Joint Statement on Procurement for Environmentally and Ethically Sound Kidney Care Products and Services

This Joint Statement on Procurement provides a global template for procuring products (e.g. medications, consumables, dialysis equipment) and commissioned services that support environmentally sustainable, climate-adapted, and ethically sound kidney care that is affordable, accessible and limits health inequities.

1. Introduction

With the establishment of the triple planetary crises of global heating, pollution and biodiversity collapse[1] as key determinants of health,[2] the need to reduce the environmental impacts of health care is appropriately intensifying.

Reducing the environmental impact of kidney therapies and services, while simultaneously expanding their delivery and improving system resilience, is an essential aspect of quality care. Both health, and a clean and sustainable environment, are human rights.[3] The 2025 Lancet Countdown on Health and Climate Change reports that climate-related health harms continue to rise, with 12 of 20 key risk and impact indicators setting 'concerning new records' in the past year.[2] The World Health Organization (WHO), via its recently adopted Global Action Plan on Climate Change and Health,[4] has positioned health systems as an essential part of the climate solution. Among the Plan's many objectives are protecting vulnerable populations, integrating health considerations across climate policy and response, and reducing pressure on health systems while decreasing the environmental and climate impacts of health-care delivery.

Though numerous health systems globally have committed to achieving net zero greenhouse gas emissions (47 at time of writing), sustainable, low carbon care (88), and climate resiliency (102),[5] it is increasingly recognized that sectoral, in addition to national, approaches to decarbonization are necessary.

The global kidney community's response toward health and climate solutions

Building on existing advocacy, policies and actions of many kidney care societies and consortia worldwide, the global kidney community is uniting via the GREEN-K (Global Environmental Evolution in Nephrology and Kidney Care) initiative, led by the International Society of Nephrology, to mitigate the impacts of planetary crises on kidney health and the environmental footprint of kidney care delivery.[6,7] This initiative recognizes these goals as essential requirements of ethical, quality kidney care.

This Joint Statement on Procurement (JSP) aligns with United Nations Sustainable Development Goals[8] 3 (good health and well-being), 9 (industry, innovation and infrastructure), 10 (reduced inequalities), 11 (sustainable cities and communities), 12 (responsible consumption and production), 13 (climate action), and 17 (partnerships for the goals). **It is grounded in the principle that we are stronger together – collaboration and collective action can help drive ecologic, affordable, and ethical innovation in kidney care products and services.**

The need for kidney care is inequitable, increasing, and driven by planetary crises

Kidney care, for the purposes of this document, encompasses the prevention, detection and management of chronic kidney disease (CKD); the management of patients with kidney failure (KF; end-stage kidney disease) through supportive care or a kidney replacement therapy (KRT; comprising kidney transplantation and the various forms of dialysis); the prevention, detection and management of acute kidney injury (AKI); and the management of assorted rare kidney conditions.

CKD is highly prevalent, with 1 in 10 individuals affected worldwide — an estimated 850,000,000 people —[9] most of whom have disease of lesser, though still impactful, severity than KF. Globally, 4.6 million people are estimated to rely on a KRT for survival,[10] 69% of whom are managed with hemodialysis, which comprises 89% of all dialysis therapies.[11] The number of people with CKD–including those with more advanced disease stages and those requiring a KRT–is projected to rise substantially in the coming years. One report estimates that by 2032 the number of individuals with a functioning kidney transplant and those receiving dialysis could increase by up to 80% and 171%, respectively, in some regions.[12] Inequitable access to care to prevent, detect and slow progression of disease, and inequitable access to therapies for people with kidney failure,[13] may compound what is now acknowledged to be a public health crisis, particularly in low- and low-middle-income countries who are suffering the fastest CKD growth

rates.[14] Along with hypertension and diabetes, well-known risk factors for the development and progression of CKD, rising global temperatures and declining air quality are now additionally recognized as important contributors.[15] An increased incidence of AKI is linked with ambient temperatures even in the temperate zone[16] and this burden is likely to increase as the planet heats. The well-being of all people with kidney disease, as well as the systems that deliver their care, is increasingly vulnerable to extreme weather events and other climate shocks. Examples of system vulnerability include the disruption of dialysis and parenteral fluid supplies following Hurricane Helene in the US in 2024[17] and of continuous renal replacement therapy disposables after earthquakes in northern Italy in 2012.[18]

Health and kidney care's environmental impacts – a needed focus on supply chains

Healthcare itself causes planetary harm, with its annual global carbon footprint of 2 million metric tonnes (Mt) carbon dioxide equivalents (CO_2e) predicted to triple by 2050 if the current trajectory continues.[19] The environmental impact of CKD care is likewise expected to increase, with projected increases exceeding 11% by 2032 across 8 higher income settings.[12] Within CKD, KF imposes a particularly significant environmental burden, with per patient greenhouse gas (GHG) emissions from one UK dialysis program exceeding that of the average National Health Service (NHS) England patient by nearly 18 times.[20] Although most assessments of GHG emissions from KRTs have been performed in high income settings,[21-24] studies that determined HD emissions in Morocco[25] and Mexico,[26] low middle and upper middle-income countries, respectively, have comparable results. Further, kidney care in lower middle-income settings is often constrained by poor waste management infrastructure and is relatively carbon-intensive due to the predominance of HD over the lower emitting KRT options of PD or transplantation.[27] Though per patient per year greenhouse gas (GHG) emissions for dialysis therapies vary by modality and prescription, region, and scope of processes evaluated, published estimates are from 1.4 to 10.2 tonnes CO_2e per patient per year.[21,28] Impact becomes substantial when scaled to population level, with recent per annum modeled emissions from CKD care (all stages) in the United Kingdom and United States, respectively, totaling 1.8 and 30.5 megatonnes (Mt) CO_2e.[29] Put another way, even modest improvements in the sustainability of CKD management carry potential for huge overall gains.

