CARING FOR COUNTRY

ADDRESSING CLIMATE CHANGE AND ENHANCING ENVIRONMENTAL PERFORMANCE

DEVELOPMENT OF A BENCHMARKING TOOL FOR IUIH AND ITS CLINICS

This report was completed as part of Griffith University's Student Placement with IUIH, in collaboration with Supervisor Zoe Ramsden and with support from others within IUIH for the Caring for Country Project within IUIH.

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TABLE OF CONTENTS

Acknowledgement of Country

I respectfully acknowledge the Goori Tribal Nations as the traditional custodians of the land on which this report was written and compiled. I pay my deepest respects to Elders, both past and present, and honor the legacy and vision of those who have paved the way, as well as those who continue to guide us with wisdom and strength.

I recognize that the concept of ‘country’ encompasses far more than the physical land. It includes profound and intrinsic connections to the sky, sea, and waterways, and all living things that form the fabric of this region. These connections have nurtured and sustained the Goori people for countless generations, fostering a deep spiritual, cultural and practical relationship with the environment.

May we walk together with the Goori Nations, learning from their rich heritage and ensuring that their voices and traditions continue to be heard and respected. In doing so, I honor their enduring connection to this country and commit to the ongoing journey of reconciliation and mutual respect.

Executive Summary

This report details the development of a benchmarking tool for the Institute for Urban Indigenous Health (IUIH) and its clinics, aimed at understanding and enhancing environmental performance and addressing climate change impacts. As Australia's largest Aboriginal and Torres Strait Islander Community Controlled Health Organization, IUIH is committed to providing comprehensive healthcare while also Caring for Country-a principle deeply rooted in the cultural and spiritual connection to land, sea, and sky.

Healthcare sectors, while advancing medical care, significantly contribute to greenhouse gas (GHG) emissions, energy consumption, and waste production. Globally, healthcare accounts for 4- 5% of total GHG emissions, while in Australia, the healthcare sector contributes to 7% of the country's total GHG emissions. Although, IUIH's footprint is minor compared to healthcare systems such as large hospitals, it plays a crucial role in serving Indigenous communities, who are disproportionately affected by climate change.

The benchmarking tool aims to help IUIH, and its clinics understand their climate impact, reflect on current operations, and plan for necessary changes to align with environmental principles. This tool not only supports IUIH's obligation to Care for Country but also enhances operational efficiency and substantiality. The tool quantifies the environmental impact of CO2e emissions enabling systematic improvement in environmental performance, alignment with sustainability goals, and upholding commitments to community and Country.

The tool's development involved identifying suitable metrics and emission factors, influenced by the Greenhouse Gas Emissions Calculator by the UNFCCC and Climate Impact Checkup tool by Health Care Without Harm. Metrics were selected based on their relevance to IUIH's operations, covering three scopes of emissions as defined by the GHG Protocol Corporate Standard. The scopes were:

Scope 1: Direct emissions from owned or controlled sources, including stationary combustion, mobile combustion, fugitive emissions, and solid waste disposal.

Scope 2: Indirect emissions from purchased electricity, accounting for market-based emissions from electricity generation and transmission and distribution (T&D) losses.

Scope 3: Other indirect emissions within the value chain, including business trips, employee commuting, inhalers, incineration, and water supply.

Despite the tool's capabilities, several improvements can be made:

- Obtain expert review of the tool.
- Compare results with state or national averages for other community-based organizations of a similar size and footprint to gauge impact.
- Expand metrics for a more comprehensive tool.
- Update emission factors specific to Queensland as they become available in the National Inventory Report from the Department of Climate Change, Energy, the Environment and Water.

Future research should explore expanding or refining metrics to better reflect IUIH's true impact. Additionally, developing a complementary tool focused on climate change adaptation could provide a more holistic approach. The final benchmarking tool, presented as an Excel file, includes a glossary, guidance for data collection and section for performance reflection. This tool is crucial for IUIH's efforts in enhancing environmental performance, aligning with sustainability goals, and fulfilling their commitment to Caring for Country.

