and sustainable design principles. The barrier is also designed to be flexible, allowing it to adapt to changing climate conditions and protect the city from future climate disasters.

Resilient buildings are also a critical component of the city's infrastructure. These buildings are designed to withstand extreme weather events, such as high winds and heavy rainfall. They incorporate advanced technologies and materials to reduce their environmental impact, such as energy-efficient lighting and HVAC systems, green roofs, and solar panels. Additionally, resilient buildings incorporate natural ventilation and lighting, reducing their reliance on artificial energy sources.

The city has also invested in upgrading its transportation infrastructure to ensure minimal disruption during extreme weather events. The city's transportation system has been upgraded to withstand increased flooding risks, with retrofitted public transportation networks such as the Underground. The introduction of autonomous electric vehicles has also helped to reduce emissions and relieve congestion on the city's roads.

To ensure the city's infrastructure remains resilient and sustainable, the city has implemented a range of measures to promote circular economy practices and reduce waste. These measures include the implementation of advanced waste management and recycling systems, reducing the amount of waste sent to landfill and promoting the reuse of materials. Additionally, the city has implemented a range of energy-efficient systems, such as LED street lighting and energy-efficient buildings, to reduce energy consumption and greenhouse gas emissions.

3.2. Transportation

The city's transportation system has faced significant challenges due to the impacts of climate change, particularly in low-lying areas where rising sea levels have led to the permanent submersion of some neighbourhoods. Consequently, several surface railways, including parts of the Overground and National Railway lines, have been permanently closed. Additionally, numerous underground stations in East London have been shuttered due to their low altitude and increased flood risks.

In response to these challenges, Transport for London (TfL) has undertaken a series of strategic initiatives to ensure the reliability, accessibility, and sustainability of London's transportation network:

3.2.1. Elevated Rail Infrastructure

TfL has constructed elevated railway lines and stations to replace the submerged and flood-prone sections of the Overground and National Railway lines. This elevated infrastructure is designed to be resilient to extreme weather events and resistant to future sea level rise.

3.2.2. Flood-Resistant Underground Stations

TfL has retrofitted existing underground stations with advanced flood-resistant technologies, including watertight doors, flood barriers, and improved drainage systems. New underground stations have been designed with these features from the outset, ensuring the long-term viability of London's iconic Tube network.

3.2.3. Autonomous Electric Vehicles

In partnership with the private sector, TfL has accelerated the adoption of autonomous electric vehicles, reducing emissions and alleviating congestion. A comprehensive network of electric charging stations has been established throughout the city, with priority given to areas where public transportation access has been diminished due to climate impacts.

3.2.4. Expanded Waterborne Transportation

Given the challenges faced by land-based transportation, TfL has significantly expanded waterborne transportation options along the Thames and other waterways. This includes the addition of new water taxi routes, electric-powered ferries, and amphibious buses, all contributing to a more resilient and diversified transportation system.

3.2.5. Active Transportation Infrastructure

TfL has invested heavily in the development of pedestrian and cycling infrastructure to promote active transportation and reduce reliance on motorised vehicles. This includes the creation of extensive cycling networks, pedestrian bridges, and traffic-calming measures, making London a more walkable and bike-friendly city.

3.2.6. Integrated Mobility-as-a-Service (MaaS) Platform

To facilitate seamless multimodal transportation, TfL has developed an integrated Mobility-

as-a-Service (MaaS) platform that combines real-time information from various transport modes, including public transit, ride-sharing, bike-sharing, and waterborne transportation. This platform enables users to plan and pay for their journeys across different transport options, increasing the efficiency and flexibility of London's transportation system.

These efforts by TfL have been instrumental in ensuring that London's transportation network remains reliable, accessible, and sustainable, even as the city grapples with the challenges posed by climate change and rising sea levels.