Approximately 70% of global health and kidney care emissions arise from supply chains, encompassing both up-stream activities (e.g. resource extraction, manufacturing and transport to site of use) and down-stream processes (e.g. waste management following care

delivery).[20,30,31] Pharmaceuticals are consistently identified as the largest emitting category within procurement, constituting between 17-35% of health system emissions, followed closely by clinical equipment and consumables, such as those used in dialysis therapies, which contribute 18-25%. Greenhouse gas emissions determined by global expenditures on pharmaceuticals were estimated at 219.6 Mt in 2019, an increase of 77% from 1995.[32] However, accurate emissions data for individual pharmaceuticals are largely unavailable, as such information is either unmeasured or proprietary. It is recognized that appropriate prescribing constitutes a cardinal patient care and sustainability opportunity. As such, this Joint Statement on Procurement addresses procurement across **both pharmacotherapies as well as kidney replacement therapies**.

Prevention of KF through optimized health promotion and disease prevention, early detection, and optimized management of CKD remains the highest priority. A 'whole of system' approach is needed, involving public health measures and equitable access to responsibly produced essential medications. Nonetheless, effective prevention does not obviate the need to address the impacts of KF treatments, which will continue to be required, at scale, for the foreseeable future.

Addressing Equitable and Environmentally Sustainable Global Kidney Care via Procurement – a Novel GREEN-K Approach

Recognizing that the environmental impacts of kidney care products and services are embedded across their entire life cycle–from design and manufacture to delivery, use, and disposal stages – **this call to action for ethical and environmentally sustainable procurement applies across the full spectrum of kidney care. It includes, but is not limited to, consumables, hardware, procured services and patient transport for KF treatments, as well as pharmaceuticals used in the care of people living with all stages of kidney diseases, including KF**. Decarbonization has been the primary focus of efforts to improve the sustainability of healthcare. However, an exclusive emphasis on carbon reduction risks 'carbon tunnel vision', which may, at best, neglect social factors, health system factors and non-carbon environmental impacts or, at worst, lead to unintended adverse consequences for people and Earth. Such consequences might include adverse working conditions, worsening health system vulnerability, inequitable distribution of healthcare resources, and the generation of unnecessary waste, with associated environmental consequences such as toxic chemical pollution, biodiversity loss, water scarcity, desertification and deforestation.

Kidney care has an opportunity to align with the World Health Organization's Sustainable Development Goals and Global Action Plan on Climate Change and Health (both as described above), as well as its 14th General Programme of Work agenda to 'advance health equity and build resilience',[33] by creating low carbon and climate-resilient kidney health systems, reducing financial barriers to KRTs, and reducing health inequities from economic and environmental determinants of health. This Joint Statement on Procurement for Environmentally and Ethically Sound Kidney Care Products and Services, therefore, covers 6 separate domains:

1. Decarbonization
2. Supply chain ethics
3. Circularity in product design and management
4. Reduction of health inequities, both within and between countries, including fair pricing
5. Climate resilience of healthcare facilities and supply chains
6. Protection of biodiversity and the living planet

These domains are expected to be applicable across all aspects of kidney care procurement, learn from evolving process and allow for progressive improvement over time. They do not supplant other 'conventional' procurement domains that:

⇒ Support high quality patient care
⇒ Deliver demonstrable clinical, cost, and resource benefits
⇒ Meet all necessary standards in relation to quality, approvals, ethics, data protection, and inter-operability
⇒ Comply fully with all required standards and regulations of each purchaser
⇒ Include equipment that is user friendly and intuitive

This JSP is intended to cover both tenders and the targeted procurement of individual products. While scoring matrices are most readily applied to tenders, the framework is also intended to be deployed for use in individual procurement decisions to ensure that key domains of interest are considered as a matter of routine practice.

The JSP Approach - Building on Systems Expertise and Existing Innovative Procurement Strategies

This Joint Statement on Procurement was informed by existing innovative procurement strategies and aligns with the World Health Organization's strategy for healthcare supply chain decarbonization.[34] The JSP was created following consultation with professionals with expertise encompassing health systems and the six novel procurement domains (refer to Acknowledgements, below). The process used to create the JSP is described in detail elsewhere.[35]

The JSP is similar to other documents and procurement processes termed 'Joint Statements of Demand' that have been implemented in healthcare and other sectors. Ecoquip, an innovative European procurement organization, has many examples of Joint Statements of Demand that pool procurers to unify market demand for novel products or services and thereby stimulate suppliers to innovate.[36] The authors of the present strategy position this GREEN-K Joint Statement reconciling its simultaneous global ambition that strives to meet the urgent ethical and environmental challenges of our times, and maintain respectful collaboration with a range of stakeholders, among these being industry partners (who have had opportunity to provide feedback on the JSP approach).

Innovative procurement strategies in other realms have objectives that variably include enhanced access to, and affordability of, healthcare products and services, or improved environmental sustainability of these products and/or services. Selected examples include:

- Pan American Health Organization's Strategic Fund – pooled procurement of essential medicines and 'strategic health supplies', intended to strengthen product availability through price agreements and expanded access to non-communicable disease (NCD) management technologies[37]
- 'Design bugs out' – a successful design challenge run by NHS Purchasing and Supply Agency and the UK's Department of Health that sought redesigned hospital furniture and equipment that would be easier and faster to clean, with a goal of reducing infections[38]
- Africa Centre for Disease Control and Prevention's Regional Procurement Mechanisms and African Pooled Procurement Mechanism – collective bargaining power to increase supply stability and attract competitive suppliers with a goal of improving access to quality and affordable health product technologies and promote localized manufacturing[39]
- Ecoquip's 'Towards Zero-Waste Operating Theatres' project supporting transition to a circular economy for University Hospitals Bristol and Weston NHS

Foundation Trust, UK – the project seeks to minimize single-use items, eliminate unnecessary packaging and ensure residual waste is optimally managed (i.e. zero exported plastics, optimal recycling, waste to energy if incineration)[40]

- Ecoquip's 'Smart emergency call and response solution for hospitals' project - originating in Vilnius Lithuania, extending to hospitals across Europe seeking solutions to establish effective, informative and reliable emergency call and response solutions.[41]

We are not aware of any pooled innovative procurement examples in kidney care to date.