1. Introduction

1.1 Background

The Institute for Urban Indigenous Health (IUIH), established in 2009 by its four founding members, plays a crucial role in enhancing the health and well-being of Aboriginal and Torres Strait Islander communities in Southeast Queensland (SEQ). As a consortium of multiple Indigenous health organizations, IUIH provides comprehensive care through a network of 19 clinics, serving a dramatically increasing population—from 59,483 people in 2011 to an estimated 129,224 in 2023. Its integrated approach combines primary, social, and preventive health services within a culturally safe framework, known as the IUIH System of Care (ISoC).

IUIH's impact is demonstrated through initiatives like Birthing in Our Community (BiOC) and Deadly Choices, which promote culturally tailored maternal health services and healthier lifestyles, respectively. The network addresses a broad spectrum of needs with a one-stop-shop model that offers preventive health, chronic disease care, mental health, aged care, and more, providing seamless care across the life course. Recently, IUIH has intensified its focus on environmental sustainability and is proactively addressing the health impacts of climate change on Indigenous populations, highlighting their commitment to both community health and cultural resilience (IUIH Information Pack, 2023).

1.2 Caring for Country by Addressing Climate Change Impacts on Aboriginal and Torres Strait Islander Communities

IUIH commits to a custodial ethic towards Country by reducing environmental impact, emphasizing waste management in building design, conserving resources, and enhancing workplace safety. Key principles include reducing energy consumption, using renewable energy, adopting sustainable procurement, and redesigning waste, transport, and water use strategies to best reflect IUIH's respect for and obligation to care for Country.

Caring for Country is a holistic environmental management approach that integrates Aboriginal and Torres Strait Islander people's traditional knowledge and cultural practices with contemporary conservation strategies (IUIH, 2019). This concept emphasizes the indigenous stewardship of land and resources, reflecting a deep spiritual and cultural connection to the land. IUIH honors the traditional practices that have been upheld for tens of thousands of years and acknowledges the profound responsibility and ethical duty to care for the Country to protect and preserve the heritage of its people. By respecting the voices, knowledge, wisdom, and guidance of our ancestors and ensuring these voices are recognized and acted on today, the Caring for Country initiative also influences policymaking and strengthens community cohesion. These practices are vital for the preservation of biodiversity, sustainability of resources, and the overall well-being of both the ecosystem and Indigenous communities.

Numerous studies indicate that Aboriginal and Torres Strait Islanders will be more vulnerable to the impacts of climate change. According to Department of Health and Aged Care (2023), climate change adversely affects Indigenous Peoples health by impacting cultural and social determinants such as connection to country, housing

infrastructure, and food and water security. Extreme weather events, loss of biodiversity, and the destruction of Country due to climate change can significantly harm physical, social, and emotional wellbeing of Indigenous Peoples. This heightened vulnerability stems from the interplay of various extreme climate conditions, lower socioeconomic status, and a deep cultural connection to the health of their environment, which includes both land and sea, collectively termed as "Country" (Green et al., 2010). Figure 1 summarizes the climate hazards projected by experts for Australia's future. Additionally, existing health vulnerabilities like diseases and psychosocial stress, along with limited adaptive measures due to socioeconomic disadvantages and political conditions already place Aboriginal populations at risk of experiencing the effects of climate change (Standen et al., 2022).