3.3. Green Spaces and Urban Ecology

London has prioritised the creation of green spaces and the preservation of urban biodiversity as a key part of its climate change adaptation and resilience strategies. The city recognises that green spaces can help mitigate the urban heat island effect, absorb excess rainfall, and provide habitat for wildlife, all while enhancing the quality of life for its residents.

To achieve this, London has implemented a range of initiatives to create green spaces and preserve urban biodiversity. One of the most notable initiatives has been the establishment of numerous urban forests, which are large areas of land designated for the growth of trees and other vegetation. These forests help to absorb carbon dioxide from the atmosphere, mitigate the effects of climate change, and provide important habitat for a variety of wildlife.

In addition to urban forests, London has also implemented green roofs and vertical gardens, which are designed to provide additional green space in urban areas where space is limited. Green roofs are covered in vegetation, while vertical gardens are designed to grow plants on the sides of buildings, providing additional insulation, reducing energy use, and helping to regulate temperature.

London has also created numerous community gardens and allotments, which provide residents with the opportunity to grow their own food and participate in community gardening projects. These gardens help to foster a sense of community and encourage the production of local food, reducing the need for transportation and promoting sustainable agriculture practices.

Furthermore, London has introduced policies and programs to protect and preserve its urban biodiversity. The city has created wildlife corridors to connect green spaces and allow wildlife to move freely between them. Additionally, the city has created protected areas for wildlife, such as nature reserves and parks, to provide important habitats for endangered species.

To support the development of green spaces and urban ecology, the city has also invested in green infrastructure. This includes the installation of rain gardens, which are designed to capture and absorb rainwater, reducing the risk of flooding and providing additional habitat

for wildlife. London has also introduced green walls and green roofs on public buildings to promote biodiversity and mitigate the urban heat island effect.

Finally, London has implemented education and outreach programs to promote the importance of green spaces and urban ecology to residents. This includes providing educational resources on sustainable gardening practices, wildlife conservation, and the benefits of green spaces for human health and well-being.

3.4. Energy and Resource Management

To address the challenges of climate change and improve its sustainability, London has transitioned to a predominantly renewable energy system, reducing greenhouse gas emissions and improving air quality. The city has also implemented advanced waste management and recycling systems to minimise resource consumption and promote circular economy practices.

In terms of energy management, London has implemented a range of policies and initiatives to promote renewable energy generation and reduce greenhouse gas emissions. The city has invested in renewable energy technologies, including wind, solar, and hydropower, and has established policies to encourage the use of low-carbon energy sources, such as biomass and geothermal energy. Additionally, the city has introduced smart grid technologies to improve the efficiency of energy distribution and storage.

London has also implemented a range of energy efficiency measures to reduce energy consumption and improve energy performance in buildings. This includes the implementation of energy performance standards for buildings and the introduction of financial incentives for building owners to invest in energy efficiency upgrades. The city has also introduced policies to encourage the use of energy-efficient appliances and lighting in homes and businesses.

To manage resources, London has implemented advanced waste management and recycling systems. The city has introduced a "zero waste" policy, which aims to reduce the amount of waste generated in the city and maximise resource recovery through recycling and composting. London has invested in recycling infrastructure, including waste separation facilities, composting facilities, and recycling centres, to improve the efficiency of waste management and increase recycling rates.

London has also introduced circular economy practices to reduce the consumption of natural resources and promote the reuse and recycling of materials. This includes initiatives to promote the sharing economy, such as bike-sharing schemes and car-sharing schemes, and the implementation of product stewardship programs to ensure the responsible disposal of products and materials at the end of their life cycle.

In addition to these initiatives, London has also implemented policies to improve air quality, such as the introduction of low-emission zones, which restrict the most polluting vehicles from entering certain areas of the city. The city has also introduced programs to promote active transportation, such as cycling and walking, to reduce reliance on private vehicles and improve air quality.

Finally, London has implemented education and outreach programs to promote sustainable energy and resource management practices to residents and businesses. This includes providing educational resources on energy efficiency, waste reduction, and circular economy practices.