The present JSP does not prescribe how industry should meet ethical and environmental sustainability goals. Further, it does not specify whether the required change(s) should be incremental or transformational; however, future procurement scoring matrices will reward solutions that demonstrate more ambition in advancing ethical and environmental sustainability goals.

The JSP also recognizes that change may occur through technological innovation or through alterations in process – for instance, a change in the manufacture and logistics of supply of a dialysis consumable may be as transformative, or even more transformative, than a new technology, and may be easier to achieve in the short-to-medium term.

The JSP requires the development of key performance indicators (KPIs) against each domain to be built in from the start of a procurement exercise, their inclusion or omission should be explicitly scored within the procurement matrix. KPIs should be developed at the level of the procuring entity, which in many cases will be the individual kidney unit or hospital, but may also be at network, regional or even national levels where these entities hold responsibility for procurement. KPI templates will be developed to support implementation of this JSP and assist procurement teams.

The JSP allows different models of forward-commitment procurement, a potentially powerful tool to drive innovation in which there is an agreement to purchase a product or service that currently does not exist (either conceptually, or at a scale commensurate to demand) in order to meet an unmet need. This is used in public procurement in the United Kingdom, and specifies product characteristics and delivery date(s), as well as provision that the good or service procured can be delivered to agreed performance levels and costs.[42] Purchasers may not be in a position to adopt such an approach – for instance, due to their smaller size and reach or the urgency of their requirement.

The EU describes two complementary forward innovation procurement models [43]:

- Public Procurement of Innovative solutions (PPI); challenges can be addressed by innovative solutions that are nearly or already in small quantity in the market and do not require new research and development
- Pre-Commercial Procurement (PCP); there are no near-to-market solutions yet so new research and development is procured; the pros and cons of alternative solutions are compared to allow stepwise de-risking of the most promising through iterative design, prototyping and testing.

The JSP anticipates that innovation and efficiency gains arising from reconceptualized products and/or services (i.e. in their design, delivery or site of manufacture, and/or their function) will generate cost savings for manufacturers and, in turn, for procurers. It is expected that savings to procurers would be further amplified through economies of scale as expanded kidney care provision enables the adoption of cost contained products and services.

Finally, the JSP recognizes that universal standards or methodologies of assessment do not presently exist for all domains. Where such standards exist, we make this clear, below. Where such standards do not presently exist, this is similarly made clear, and illustrative examples of potential alternatives are proposed to support the incorporation of human health and environmental protection measures beyond climate change.

2. JSP Requirements

We recommend that all procurements include a minimum 10% environmental and social weighting, encompassing all of the 6 domains, to drive progress in each. The weighting applied to each individual domain within this minimum 10% allocation is adaptable according to local priorities; for instance, a local scoring matrix may place a greater weighting on water savings than materials circularity if applied in a water stressed setting.

In general, the recommendations below relate to the specific kidney care product or procured service under consideration and not just the overarching ambition and performance of the individual supplier.

Taking the domains in turn:

1. Decarbonization:

Tenders must include both decarbonization targets and decarbonization timelines:[34]

a) The high ambition decarbonization target of the WHO Alliance for Transformative Action on Climate and Health (ATACH) is whole health system (including scope 1,2 and 3 supply chain) net zero emissions (ideally by 2050) [44,45]

i. by extension, for health systems to meet this commitment, this ambition is expected for all procured products and services, and must be clearly stated at both the level of the product and the level of the company (i.e. each procured product / service and the company providing it must have credible net zero goal(s) by 2050 for scopes 1,2, and 3)

b) By April 2027, all suppliers will, at the time of tender, be expected to publicly report targets and emissions at global corporate level, and to have a published Carbon Reduction Plan for their global scope 1, 2 and 3 emissions aligned to the stated target.

c) By April 2028, all suppliers will be required to provide carbon foot printing data for individual products/services being procured.

d) Methodology of carbon foot printing should align with that of the latest GHG protocol [46] with any residual carbon offsetting adhering to accepted principles (e.g. those of the Voluntary Carbon Markets Integrity Initiative [47] or the Science Based Targets Initiative [48]). Suppliers should aim to replace expenditure data from the E-Class classification system (an international standard for the classification of products and services) [49] in favor of carbon assessment methodologies further up the hierarchy. Life cycle assessments and data reporting for pharmaceutical products should adhere to requirements specified in PAS 2090 product category rules specification.[50]

Additional procuring entity decarbonization considerations:

1.1) an existing national (or international) target (e.g. that of NHS England[30]) would normally take primacy over ATACH if these are in place to avoid confusion during tendering although the latter may be chosen if local requirements are less ambitious

1.2) if procurement bids do not specify decarbonization strategies a(i), b, c and/or d above, procurement scores must reflect this

1.3) commitments that exceed a(i) (i.e. those with earlier and/or interim decarbonization targets) should be rewarded in the scoring matrix. One example of such a target is the

near-term emissions reduction target aligned with the 1.5°C pathway of the Sustainable Markets Initiative,[51] with commitment to achieve net zero emissions by 2045.

1.4) It is recommended that suppliers be disqualified from a tender if minimum ambitions for decarbonization requirement a(i) above is not met

2. Supply chain ethics

The JSP aspires to the United Nations Guiding Principles on Business and Human Rights [52] and encompasses:

a) immediate and full compliance with international labour standards per the 11 fundamental instruments of the International Labour Organization[53]
b) immediate and full compliance with the ten principles of the UN Global Compact, which includes human rights, workers' rights, and an anti-corruption commitment, as well as environmental protection[54]
c) Suppliers will be disqualified from a tender if minimum ambitions for supply chain ethics are not declared.