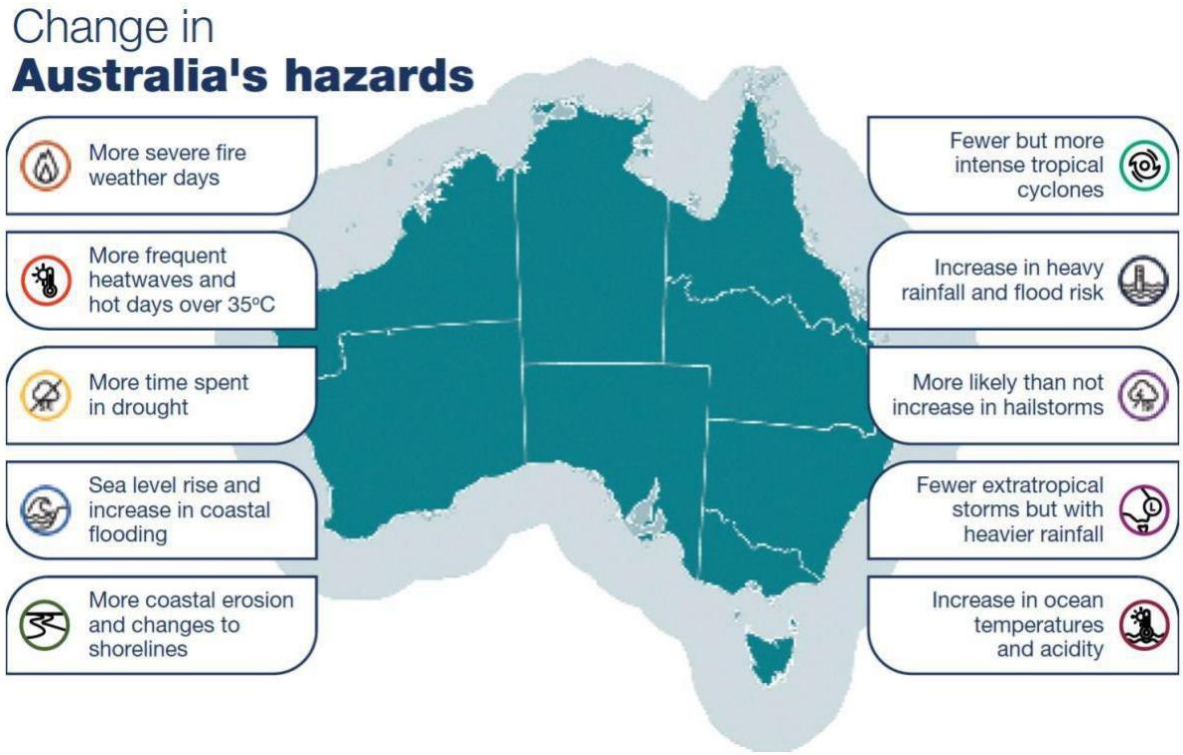

Figure 1. Projection of Australia's climate hazards (adapted from Department of Health and Aged Care, 2023).

However, according to Nursey-Bray et al., (2019), Indigenous groups use Traditional Ecological Knowledge (TEK), to manage and adapt to environmental changes and such old ways which they have practiced over millennia involves a deep understanding of local ecosystems, helps in crafting effective adaptation strategies. Therefore, it is crucial to acknowledge and integrate these practices into decision-making processes and the Caring for Country Guidelines at IUIH to lead adaptation strategies effectively in response to the extremities of climate change.

Over the years, the context, and systems of "Caring for Country" have evolved significantly. Historically, Indigenous peoples practiced controlled burning, sustainable hunting and fishing, and the maintenance of sacred sites as part of their traditional land management (Pleshet, 2018). Today, these practices have been adapted into contemporary programs and initiatives that continue to support the principles of "Caring for Country" (Fatima et al., 2023).

2. Objective of the Project

Guided by Aboriginal and Torres Strait Islander Ways of Knowing, Being and Doing and by being the owners and runners of the Country, the lands, waterways, and skies (IUIH's Cultural Integrity Framework and the Ways Statement), to address the challenges posed by climate change on the very people it is obligated to protect, IUIH is intensifying its efforts towards Caring for Country. This project is one of the measures it is taking and aims to:

- Create a scalable benchmarking tool for IUIH and its clinics covering energy use, transport, plastics, waste management, single use items, procurement, electricity supply, water, and solar passive design.
- Provide resources to support IUIH's obligations to the community and environment.

3. Literature Review

3.1 Literature Review Process

To determine the components of the benchmarking tool, an initial electronic search was conducted to explore the link between climate change and primary healthcare facilities, aiming to understand how primary healthcare practices impact and exacerbate climate change. The most relevant literature was searched on various scholarly websites using the search term "connection between climate change and primary healthcare" to identify and prioritize metrics for developing the benchmarking tool. The findings were narrowed down a total of 14 scholarly literatures and 6 gray literatures taking the time constraint into consideration.

3.2 Findings

3.2.1 Nexus between Climate Change and Primary Health Care Facilities

Various research highlights the nexus between climate change and healthcare sector. Malik et al., (2018), found that healthcare services contribute to 7% of Australia's total carbon emissions, with public hospitals being the largest contributions, followed by private hospitals, pharmaceuticals, and capital expenditures for buildings. In New South Wales (NSW), the health system annually produces 7908 kilotonnes of GHGs, consuming 246 gigalitres of water, and generating 1624 kilotonnes of waste annually (Malik et al., 2021). Single use items such as non-sterile gloves are commonly used in IUIH clinics. A life-cycle assessment by Jeffries et al. (2023) found that a single 3-gram non-sterile glove produces 26 grams of CO2, whereas 3 ml of hand sanitizer produces only 0.9 grams of CO2. Additionally, hand sanitizer was shown to outperform soap and water in bacterial reduction, achieving a 0.16 to 0.39 higher reduction in Escherichia coli and fecal streptococci on hands, highlighting the need to rationalize single-use items like gloves.