London has implemented a range of policies and initiatives to improve its energy and resource management practices, reduce greenhouse gas emissions, and promote circular economy practices. The city's transition to renewable energy, introduction of energy efficiency measures, advanced waste management and recycling systems, circular economy practices, and promotion of active transportation and education and outreach programs highlight its commitment to building a sustainable and resilient future for its residents. These efforts have significantly enhanced London's resilience to the challenges posed by climate change and demonstrate its leadership in addressing environmental issues.

4. Monitoring and Evaluation

To ensure the effectiveness of our adaptation and resilience strategies, the GLA will:

4.1. Establish a Climate Resilience Monitoring and Evaluation Framework

The GLA has established a comprehensive Climate Resilience Monitoring and Evaluation Framework to track the progress of its climate change adaptation and resilience strategies. This framework includes a range of components that enable the GLA to evaluate the effectiveness of its initiatives and refine its strategies as needed.

The first component of the framework is a set of key performance indicators (KPIs), which provide a standardised and consistent way to track progress across different initiatives. The KPIs cover a range of topics, including greenhouse gas emissions, energy consumption, air and water quality, waste management, and climate resilience. By tracking progress against these KPIs, the GLA can identify areas where additional action is needed and evaluate the effectiveness of different initiatives.

To support the collection and analysis of data, the GLA has established a range of data management systems and tools. These systems enable the GLA to collect and manage data from a range of sources, including sensors, surveys, and other data-gathering methods. The GLA also uses advanced data analytics and visualisation tools to analyse and present data in a clear and accessible way, making it easier to identify trends and areas for improvement.

To ensure the accuracy and reliability of data, the GLA has also established a range of quality control measures. These measures include regular checks and audits of data sources, as well as training programs for staff and stakeholders to ensure that data is collected and managed in a consistent and reliable way.

In addition to these components, the Climate Resilience Monitoring and Evaluation Framework also includes a system for reporting and communicating progress to stakeholders. The GLA regularly produces reports and updates on the progress of its initiatives, which are made publicly available to ensure transparency and accountability. The GLA also engages with stakeholders, including community groups, businesses, and academic institutions, to gather feedback and incorporate input into its monitoring and evaluation efforts.

Finally, the Climate Resilience Monitoring and Evaluation Framework is designed to be adaptive and flexible, allowing the GLA to refine its strategies as needed. The GLA regularly reviews and updates the framework to ensure that it remains effective and relevant in the face of evolving environmental challenges and emerging trends.

4.2. Conduct Regular Environmental Assessments

The GLA conducts regular environmental assessments to understand the evolving environmental challenges faced by the city and to inform the development of future plans and policies. These assessments cover a range of environmental factors, including air quality, water quality, biodiversity, and climate resilience.

Air quality assessments are a key component of the GLA's environmental assessment program. The city regularly measures air pollution levels using a range of monitoring methods, including stationary monitoring stations, mobile monitoring units, and low-cost sensors. This data is used to identify areas where air quality is poor and to evaluate the effectiveness of air pollution reduction initiatives.

Water quality assessments are also a critical part of the GLA's environmental assessment program. The city monitors water quality in the River Thames, as well as in smaller rivers and streams throughout the city. This data is used to identify areas where water quality is poor and to guide efforts to reduce pollution and improve water quality.

Biodiversity assessments are another important component of the GLA's environmental assessment program. The city conducts surveys to identify and monitor plant and animal

species within its boundaries, as well as to assess the quality of their habitats. This data is used to inform efforts to protect and enhance biodiversity within the city.

Climate resilience assessments are also conducted on a regular basis to understand the evolving risks and challenges posed by climate change. These assessments evaluate the city's vulnerability to extreme weather events, rising sea levels, and other climate-related risks. This data is used to inform the development of climate adaptation and resilience strategies and to guide efforts to build a more climate-resilient city.