Additional procuring entity ethics considerations and tools, to ensure active and constructive engagement across all levels of the supply chain[54,55]:

1. British Medical Association's Ethical Procurement for Health: workbook.[56]

   Developed in partnership between the British Medical Association, the Ethical Trading Initiative, and the UK Department of Health, this flexible tool aids understanding of labour standards throughout health care supply chains. Using a stepwise policy /people/ process/ engagement/ measurement approach, the tool provides an overall framework for ethical procurement. It also contains numerous useful links, illustrative case studies, guidelines, and templates.

2. ISO standard 26000, a guidance standard on social responsibility
   Intended primarily for organizations, a framework is provided to aid integration of values and sustainable practices into organizational governance and function, going beyond legal compliance. Wider consideration of human rights, fair operating practices and community involvement and development are collectively intended to improve impacts on workers, communities, and nature.[57]

3. Pharmaceutical Supply Chain Initiative's 'PSCI Principles for Responsible Supply Chain Management'.
   Intended to reach all businesses operating within an organization's supply chain, five areas to be upheld, with expectations outlined for each, are: ethics; labour, health, and safety; environment; and management systems.[58] Although created by and for the pharmaceutical industry, these principles could also be applied to the medical supply realm.

3. Circularity

Circularity keeps materials at their highest possible value throughout the value chain and builds upon value retention loops (that include but are not limited to reducing, repairing, refurbishing, repurposing, and recycling) from the 'reduce by design' guiding principle.[59]

Procurement scoring matrices should reward solutions:

a) that are managed and/or supported by the supply chain rather than the end-user (front-line clinical teams and hospital estates teams); for instance, an assertion that mixed materials packaging is recyclable at the point of use fails to recognize that front-line work-flows may preclude this.
b) that are designed for extended life, repair and re-use
c) that allow resources to retain their highest intrinsic value without degradation down the waste hierarchy

Additional procuring entity circularity considerations:

1. It should be recognized that transparency of the actual (and not just the intended) fate of spent materials is a vital consideration, regardless of whether responsibility for waste processing resides with the supplier or end-user. The ultimate fate of plastics intended for recycling but ending up dumped or incinerated is one example of this gap between intent and reality[60] and should be assessed at the time of tender.
2. It should also be recognized that 'dematerialization' (the digitalization of physical processes or products) and 'servitisation' (leasing hardware rather than buying) may not always serve the best interests of the end-user through the addition, for instance, of licensing or other fees.

3. With no uniformly accepted standard for measuring circularity, each procurement will need to be assessed on its own merits, with scoring of each tendered product or service aligned with the broad principles noted above.
4. No specific timeline has been set for this domain although we note that the Ecodesign for Sustainable Products Regulation (ESPR) legislation is now in force across the EU and is the cornerstone of the Commission's approach to more circular as well as environmentally sustainable products.[61]

4. Reduction of health inequities, both within and between countries, including fair pricing

The Framework for Developing Dialysis Programs in Low-resource Settings[62], a part of the ISN's collaboration plan with WHO, calls for more cost-effective dialysis machinery, inexpensive manufacture of PD solutions, and financial efficiencies in dialysis care that include central negotiated strategic purchasing, operational efficiencies, product and process re-engineering, and introduction of new/affordable technologies. In addition to procurement of KRTs, a major aim of a kidney community procurement strategy is to enhance demand for sustainably produced, packaged, and distributed kidney protective pharmacotherapies, and immunosuppressive therapies for kidney transplant recipients.

More recently, the WHO's 2025-2028 Global Health Strategy seeks to advance health equity (via enhanced health promotion and protection, and universal health care provision) and resilience.[63] Importantly for kidney care, Joint Outcome 4.3 of this Strategy aims to reduce financial barriers and out-of-pocket health expenditures, with plans to collect, track and analyze these expenditures, as well as financial hardship and foregone care - pertinent indicators recognizing the inequity of access to kidney care worldwide.[64,65]

Procuring entity equity considerations include:

4.1) Collection and reporting of performance data for health equity, such as Global Kidney Health Atlas data on KRT provision, and WHO SDG indicator 3.8.1 'coverage of essential health services' and 3.8.2 'incidence of catastrophic out-of-pocket health spending'

4.2) Engagement of regional, national, and international health organizations and associated funding mechanisms to optimize use of 'best buys' [66] (effective interventions with demonstrated cost effectiveness in low-income and lower middle-income countries)

4.3) Potential application of novel health care funding models such as 'progressivity' financing[67] of health care (where a service is equitably available to rich and poor through different pricing).

4.4) Wider value considerations in procurement beyond direct cost (i.e. societal benefits of enhanced health including life engagement, regional economic stimulation, regional environmental benefits of reconceptualized product or service delivery models).

4.5) With no uniformly accepted standard for measuring equity within or between countries, each procurement will need to be assessed on its own merits, with scoring of each tendered product or service aligned with the broad principles noted above.

Expanding kidney health worldwide is a priority with this domain being an area of active development; though a specific timeline is not defined.

5. Climate resilience of healthcare facilities and supply chains

Care for people with kidney diseases depends on reliable infrastructure (facilities, water, energy), and uninterrupted flow of people (patients and providers), consumables, and pharmaceuticals. Each step in a product's pathway and use may be vulnerable to climate shocks – hence the need to incorporate resilience into product design, care delivery, and service provision.

Procurement matrices should reward solutions:

a) that support and facilitate resiliency measures sensitive to local challenges and developing risks, whilst also demonstrating security to climate-, socio-economic and other shocks, within their own supply chains to ensure continuity of service.