Likewise, the use of inhalers is also prevalent in IUIH clinics. Wilkinson & Woodcock (2021) found that metered dose inhalers (MDIs) with hydrofluorocarbons (HFCs) propellants contribute significantly to GHG emissions, making 13% of UK's National Health Services' carbon footprint related to care. Such inhalers were found to emit 28 kg of CO2e per inhaler while that of dry powder inhalers (DPIs) and soft mist inhaler emissions range from 200-920 grams CO2e per inhaler. Woodcock et al (2021) also found that switching from MDIs to DPIs can achieve substantial carbon savings without worsening asthma control. To this end, at

IUIH, switching from aerosol inhalers should be made where clinically appropriate to help reduce carbon footprint. In a broader perspective, all the emissions and wastes that result in GHG emissions are a result of poor value or low value care, underscoring the importance on reflecting on the care provided to patients. For example, routinely ordering blood tests for a common cold can be unnecessary and wasteful. This practice not only increases healthcare costs but also contributes to medical waste and carbon emissions. IUIH can therefore, avoid such low value care through more judicious decision-making ensuring that interventions are improving patient outcomes and contributing to environmental sustainability by reducing the healthcare sectors' carbon footprint.

A study carried out to prioritize research areas for improving environmental performance of research underscores the environmental and health challenges posed by single-use disposable medical products, highlighting issues with recycling, persistent pollution from plastics and toxic emissions from incineration, alongside the need for evaluating reusable and reprocessed devices to mitigate these impacts (Sherman et al., 2020). Healthcare systems are responsible for 4-5% of the emissions of GHGs globally, with 50% to 70% stemming from indirect sources like medical equipment and pharmaceuticals. Although healthcare systems are primarily established to improve people's health, these findings underscore that it is one of the concerning sectors contributing to climate change, functioning contrary to its objectives. Therefore, there is an urgent need for the healthcare sector to adopt sustainable practices to mitigate its significant contribution to climate change.

Effective reduction strategies include installing solar panels, adopting vegetable-based menus, and optimizing hospital supply chains (Suresh et al., 2024). Suresh et al. (2024) also found that dental practices can significantly reduce their carbon footprint by adopting sustainable measures such as emailing appointment notices and referral letters, reusing scrap paper and envelopes, and implementing dual flush toilets and rainwater collection systems. Key findings include a 92% reduction in carbon footprint by emailing appointment notices and an 82% reduction by emailing referral letters, compared to posting. Reusing scrap paper and envelopes can reduce carbon emissions by 60% and 39%, respectively. Dual flush toilets reduce water use by 63%, while using rainwater collection for water supply decreases carbon footprint by 90%. Recycling toothbrushes reduces carbon emissions by 96%, and reusing metal air-water syringe tips saves 66%. Additionally, washing dishes with running tap water reduces carbon footprint by 87% compared to using a dishwasher. Despite the significant impact healthcare systems have on the climate change, these are some of the many changes IUIH can adopt to further minimize its carbon footprint.

Similarly, when constructing new clinics, IUIH can consider building designs that reduce GHG emissions through thoughtful design, location, orientation, and efficient use. Green building designs focus on energy efficiency, sustainable materials and integration with natural environment while being resilient to climate change impacts. These includes low-impact materials, advanced insulation, energy efficient windows, high performance HVAC systems, natural lighting, and ventilation, as well as renewable sources like solar panels (Sijakovic & Peric, 2020). Buildings should also be designed to withstand extreme weather events through passive design strategies and resilient construction techniques. Effective urban design measures such as reducing building densities, optimizing building height, and spacing, enhancing natural

ventilation, using high albedo materials, and incorporating vegetation and water features can mitigate rising temperatures and improve energy performance (Sijakovic & Peric, 2020). Research by Forcael et al. (2019) demonstrated that improvements in thermal resistivity and insulation led to energy demand reductions from 60% to 40%, and up to 85% in higher latitudes and energy demand ranged from 40-100 kWh/m² in warmer climates to 150-500 kWh/m² in colder climates in Chilean primary healthcare sectors. Buildings with lower form factors and less glazing performed better, while those with higher form factors and more glazing performed worse. Construction improvements consistently reduced energy demand by 20% to 80%, highlighting the importance of geometric and material design in enhancing environmental performance (Peng and Yi, 2020).