To support these assessments, the GLA has established a range of partnerships and collaborations with academic institutions, non-governmental organisations, and other stakeholders. These partnerships help to leverage expertise and resources to improve the city's environmental resilience and facilitate the exchange of best practices and knowledge-sharing.

In conclusion, the GLA's regular environmental assessments provide critical data and insights that inform the development of policies and initiatives to protect and enhance the city's environment. By monitoring air and water quality, biodiversity, and climate resilience, the GLA is able to identify areas where action is needed and guide efforts to build a more resilient and sustainable future for London. The GLA's partnerships and collaborations with stakeholders highlight its commitment to collaboration and knowledge-sharing and ensure that the city remains at the forefront of environmental resilience and adaptation.

4.3. Foster Collaboration with Global Partners

The GLA recognises that climate change is a global challenge that requires global solutions. To this end, the GLA fosters collaboration with a range of global partners, including other cities, regions, and countries facing similar challenges. These partnerships help to leverage expertise, resources, and best practices to build a more resilient and sustainable world.

One key partner for the GLA is the C40 Cities Climate Leadership Group, a network of over 90 cities committed to taking bold action on climate change. Through this partnership, the GLA is able to share knowledge and best practices with other leading cities, as well as collaborate on joint initiatives and advocacy efforts.

The GLA also collaborates with other cities and regions facing similar environmental challenges. For example, the GLA has a partnership with New York City to share expertise and collaborate on initiatives to reduce greenhouse gas emissions and build climate resilience. Similarly, the GLA collaborates with other European cities through networks such as Eurocities and the European Union's Covenant of Mayors.

The GLA also collaborates with national and international organisations to promote greater global action on climate change. For example, the GLA is a signatory to the Paris Agreement,

a global agreement to limit global warming to below 2 degrees Celsius. The GLA also engages with international organisations such as the United Nations and the World Bank to advocate for greater action on climate change and promote innovative solutions.

To facilitate these partnerships and collaborations, the GLA regularly hosts and participates in global conferences and events. For example, the GLA hosted the Cities Climate Action Summit in 2019, which brought together representatives from over 50 cities to discuss best practices and strategies for reducing greenhouse gas emissions and building climate resilience.

5. Recommendations for Further Action

To ensure continued resilience in the face of climate change and to maintain London's position as a global leader in sustainable urban development, we propose the following recommendations for further action:

5.1. Strengthen Community Engagement and Preparedness

Empower local communities to develop and implement localised resilience strategies by providing education, resources, and support. This includes the development of community-based emergency preparedness plans, the establishment of local support networks, and the promotion of volunteer-driven initiatives to enhance neighborhood-level resilience.

5.2. Enhance Climate Change Education

Promote climate change education and awareness across all age groups and sectors, with a focus on fostering a deep understanding of the challenges, opportunities, and solutions associated with climate change. Encourage schools, universities, and community organisations to incorporate climate change education into their curricula and outreach programs, and engage businesses in adopting sustainable practices.

5.3. Support Research and Innovation

Invest in research and development to drive innovation in sustainable technologies, urban planning practices, and climate-resilient infrastructure. Establish research partnerships with academic institutions, businesses, and international organisations to develop and share cutting-edge solutions, positioning London as a global hub for climate resilience research and innovation.

5.4. Encourage Green Business Development and Job Creation

Provide incentives and support for the development of green businesses and industries, creating jobs and economic growth opportunities in the sustainable sector. Develop workforce training and upskilling programs to equip Londoners with the skills and knowledge required to thrive in a low-carbon, climate-resilient economy.

5.5. Strengthen Climate Change Legislation and Policy

Review and update existing legislation and policies to ensure they adequately address the evolving challenges posed by climate change. Consider the development of new policies and regulations that encourage the adoption of climate-resilient practices across various sectors, including transportation, housing, energy, and waste management.

5.6. Improve Cross-Sector Collaboration

Foster collaboration and communication among various sectors, including government agencies, businesses, non-profit organisations, and local communities, to facilitate the development and implementation of comprehensive and integrated climate resilience strategies.