Additional procuring entity considerations:

1. Both WHO [68] and Health Care Without Harm (Europe), through their LIFE-RESYSTAL programme [69] have provided guidance to promote facility- and health care system-resilience. The WHO calls on the entire health workforce, facility managers in particular, to understand climate risks, and to strengthen climate resilience.

The WHO identifies four primary health facility resiliency requirements:

a) a stable, informed workforce (adequate human resources including surge capacity, healthy and safe working conditions, disaster and emergency management informed workforce, practicing environmentally sustainable care)
b) water, sanitation, hygiene and health care waste systems (consistent availability of services allowing sustainable supply and delivery of water and goods and their appropriate disposal, including of chemicals; also monitoring, risk mitigation, and health and safety regulations available and followed)
c) sustainable energy (use of energy from renewable sources, low facility greenhouse gas emissions, off-grid energy production capacity (i.e. solar, wind, hydroelectric, batteries) in the event of electrical grid disruption)
d) use of appropriate infrastructure (resilient load-bearing building elements (i.e. beams, floor slabs), construction built to resist floods / storms / rising water levels; fire protection systems; exit and evacuation routes; and critical health systems resiliency (medical and laboratory operations, digital health resiliency)

2. The WHO strategic healthcare supply chain decarbonization strategy advises lower emitting, lower performing health systems to focus on climate resilience while adopting sustainable low carbon technologies.
3. With no uniformly accepted standard to measure resilience, each procurement will have to be viewed in and of itself with a tailored scoring structure aligned with the broad principles noted above.
4. No specific timeline has been set for this domain.

6. Protection of biodiversity and the living planet

Adherence to local, national and international environmental law as relevant to the specific jurisdiction is taken as a given.

Various aspects of this domain are explored below:

a) General environmental management - Organizations are encouraged to obtain ISO 14001 certification for the design and implementation of an environmental management system. [70]

This Standard provides a framework to protect the environment while responding to changing environmental conditions in balance with socio-economic needs, with a holistic

view of product and service design, manufacture, distribution, consumption, and disposal through a life cycle perspective.

b) *Water Management* - Considering that millions of people who rely on dialysis for their survival reside in water scarce regions,[71, 72] procurers should demand products with low water use.

   i. All organizations should have, or undertake, a comprehensive water management policy, such as that outlined by the Alliance for Water Stewardship. [73]

   ii. Suppliers should provide details of water usage (e.g. per unit) through full life cycle of the product, including expected levels of consumption during routine use, as well as throughout manufacturing and end use phases

   iii. It is recommended that procurement tender scoring for water conservation should be explicitly scored at both operational (i.e. end user) and comprehensive (i.e. through entire production and supply chain) stages.

c) *Toxic Chemical Pollution* – It is noted that understanding the effect of chemicals on human and ecosystem health would require full life-cycle assessment for each chemical produced in its individual context.

   A variety of frameworks guide chemical stewardship. The UN Global Framework on Chemicals [74] offers a guide for countries and stakeholders to take measurable actions to address overall management of chemicals and waste, including plastic waste. European healthcare's phase out list for chemicals of concern [75] attempts to avoid chemical pollution by regulating substance groups instead of individual substances, in part via avoiding 'regrettable substitution', where chemicals are replaced by those with different or unknown hazards. 'Green chemistry' [76] involves the design of chemical products and processes that reduce or eliminate the use or generation of hazardous substances.

   Guiding principles for procurers:

i. Procurers should expect organizations to have chemical stewardship processes and to communicate these processes, or plans to achieve them.
ii. In compliance with the UN Global Framework on Chemicals, organizations are expected to use safer alternatives, innovative and sustainable production (including green chemistry) and handling throughout value chains so benefits to human health and environment and maximized and risks prevented.

d) Plastics

Suppliers should demonstrate a comprehensive approach to plastics (some examples include minimizing their use i.e. in packaging and/or improved product design, or use of less toxic plastic types and constituents)[77] when suitable, more sustainable, alternatives exist.

e) *Nature-related Issues*:

The Taskforce on Nature-related Financial Disclosures has guidance and disclosure recommendations to enable businesses to report and act on their nature-related dependencies, impacts, risks and opportunities.[78] Aligned with the goals and targets of the Kunming-Montreal Global Biodiversity Framework, organizations can ensure that their activities shift financial flows toward nature-positive outcomes.

With no uniformly accepted standard to measure any of the above content areas surrounding protection of the living planet, each procurement will have to be viewed in and of itself with scoring aligned with the broad principles and guidance materials noted above.

No specific timeline has been set for this domain.

Acknowledgements

Expert panel with areas of expertise

Procurement Expert	Organization / Affiliation	Area of Expertise
Fiona Adshead, Keith Moore	Sustainable Healthcare Coalition	Sustainable procurement, Industry liaison, Health inequities
Stephen Blenkinsop	Newcastle University, Engineering	Climate resilience
Michael Collins	Environmental Resources Management	Carbon foot printing, Decarbonization
Tsanko Dimov	Greener NHS	Decarbonization, Ethics
Gabriella Abruzzo, Tristan Couberes	Healthcare Without Harm Europe	Climate resilience
Gil Manning	Centre for Sustainable Healthcare, UK; Association of Renal Industries	Sustainable procurement, Industry liaison
Fiona Miller	CASCADES Canada, University of Toronto, ATACH Procurement	Sustainable health systems, Sustainable procurement
Gaynor Whyles	JERA consulting	Sustainable procurement
Nicole Fletcher	NHS England	Sustainable procurement