3.2.2 Move Towards Net Zero Emission

The global race to net zero has been propelled by the Paris Agreement, under the United Nations Framework on Convention on Climate Change (UNFCCC), includes Nationally Determined Contributions (NDCs) aimed at reducing GHG emission to the global temperature rise well below 2 degrees Celsius. Australia has committed to achieving net zero GHG emission by 2050, targeting a 43% reduction from 2005 emission levels by 2030.

The "DEA-Net-Zero Report" by Doctors for Environment Australia through its report urges the Australian healthcare sector, responsible for 7% of the nation's carbon emissions, to reduce emissions by 80% by 2030 and achieve net zero by (2040 Doctors for the Environment Australia, 2020). This transition aims to mitigate severe health risks from climate change, including extreme weather events and increased climate-related illnesses, by adopting renewable energy, reducing healthcare demand, and implementing sustainable practices. The pre-budget submission from Climate and Health Alliance highlights that climate change could cost the Australian economy $584.5 billion by 2030, $762 billion by 250 and %5 trillion by 2100, while globally causing around 250,000 additional deaths annually from undernutrition, malaria, diarrhea, and heat stress between 2030 and 2050 (Department of Health and Aged Care, 2023). The Intergovernmental Panel Climate Change projects a 20-70% increase in days over 35 degrees Celsius in Australia by 2030, emphasizing the need for urgent action (Calvin et al., 2023). The World Health Organization identifies climate change as the 21st century's greatest public health threat, already impacting Australia through droughts, fires, floods, heatwaves, and health issues (Department of Health and Aged Care, 2023). Without reductions, food and water security will worsen, diseases will spread, air quality will degrade, and mental health will suffer, especially among youth (Department of Health and Aged Care, 2023). Australia's renewable energy transition plan aims to cut climate pollution by 75% by 2030 and achieve net zero by 2035 through solar installations electrifying industries, investing in hydrogen energy, promoting electric transport, and improving building efficiency (Climate Council of Australia Limited, 2024).

For SEQ, the Climate Change in Queensland: Summary of Expected Impacts" report highlights several climate projections to temperature, rainfall, and sea. The regions will experience higher temperatures, with maximum, minimum, and average temperatures continuing to rise. By 2030, average temperatures are expected to increase by 0.5 to 1.5 degrees Celsius, and by 2070, by 1.2 to 3.9 degrees Celsius (Queensland Government, 2019). Hotter and more frequent hot days, fewer frosts, and harsher fire weather are anticipated.

Although overall rainfall may slightly decrease, the intensity of heavy rainfall events will likely increase, and droughts may become more frequent and severe by the century's end (Queensland Government, 2019). Seal levels are projected to rise by 0.8 meters by 2100, leading to increased coastal hazards, while ocean temperatures and acidification will continue to rise (Queensland Government, 2019). For SEQ's general population, this means greater risks of coastal erosion, infrastructure damage, disruptions to services, and increased energy and water usage. Tourism, agriculture, livestock, and business sectors will face significant challenges, including threats to infrastructure, supply chains and public health (Queensland Government, 2019). For Indigenous communities, particularly those in coastal areas like the Torres Strait Island, the strong cultural connections to land and resources are at risk due to biodiversity loss and potential relocations due to rising sea levels. Adaptation measures will be essential to manage these risks and ensure resilience across all sectors, with careful consideration given to the associated costs of implementing such measures. As the transition to net zero progresses, and considering the climate projections for SEQ, IUIH is embracing this shift as a part of its comprehensive commitment to caring for Country. This strategic approach highlights IUIH's dedication to mitigating climate impacts and protecting the natural environment ensuring sustainable healthcare practices that benefit both the community the and the planet.