5.7. Enhance Regional and International Cooperation

Strengthen regional and international cooperation to share knowledge, best practices, and resources in addressing climate change challenges. Engage in collaborative projects and initiatives with other cities, regions, and countries facing similar issues to build a more resilient and sustainable world.

By implementing these recommendations, London will continue to bolster its climate change resilience and contribute to global efforts to mitigate the impacts of climate change, ensuring a sustainable, thriving, and inclusive future for our city and its residents.

The challenges posed by climate change are immense, but so too are the opportunities for innovation, collaboration, and transformation. By taking these next steps, the Mayor of London and the Greater London Authority will remain committed to ensuring a sustainable, resilient, and prosperous future for our city and its residents. Together, we will rise to the challenge and create a thriving, inclusive London that can withstand the tests of time and climate.

Factors Contributing to the Inundation of Several Areas in London in 2095

1. Sea-level rise due to climate change:

One of the major consequences of climate change is the rising sea levels, caused by the melting of polar ice caps and glaciers, as well as the thermal expansion of seawater. London, situated along the River Thames, is particularly vulnerable to the impacts of sea-level rise. As global temperatures continue to increase, it is expected that sea levels will rise further, increasing the risk of coastal and riverine flooding in London.

2. Increased precipitation and extreme weather events:

Climate change is also expected to lead to changes in precipitation patterns and an increase in the frequency and severity of extreme weather events, such as storms and heavy rainfall. These events can overwhelm drainage systems and cause flash floods, which could affect various areas of London.

3. Tidal surges and storm surges:

London is exposed to the risk of tidal surges and storm surges from the North Sea, which can result in flooding along the Thames estuary. With climate change, it is expected that storm surges will become more severe and frequent, further increasing the risk of flooding in the city.

4. Inadequate flood defences and infrastructure:

London's existing flood defences and infrastructure, such as the Thames Barrier, were designed to cope with historical flood levels and may not be sufficient to protect the city from the increased risk of flooding due to climate change. If adequate measures are not taken to upgrade and maintain flood defences, London could become increasingly vulnerable to flooding.

5. Land subsidence:

Parts of London are built on clay soils that are susceptible to subsidence or sinking over time. Land subsidence can exacerbate the risk of flooding by reducing the elevation of areas above sea level, making them more prone to inundation from rising sea levels and storm surges.

6. Urbanisation and loss of natural flood mitigation:

Continued urbanisation and development in London can lead to the loss of green spaces and natural landscapes, which can help mitigate the impacts of flooding by absorbing rainwater and reducing surface runoff. Increased impervious surfaces, such as roads and buildings, can further contribute to surface water flooding during heavy rainfall events.

Residential Structures

Wealthy Class Occupying 0.05% of the global population.

Building Design.

Intelligence for Architects

The Architects' favourite AR news site in 2060



Stratford Oasis: A Sustainable Luxury Haven Rises Amidst the Climate Crisis

LONDON, UK - 2061 - Against the backdrop of a world beset by climate disasters and extreme weather, Stratford's most iconic high-rise apartment building, previously known as Legacy Tower, has been transformed into a futuristic, sustainable oasis of luxury living, renamed as Stratford Oasis. This remarkable renovation comes as a response to the worsening climate crisis and the dire need for more sustainable living spaces.

Following a complete renovation, the tower has been reimagined as an AI-assisted, self-sufficient structure designed to withstand the worst effects of climate change. The building's exterior is coated in a specially-developed, superhydrophobic material, designed to repel water and resist corrosion, making it impervious to even the most severe weather conditions. The exterior also features a self-healing, temperature-regulating facade made from advanced nano-materials, which not only absorbs and dissipates heat but also repairs any cracks or damage caused by extreme weather events.