REFERENCES

1. https://unfccc.int/news/what-is-the-triple-planetary-crisis. Accessed online Nov 11, 2025.
2. Romanello M, Walawender M, Hsu SC, et al. The 2025 report of the Lancet Countdown on health and climate change: climate change action offers a lifeline. *Lancet*. 2025;406(10521):2804-2857. doi:10.1016/S0140-6736(25)01919-1
3. United Nations General Assembly Seventy-sixth session Agenda item 74(b): Resolution adopted by the General Assembly on 28 July 2022: The human right to a clean, healthy and sustainable environment. Available at: https://docs.un.org/en/a/res/76/300, accessed December 23, 2025.
4. World Health Organization Seventy-eighth World Health Assembly 15 May 2025. Climate Change and Health. Draft Global Action Plan on Climate Change and Health. Available at: https://apps.who.int/gb/ebwha/pdf_files/WHA78/A78_4Add2-en.pdf, accessed December 23, 2025.
5. World Health Organization Alliance for Transformative Action on Climate and Health (ATACH) Country Commitments. Available at: https://www.who.int/initiatives/alliance-for-transformative-action-on-climate-and-health/commitments, accessed December 23, 2025.
6. International Society of Nephrology. GREEN-K – Global Environmental Evolution in Nephrology and Kidney Care, 2024. Available at: https://www.theisn.org/initiatives/green-k-global-environmental-evolution-in-nephrology-and-kidney-care/ accessed December 23, 2025.
7. Stigant CE, Barraclough KA, Harber M, et al. Our shared responsibility: the urgent necessity of global environmentally sustainable kidney care. *Kidney Int*. 2023;104(1):12-15. doi:10.1016/j.kint.2022.12.015
8. United Nations Department of Economic and Social Affairs. Sustainable Development. The 17 Goals. Available at: https://sdgs.un.org/goals. Accessed December 23, 2025.
9. Jager KJ, Kovesdy C, Langham R, et al. A single number for advocacy and communication-worldwide more than 850 million individuals have kidney diseases. *Nephrol Dial Transplant*. 2019;34(11):1803-1805. doi:10.1093/ndt/gfz174
10. GBD 2023 Kidney Failure with Replacement Therapy Collaborators. Global, regional, and national prevalence of kidney failure with replacement therapy and associated aetiologies, 1990-2023: a systematic analysis for the Global Burden of Disease Study 2023. Lancet Glob Health. 2025;13(8):e1378-e1395. doi:10.1016/S2214-109X(25)00198-6
11. Bello AK, Okpechi IG, Osman MA, et al. Epidemiology of haemodialysis outcomes. *Nat Rev Nephrol*. 2022;18(6):378-395. doi:10.1038/s41581-022-00542-7.
12. Rao N, Brotons-Munto F, Moura AF, et al. Holistic Impact of CKD: A Clinical, Economic, and Environmental Analysis by IMPACT CKD. *Kidney Int Rep*. 2025;10(7):2116-2127. Published 2025 Apr 2. doi:10.1016/j.ekir.2025.03.051
13. Bello AK, Okpechi IG, Levin A, et al. An update on the global disparities in kidney disease burden and care across world countries and regions. *Lancet Glob Health*. 2024;12(3):e382-e395. doi:10.1016/S2214-109X(23)00570-3
14. International Society of Nephrology. Closing the gaps CKD initiative, 2024 [Available from: https://www.theisn.org/initiatives/the-isn-closing-the-gaps-ckd-initiative. Accessed December 30 2024.

15. Young SE, Khoshnaw LJ, Johnson RJ. Climate and the Nephrologist: The Intersection of Climate Change, Kidney Disease, and Clinical Care. *Clin J Am Soc Nephrol*. 2023;18(3):411-417. doi:10.2215/CJN.08530722
16. Hajat S, Casula A, Murage P, et al. Ambient heat and acute kidney injury: case-crossover analysis of 1 354 675 automated e-alert episodes linked to high-resolution climate data. *Lancet Planet Health*. 2024;8(3):e156-e162. doi:10.1016/S2542-5196(24)00008-1
17. US Food and Drug Administration. Hurricane Helene: Baxter's manufacturing recovery in North Carolina [Available from: https://www.fda.gov/drugs/updates-2024-hurricane-season/hurricane-helene-baxters-manufacturing-recovery-north-carolina. Accessed January 5 2025.
18. Jones, R., & Prout, R. (2013). Haemodialysis: Solving a Shortfall in Consumables. *Journal of the Intensive Care Society*, 14(4), 365-366.
19. Health Care Without Harm. Global road map for health care decarbonization: a navigational tool for achieving zero emissions with climate resilience and health equity, 2021. Available from: https://healthcareclimateaction.org/roadmap. Accessed January 5, 2025.
20. Connor A, Lillywhite R, Cooke MW. The carbon footprint of a renal service in the United Kingdom. *QJM*. 2010;103(12):965-975. doi:10.1093/qjmed/hcq150
21. Saleem S, Stigant C, Rajan T, et al. Environmental Impacts of Kidney Replacement Therapies: A Comparative Lifecycle Assessment. *Am J Kidney Dis*. 2026;87(1):65-74.e1. doi:10.1053/j.ajkd.2025.08.010
22. Barraclough KA, Talbot B, Knight J, et al. Carbon Emissions From Different Dialysis Modalities: A Life Cycle Assessment. *Am J Kidney Dis*. 2025;86(4):465-474.e1. doi:10.1053/j.ajkd.2025.04.019
23. Sehgal AR, Slutzman JE, Huml AM. Sources of Variation in the Carbon Footprint of Hemodialysis Treatment. *J Am Soc Nephrol*. 2022;33(9):1790-1795. doi:10.1681/ASN.2022010086
24. Garcia Sanchez JJ, Barraclough KA, Cases A, et al. Using Chronic Kidney Disease as a Model Framework to Estimate Healthcare-Related Environmental Impact. *Adv Ther*. 2025;42(1):348-361. doi:10.1007/s12325-024-03039-w
25. Mtioui N, Zamd M, Ait Taleb A, Bouaalam A, Ramdani B. Carbon footprint of a hemodialysis unit in Morocco. *Ther Apher Dial*. 2021;25(5):613-620. doi:10.1111/1744-9987.13607
26. Hernández-de-Anda M, Taboada-González P, Aguilar-Virgen Q, et al (2023). Environmental impacts of a Mexican hemodialysis unit through LCA. *Journal of Cleaner Production* 2023;*384*, 135480.
27. Bajpai D, Hailu W, Bagasha P, et al. Challenges to Implementing Environmentally Sustainable Kidney Care in LMICs: An Opinion Piece. *Can J Kidney Health Dis*. 2024;11:20543581241246835. Published 2024 May 20. doi:10.1177/20543581241246835
28. Lim AE, Perkins A, & Agar JW. The carbon footprint of an Australian satellite haemodialysis unit. *Australian Health Review*, 2013;*37*(3), 369-374.
29. Barraclough KA, Cases A, Eckelman MJ, et al. International Environmental Impact of CKD Care. *Kidney International Reports 2026*, *11*(2), 103662.