3.2.3 Benchmarking and Its Significance

As the saying goes, prevention is better than cure. In the context of climate change, mitigation measures act as prevention, while adaptive measures serve as the cure. Although both mitigation and adaptation measures should go hand in hand, the first approach to climate chance should always begin at home so that similar actions can resonate across sections of the community. To effectively reduce GHG emissions in the healthcare sector, the use of benchmarking tools is essential as they replicate preventive measures. The significance of benchmarking is highlighted by studies demonstrating that using multiple methods provides more reliable results, consistently identifying the least efficient hospitals (Li et al., 2021). Additionally, healthcare systems should integrate sustainability metrics with population health, clinical quality, and environmental sustainability for comprehensive improvement (Hensher & McGain, 2020). As climate change increases healthcare demand and as the sector contributes to 5% of global carbon emissions, it is imperative for clinicians and policymakers to utilize benchmarking tools to effectively measure and manage healthcare's GHG contribution as we simply cannot measure what we don't monitor (Smith et al., 2022).

3.2.4 Synthesis of the Literature

The nexus between climate change and healthcare facilities reveals that the sector significantly contributes to carbon emission, with hospitals and pharmaceuticals being major sources. While IUIH and its clinics are comparatively smaller in scale and the impacts may seem negligible, it is still important to document the carbon footprint considering its obligations to community and the broader move towards net zero emissions. Benchmarking tools can play a crucial role in this effort to reduce the carbon footprint of IUIH and its clinics, creating a positive influence and inspiring the community. By tracking and comparing emissions data, these tools help identify areas for improvement and promote sustainable practices. As IUIH implements these changes, it sets an example for the community, demonstrating the feasibility and benefits. This influence could encourage others to adopt similar practices,

driving widespread behavior change. Ultimately, the positive impacts fostered by these tools contribute to the overarching goal of achieving the government's net zero emissions target, enhancing community well-being.

4. Methodology

IUIH operates a network of health service across SEQ, including five member organizations: Aboriginal and Torres Strait Islander Community Health Service (ATSICHS) Brisbane Limited, Kalwun Development Corporation Limited, Kambu Aboriginal and Torres Strait Islander Corporation for Health, Yulu-Burri-Ba Aboriginal Corporation for Community Health and Moreton Aboriginal and Torres Strait Islander Community Health Service (Moreton ATSICHS). The offices and clinics are located at various sites and vary in type, size, and scale across SEQ,

Considering the project brief's metrics-such as energy use, transport, plastics, waste reduction and management, single-use items, procurement, electricity supply (e.g., solar green energy), water, and solar passive design, these factors, along with the sizes and locations of the clinics and offices, were key areas of focus for the benchmarking tool. Following consultations with key staff from IUIH and an extensive online search for effective tools to track and benchmark GHG emission and climate footprints, the GHG Emissions Calculator from United Nations Framework Convention on Climate Change (UNFCCC) and the Climate Impact Check-up (CIC) Tool were identified as the most suitable options.

The UNFCCC tool was favored for its comprehensive range of metrics, including fuel, energy, refrigerant, electricity, fleets, and business and employee commuting, which align well with the diverse aspects of IUIH's operations. The tool was developed to offer organizations a free, up-to-date methodology for estimating emissions, aiming to raise awareness and promote climate action (United Nations Framework Convention on Climate Change, 2021). The CIC Tool was considered highly appropriate due to its functionality closely mirroring the operations of IUIH and its clinics. The CIC tool was developed by Healthcare Without Harm and Global Green and Healthy Hospitals to help healthcare institutions globally monitor and reduce their carbon footprints (Health Care Without Harm, 2021). Initially created for Latin American countries in 2016, it was later upgraded in 2020 to a global version incorporating feedback and elements from the existing tool to address regional challenges.

Additionally, the clarity on emission factors provided by the CIC tool, along with its alignment with the specific metrics relevant to IUIH, made it an excellent choice for effective benchmarking and monitoring of the organization's carbon footprint. Furthermore, it was observed that Australia is a collaborating partner of the Global Green and Healthy Hospitals (GGHH), which developed the CIC tool. Hospitals in states like New South Wales are already using this tool, reinforcing its suitability and effectiveness. This dual approach, informed by consultations with key IUIH persons regarding their requirements for the tool and supervisor, resulted in the adoption of both the tools as suitable examples to base the benchmarking tool on.