The interior of Stratford Oasis is equally impressive, with smart home technology and GAI-controlled energy systems that optimise energy usage and minimise waste. The building features a vertical farm, which spans multiple levels of the structure, providing residents with fresh produce and contributing to the building's self-sustainability.

Stratford Oasis also addresses the growing issue of water scarcity by employing a state-of-the-art rainwater harvesting system. The building captures and stores rainwater, which is then purified and used for various purposes, such as irrigation, flushing toilets, and even for human consumption after undergoing advanced filtration processes.

The tower's owners have partnered with local transportation authorities to develop a high-speed, sustainable transportation system that connects the tower to other parts of the city. The system is powered by renewable energy sources and is designed to minimise its impact on the environment, offering residents a convenient, sustainable way to get around.

Stratford Oasis offers 100 luxury apartments, ranging in size from one to four bedrooms, each designed to provide a sanctuary of comfort and sophistication amidst a world in chaos. The tower's amenities include a private gym, a rooftop terrace with panoramic views of the city, a cinema room, and 24-hour concierge services.

As the world continues to grapple with the effects of climate change, structures like Stratford Oasis offer a glimpse of a sustainable, resilient future, where luxury living and environmental consciousness go hand in hand.

Working Class

In the face of climate change and widening socio-economic disparities, the living conditions for the working class have undergone a stark transformation. The following is a detailed account of the average residential structures:

1. Enhanced Insulation: To resist the drastic temperature differences brought about by climate change, the working class have adapted by thickening the walls of their homes. This insulation measure, though functional, results in less usable space, making the interiors feel cramped and restrictive. The rooms are smaller, often accommodating multiple functions in a single space due to the reduced footprint.

2. Sealed Environments: Due to the violent winds and severe air pollution, the working class had to completely close off windows and rely on an improvised ventilation system. This sealing-off further compounds the feeling of confinement, with homes resembling bunkers more than traditional houses.

3. Artificial Lighting: As natural light is scarce due to the sealing off of windows, homes are mostly lit by artificial light. While attempts have been made to use biologically adjusted lighting systems that mimic the diurnal cycle, the absence of natural

sunlight affects the physical and psychological well-being of the occupants. Vitamin D deficiencies and circadian rhythm disorders become common health issues.

4. Rudimentary Climate Control: While advanced climate control systems are a luxury only the wealthy can afford, the working class resorts to makeshift solutions. These might include manually operated heat exchange units, or DIY air-conditioning systems repurposed from old vehicle parts or discarded electronics.

5. Shared Facilities: As individual housing becomes increasingly expensive and space-constrained, many working-class communities have moved towards shared facilities. Common kitchens, bathrooms, and laundry areas are the norm, and community gardens or shared outdoor spaces offer a semblance of interaction with nature.

6. Vertical Expansion: To combat the rising sea levels and reclaim land lost to floods, there has been a trend towards vertical expansion. Multiple-storey buildings, some crudely stacked atop one another, have become a common sight in working-class neighborhoods.

Dietary Preferences

As climate change continues to exert its influence on ecosystems worldwide, dietary patterns have undergone substantial transformations in order to accommodate the changing environmental conditions. The following analysis provides a comprehensive overview of the dietary preferences observed among individuals in the year 2095.

1. Plant-based diets: With the dwindling supply of seafood due to the extinction of coral reefs, people have leaned heavily towards plant-based diets. The loss of fisheries and subsequent reduction in protein sources have compelled society to find alternatives. Innovations in agriculture and the development of plant-based proteins that mimic traditional meat products have gained widespread acceptance.

2. Insect protein: Due to the loss of traditional protein sources, insects have become a common protein staple. They are far more efficient to farm than traditional livestock, and their environmental footprint is significantly smaller. Crickets, mealworms, and other insects are incorporated into the diet in various forms, often ground into a flour and used in a variety of foods.

3. Lab-grown meat and seafood: Biotechnology has advanced to the point where lab-grown meat and seafood have become

affordable and widely available. These cultured products offer a sustainable source of protein that doesn't rely on increasingly scarce natural resources.