30. Delivering a net zero National Health Service, 2020. Available from: https://www.england.nhs.uk/greenernhs/wp-content/uploads/sites/51/2020/10/delivering-a-net-zero-national-health-service.pdf. Accessed January 10, 2025.
31. Five Years of a Greener NHS: progress and forward look. Available from: https://www.england.nhs.uk/long-read/five-years-greener-nhs-progress-forward-look/. Accessed November 11, 2025.
32. Hagenaars RH, Heijungs R, de Koning A, Tukker A, Wang R. The greenhouse gas emissions of pharmaceutical consumption and production: an input-output analysis over time and across global supply chains. *Lancet Planet Health*. 2025;9(3):e196-e206. doi:10.1016/S2542-5196(25)00028-2
33. A global health strategy for 2025-2028 – advancing equity and resilience in a turbulent world: fourteenth General Programme of Work. Executive summary. Geneva: World Health Organization; 2025. https://doi.org/10.2471/B09277. Licence: CC BY-NC-SA 3.0 IGO.
34. Decarbonizing the healthcare supply chain strategic actions for health systems. Geneva: World Health Organization; 2025. Licence: CC BY-NC-SA 3.0 IGO.
35. (Placeholder for JSP Methods)
36. Ecoquip Joint Statement of Demand. Available at: https://www.ecoquip.eu/?s=joint+statement+of+demand. Accessed November 11 2025.
37. Pan-American Health Organization Strategic Fund. Available at: https://www.paho.org/en/paho-strategic-fund. Accessed Dec 23, 2025.
38. Design Council, Design Bugs Out project. Available at: https://www.designcouncil.org.uk/our-resources/archive/reports-resources/design-bugs-out/. Accessed January 10, 2025.
39. Africa Centres for Disease Control and Prevention. African Pooled Procurement Mechanism (APPM). Available at: https://africacdc.org/appm/. Accessed January 10, 2025.
40. Ecoquip 'Towards Zero-Waste Operating Theatres' project supporting transition to a circular economy for University Hospitals Bristol and Weston NHS Foundation Trust. Available at: https://www.ecoquip.eu/projects/towards-zero-waste-operating-theatres/. Accessed online Dec 24, 2025
41. Ecoquip 'Smart emergency call and response solution for hospitals' project. Available at: https://www.ecoquip.eu/projects/smart-emergency-call-response/. Accessed online Dec 26, 2025
42. Department for Environment, Food & Rural Affairs (Government of the UK). Commission on environmental markets and economic performance, 2007.
43. European Commission. Innovation procurement. How the EU supports innovation procurement, different types of support and support by theme. Available at: https://research-and-innovation.ec.europa.eu/strategy/support-policy-making/shaping-eu-research-and-innovation-policy/new-european-innovation-agenda/innovation-procurement_en. Accessed January 2, 2025.
44. World Health Organization Alliance for Transformative Action on Climate and Health (ATACH). www.who.int/initiatives/alliance-for-transformative-action-on-climate-and-health. Accessed November 11, 2025.
45. WHO. Target setting for low carbon sustainable health systems. Discussion draft, 2023. Available at: https://www.atachcommunity.com/fileadmin/uploads/atach/Resource_documents/Target_

setting_for_low_carbon_sustainable_health_systems_2023.pdf. Accessed January 10, 2026.
46. Worldwide Resources Institute. Greenhouse gas protocol. Available at: https://ghgprotocol.org/. Accessed January 2, 2025.
47. Voluntary Carbon Markets Integrity Initiative. Claims code of practice, 2024. Available at: https://vcmintegrity.org/vcmi-claims-code-of-practice/. Accessed January 2, 2025.
48. Science Based Targets Initiative. Statement from the SBTi Board of Trustees on use of environmental attribute certificates, including but not limited to voluntary carbon markets, for abatement purposes limited to scope 3, 2024. Available at: https://sciencebasedtargets.org/news/statement-from-the-sbti-board-of-trustees-on-use-of-environmental-attribute-certificates-including-but-not-limited-to-voluntary-carbon-markets-for-abatement-purposes-limited-to-scope-3. Accessed January 2, 2025.
49. ECLASS data standard for products and services. Available at: https://eclass.eu/en/. Accessed November 11, 2025.
50. PAS 2090 Pharmaceutical products – Product category rules for environmental lifecycle assessments – Specification. Available at: https://standardsdevelopment.bsigroup.com/projects/9025-12045. Accessed January 29, 2026.
51. Decarbonizing Healthcare Supply Chains: Recommendations on how to drive emissions reductions across healthcare supply chains. A report by the Sustainable Markets Initiative Health Systems Task Force, cin collaboration with Boston Consulting Group. Available at: https://a.storyblok.com/f/109506/x/c8d17852a1/smi-hstf-supply-chains-whitepaper.pdf. Accessed January 10, 2025.
52. UN Guiding Principles on Business and Human Rights: Available at: https://www.ohchr.org/sites/default/files/Documents/Publications/GuidingPrinciplesBusinessHR_EN.pdf. Accessed November 11, 2025.
53. International Labour Organization. Conventions, Protocols and Recommendations Available at: https://www.ilo.org/international-labour-standards/conventions-protocols-and-recommendations. Accessed January 5, 2025.
54. United Nations Global Compact. The Ten Principles of the UN Global Compact Available at: https://unglobalcompact.org/what-is-gc/mission/principles#:~:text=The%20Ten%20Principles%20of%20the,%2C%20environment%20and%20anti%2Dcorruption. Accessed January 5, 2025.
55. British Medical Association. Fair medical trade Available at: https://www.bma.org.uk/what-we-do/working-internationally/our-international-work/fair-medical-trade. Accessed February 24, 2024.
56. British Medical Association. Ethical procurement for health: workbook, 2017. Available at: https://www.bma.org.uk/media/2409/ethical_procurement_for_health_workbook_20_final_web.pdf. Accessed November 11, 2025.
57. ISO 26000:2010. Guidance on social responsibility. Available at: https://www.iso.org/iso-26000-social-responsibility.html. Accessed November 11, 2025.
58. Pharmaceutical Supply Chain Initiative. Available at: https://pscinitiative.org/principles. Accessed November 11, 2025.
59. UN Environment Programme. Circularity. Available at: https://www.unep.org/circularity Accessed February 23, 2024.