4.1 Screening and Selection of Metrics

The screening and selection of metrics were caried out based on the suitability of the metrics

to the functionality of the IUIH and its clinics. The Greenhouse Gas Protocol Corporate Standard, a multistakeholder initiative involving businesses, nongovernmental organizations, and others led by the World Recourses Institute and World Business Council for Sustainable Development categorizes an organization's GHG emission into three scopes. The scopes are summarized as follows:

- Scope 1 includes direct emissions from owned or controlled sources (Greenhouse Gas Protocol, 2022).
- Scope 2 emissions encompasses indirect emissions from the generation of purchased energy (Greenhouse Gas Protocol, 2022).
- Scope 3 emissions cover all other indirect emissions (excluding those in scope 2) that occur within the reporting organization's value chain including both upstream and downstream emissions (Greenhouse Gas Protocol, 2022).
- Figure 2 summarizes the scopes of emissions categorized by the Greenhouse Gas Protocol Corporate.

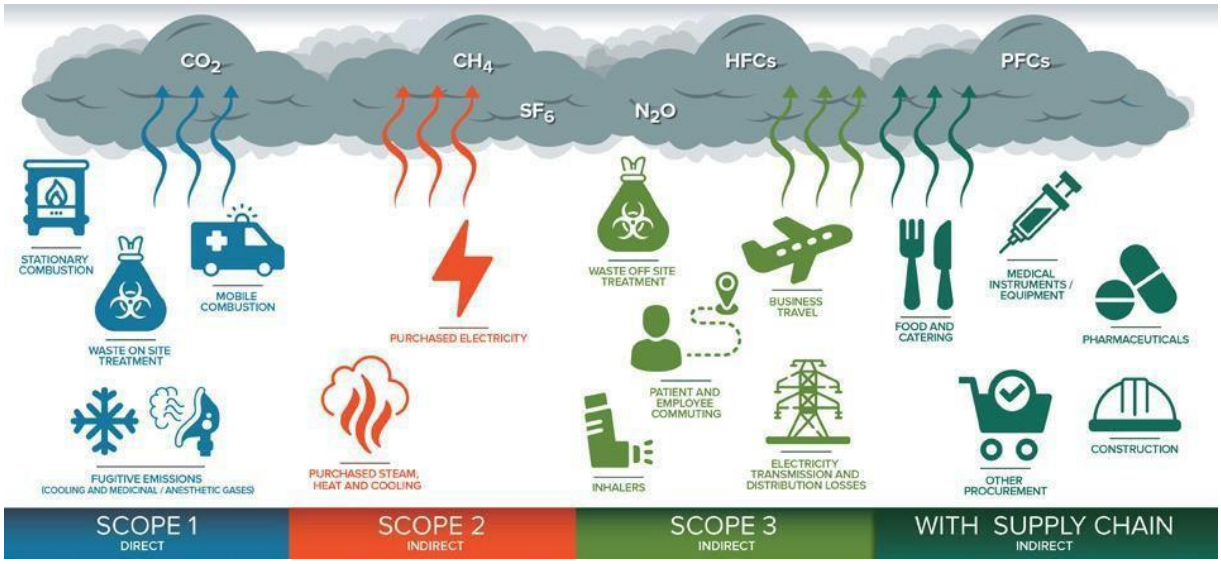

Figure 2. graphical view of scopes of emissions (adapted from Health Care Without Harm, 2021).

The benchmarking tool is based on metrics outlined by the GHG Protocol Corporate Standard. The UNFCCC tool includes 15 metrics: fuels, bioenergy, refrigerants, electricity, heat, cooling, owned vehicles, material use, waste disposal, flight and accommodation, business travel (land and sea), freighting goods, food, home office and water (click here to see the tool). In contrast, the CIC focuses on healthcare metrics including cooling, anesthetic gases, business trips, employee commuting, patient commuting, extra supply chain along with stationary combustion, mobile combustion, fugitive emissions, medicinal/anesthetic gases, purchased electricity, purchased steam, heat and cooling, business trips, employee commuting, patient commuting, inhalers, electricity and distribution loses and waste (categorized into solid waste disposal, composting, incineration (click here to access the tool).

To clearly understand the emission scopes generated by IUIH, the tool is structured around

three types of scopes as elaborated next.