4. Seaweed and Algae: With the decline in traditional seafood, seaweed and algae farming have surged. These marine crops are harvested for their high nutritional value and versatility in cooking, providing an important food source for coastal communities and beyond.

5. Hydroponic and Vertical Farming: In an effort to maximize food production in a changing climate, many crops are now grown hydroponically in vertical farms. These high-efficiency urban farms produce a variety of fruits, vegetables, and grains, contributing significantly to the urban food supply.

BIOX

BIOX, as a leading biotechnology company, it serves as an emblem of human innovation and resilience amidst a drastically altered environment due to climate change.

Established in the mid-21st century, BIOX rose to prominence amidst an escalating global climate crisis. It reflects the transformative role of biotechnology in addressing the unprecedented challenges posed by severe climatic shifts. While the crisis was worsening, BIOX adopted a humanitarian approach, focussing on developing affordable survival solutions for the majority of the global population that couldn't afford the prohibitive costs of overground bunkers and underground cities.

BIOX's most renowned offering is the Urban Survival Kit (USK) Essential, launched in 2087. This kit signifies the convergence of biotechnological innovation and design adaptation to climate change. Each iteration of the USK, culminating in the 9th generation USK Essential displayed at the exhibition, showcases BIOX's commitment to updating its survival solutions to meet evolving environmental challenges.

What sets BIOX apart is its mission to democratise access to survival technology. It envisions a world where over a billion people can survive and thrive amidst the changing climate by the end of the century. BIOX's contributions serve as an example of how design and technology can contribute to social resilience, transforming a dystopian future into a testament to human adaptability.



↑ BIOX logo.

**YOUR
VOICE**

What was your first thought when you saw this map?

London



**Do you like this future?
If not, whose fault is this?**

FURTHER READING

FURTHER READING

If you are interested in delving deeper into the themes and ideas presented in this exhibition, the following reading materials are suggested. These works offer valuable insights into the realities of climate change and human adaptation strategies:

“The Uninhabitable Earth: Life After Warming” by David Wallace-Wells

A profound examination of the potential outcomes of unchecked climate change. Wallace-Wells paints a sobering picture of our planet’s future and urges for immediate action.

“Learning to Die in the Anthropocene: Reflections on the End of a Civilization” by Roy Scranton

This book confronts the existential crisis of climate change, arguing for a new perspective on human existence and the need to reconceptualise our relationship with the natural world.

“The Future We Choose: Surviving the Climate Crisis” by Christiana Figueres and Tom Rivett-Carnac

Written by the architects of the 2015 Paris Climate Change Agreement, this book outlines two possible scenarios for our planet and details practical steps for achieving the best outcome.

These resources will provide a comprehensive understanding of the current and future realities of climate change, as well as the steps being taken towards mitigation, adaptation, and resilience. You are highly encouraged to explore these works to better comprehend the themes portrayed in the exhibit.

“Six Degrees: Our Future on a Hotter Planet” by Mark Lynas

Based on a wide range of scientific reports and projections, Lynas outlines the drastic changes to be expected with each incremental increase in global temperature.

“The Water Will Come: Rising Seas, Sinking Cities, and the Remaking of the Civilized World” by Jeff Goodell

Goodell provides an insightful exploration of the impact of rising sea levels on our cities and infrastructure, discussing the measures needed to protect our future.

“Adaptation to Climate Change: From Resilience to Transformation” by Mark Pelling

A comprehensive resource for understanding climate adaptation strategies, Pelling’s work discusses resilience, transition, and transformation as key concepts in the adaptation process.

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It is the shared wisdom, encouragement, and expertise of these individuals that have greatly contributed to this project's success. For this, my sincerest thanks and appreciation.



Thank you for reading this guidebook. Your attention to the matter of climate change is greatly appreciated.

For this project, your insights and suggestions are highly valued. Please feel free to reach out to me with any comments or feedback.

Thank you.

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