60. Greenpeace: What really happens to your plastic recycling? [Available from: https://www.greenpeace.org.uk/news/plastic-recycling-export-incineration/?gad_source=1&gclid=CjwKCAiAiOa9BhBqEiwABCdG83-EnnMpuaNHHE0EzObhpojgYxqIPF3eKHFtMgOWGKXostnwExMq3hoCZE8QAvD_BwE Accessed February 22, 2025.
61. European Commission. Ecodesign for Sustainable Products Regulation. Making sustainable products the norm in the EU. Available at: https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/ecodesign-sustainable-products-regulation_en#:~:text=Overview,significant%20impact%20on%20the%20environment Accessed January 2, 2025.
62. International Society of Nephrology. The ISN framework for developing dialysis programs in low-resource settings, 2021. Available at: https://www.theisn.org/wp-content/uploads/2021/03/ISN-Framework-Dialysis-Report-HIRES.pdf. Accessed November 11, 2025.
63. A Global Health Strategy for 2025-2028 - advancing equity and resilience in a turbulent world:
fourteenth General Programme of Work. Geneva: World Health Organization; 2025. Licence: CC BY-NC-SA 3.0 IGO. Available at: https://cdn.who.int/media/docs/default-source/documents/about-us/general-programme-of-work/global-health-strategy-2025-2028.pdf?sfvrsn=237faeeb_3, accessed November 11, 2025.
64. Liyanage T, Ninomiya T, Jha V, et al. Worldwide access to treatment for end-stage kidney disease: a systematic review. *Lancet*. 2015;385(9981):1975-1982. doi:10.1016/S0140-6736(14)61601-9
65. Harris DCH, Davies SJ, Finkelstein FO, et al. Increasing access to integrated ESKD care as part of universal health coverage. *Kidney Int*. 2019;95(4S):S1-S33. doi:10.1016/j.kint.2018.12.005
66. Tackling NCDs: best buys and other recommended interventions for the prevention and control of noncommunicable diseases, second edition. Geneva: World Health Organization; 2024. Licence: CC BY-NC-SA 3.0 IGO.
67. Asante A, Price J, Hayen A, Jan S, Wiseman V. Equity in Health Care Financing in Low- and Middle-Income Countries: A Systematic Review of Evidence from Studies Using Benefit and Financing Incidence Analyses. *PLoS One*. 2016;11(4):e0152866. Published 2016 Apr 11. doi:10.1371/journal.pone.0152866
68. WHO. WHO guidance for climate resilient and environmentally sustainable health care facilities. Available at: https://www.who.int/publications/i/item/9789240012226. Accessed January 5, 2025.
69. Health Care Without Harm (Europe). Climate change resilience framework for health systems and hospitals. Available at: https://life-resystal.eu/. Accessed January 5, 2025.
70. ISO 14001:2015. Environmental management systems – Requirements with guidance for use. Available at: https://www.iso.org/standard/60857.html. Accessed November 11, 2025.
71. International Water Stewardship Standard. Available at: https://a4ws.org/the-aws-standard-2-0/. Accessed November 11, 2025.
72. Ben Hmida M, Mechichi T, Piccoli GB, Ksibi M. Water implications in dialysis therapy, threats and opportunities to reduce water consumption: a call for the planet. *Kidney Int*. 2023;104(1):46-52. doi:10.1016/j.kint.2023.04.008

73. World Resources Institute Aqueduct Water Risk Atlas. Available at: https://www.wri.org/data/aqueduct-water-risk-atlas. Accessed February 23, 2025.
74. United Nations Environment Programme. Global Framework on Chemicals. Available at: https://www.chemicalsframework.org/. Accessed January 5, 2025.
75. Healthcare Without Harm (Europe). European healthcare's phase-out list for chemicals of concern, 2021. Available at: https://europe.noharm.org/media/4557/download?inline=1. Accessed November 11, 2025.
76. United States Environmental Protection Agency Basics of Green Chemistry. Available at: https://www.epa.gov/greenchemistry/basics-green-chemistry#:~:text=Green%20chemistry%20is%20the%20design,or%20generation%20of%20hazardous%20substances. Accessed January 10, 2026.
77. Healthcare Without Harm. Towards PVC-free healthcare, 2023. Available at: https://global.noharm.org/sites/default/files/documents-files/7382/2023-05-Towards-PVC-free-healthcare_0.pdf. Accessed November 11, 2025.
78. Taskforce on Nature-related Financial Disclosures. Available at: https://tnfd.global/. Accessed February 23, 2025.