- Scope 1: Includes stationary combustion, mobile combustion, fugitive emissions (refrigeration and fire extinguisher systems) and solid waste disposal accounting for all direct emissions from IUIH and its clinics. The CIC tool's headings were adopted for their clarity, and emissions factors were sourced from both tools, though the CIC tool provided clearer back-end calculations. These metrics would account for all the direct emissions resulting from the IUIH and its clinics.
- Scope 2: Covers grid electricity, accounting for market-based emissions from purchased electricity generation and transmission and distribution (T&D) losses. Emissions factors for grid electricity and T&D are based on Australia data, with potential updates for Queensland when available.
- Scope 3: Emissions are classified into extra supply chain and other indirect emissions, using emission factors specific to Australia. Metrics include business trips, employee commuting, inhalers, incineration, and water supply. By taking responsibility for scope 3 emissions which largely stem from extra supply chains included in IUIH's value chain and often overlooked, IUIH upholds its Environmental, Social and Governance (ESG) commitment. This approach ensures that IUIH, as a responsible community-controlled not- for-profit organization, addresses significant environmental impacts that might otherwise be neglected.

4.2 Outcome

The final benchmarking tool, attached as a separate Excel file includes a glossary of important terms, a guide for finding metric information (e.g., grid electricity costs from quarterly bills), and a section for IUIH and its clinics to reflect on their GHG and climate impact performance, identify areas of improvement, and acknowledge areas of success.

5. Conclusion

The purpose of this report was to outline the foundation and requirements for developing the benchmarking tool for IUIH and its clinics. While healthcare sectors strive to provide cutting-edge medical advancements to communities, they often generate significant GHG emissions, consume vast amounts of energy and produce substantial waste. Globally, the healthcare sector is responsible for 4-5% of the total GHG emissions, with Australia's healthcare sector contributing a slightly higher rate of 7%. Though IUIH's impact on climate change may seem negligible in comparison to larger hospitals and pharmaceuticals, as an organization serving Aboriginal and Torres Strait Islander communities, IUIH is committed to Caring for the Country, a principle deeply connected to land, sea and sky. These communities have sustainably lived in harmony with their environment for tens of thousands of years, and it is imperative for IUIH to continue this legacy by addressing environmental threats.

The benchmarking tool will enable IUIH and its clinics to understand their climate impact, reflect on current operations, and plan for necessary changes to align with environmental principles. This tool not only meets IUIH's obligation to Care for the Country but also enhances operational efficiency and sustainability for the future.

Carefully developed with applicable emission factors and metrics, the tool quantifies the environmental impact of IUIH and its clinics in terms of CO2e emissions. By following this

structured approach, IUIH and its clinics can systematically improve their environmental performance, align with sustainability goals, and uphold their commitments to the community and Country.

However, caution should be exercised to avoid double counting metrics, which could inflate emissions estimates. Continuous improvement is essential for a tool to remain efficient and effective. By systematically evaluating what works and what doesn't, and implementing necessary changes, the tool can evolve to meet user's needs better. This ongoing process ensures that the tool remains user-friendly, practical, and relevant. As a result, several enhancements can be made as follows:

- Obtain expert review of the tool.
- Compare the result with the state or national averages to gauge impact.
- Expand metrics for a more comprehensive tool.
- Update emission factors under Scope 1 to be specific to Australia or Queensland when available. Likewise update emissions factors under Scope 2 and 3 to Queensland when available.

Future research should explore expanding or refining metrics to better reflect IUIH's true impact. By continuously refining this tool, IUIH can lead by example in the community. Additionally, developing a complementary tool focused on climate change adaptation could provide a more holistic approach. This could help identify potential climate threats and guide infrastructure investment (for new constructions), climate resilience infrastructure designs such as increased height of roads near coastal area, increase green space and cool zones, sustainability efforts, operational and workforce planning, and necessary resources to adopt a risk-based approach, ensuring actions are planned and implemented in response to climate triggers rather than reactively. It could also support organizational arrangements for disaster and emergency management across prevention, preparedness, response, and recovery phases, especially for increasingly common events like floods, cyclones, droughts, and heatwaves. Additionally, this tool to accommodate benchmarking educational activities across clinics and offices such as distribution of educational materials on climate change impacts and mitigation strategies, thereby raising awareness and preparedness among staff and clients. The potential for improvement is vast, and enhancing the tool will strengthen IUIH's efforts in Caring for Country, making its environmental commitment more impactful and evident.

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