Annex 1: The Guidance Framework for the Application

A Guidance Framework is here provided to guide the narrative submitted by the applicant utility. It is **NOT MANDATORY** to complete the annex of indicators.

The approach is based on defining **the ideal utility under each component**. From that *ideal* which would be the *"superior state"*, the applicant utility is asked to formulate its own narrative describing where it sits and where it plans to be in the near future (refer to Table 1 for indicators that can help shape the narrative). Note that the proposed components to self-assess the utilities' journey towards being climate smart are aligned with the Climate Smart Vision:

1. **Adaptation**: Increase resilience in the face of climate change
2. **Mitigation**: GHG emissions are reduced
3. **Leadership:** a national, regional or international champion

Note: the below descriptions are largely inspired by the CRC Water Sensitive City Index and the City Water Resilience Framework, which are great tools to assess the whole of a city.

ADAPTATION : Essential services are delivered while reducing the risk of failure in the face of climate change threats

How does the utility compare against the following statements?

***Description of the ideal utility**: **Climate Smart Utilities** plan to anticipate future threats from climate change impacts to their services: potable water supply, sanitation, drainage, and the protection of the ecological health of water bodies. Investments to increase resilience contribute to reducing GHG emissions when possible. This translates into:*

1. Diversifying the water portfolio and lowering water use

***Description of the ideal utility**: Safe and secure water is available to everyone for drinking and other consumptive purposes. The utility's strategy is to reduce water losses and water use in relation to local scarcity trends and to diversify alternative water sources, including wastewater recycling, rainwater harvesting and desalination when needed to achieve a positive water balance under the impacts of climate change. Multiple sources feed a diversified water supply system providing fit-for-purpose water. A long-term water strategy is in place including the promotion of low-carbon investment choices and the protection of water sources using nature-based solutions as much as appropriate.*

2. Adapting sanitation strategies to the impacts of climate change

***Description of the ideal utility**: All households are connected to a sewer system or otherwise have a hygienic toilet facility in house (flush/pour flush to sewer, septic tank or pit latrine, or compositing toilet), aligned with the Citywide Inclusive Sanitation (CWIS) vision promoted by IWA. Discharge to environment that causes public health risk is prevented (including leaks) or treated at wastewater treatment plants to protect the ecological health of water bodies prior to release. The system takes planning for growth into account along with the impacts of climate change on the receiving water bodies capacity to absorb treated wastewater discharge. The utility is adapting its sanitation strategies, collection and treatment systems, to respond to lower low-flows and higher high-flows induced by climate change, and in general to an increased sensitivity of aquatic ecosystems, which demand enhanced discharge requirements. These strategies include a combination of centralised and decentralised infrastructure and the use of nature-based solutions when applicable. A long-term adaptation strategy is in place promoting low-carbon investments.*

3. Adequate drainage to manage rainwater and reduce the risk of flooding rivers

***Description of the ideal utility**: Rainfall events do not disrupt everyday activities, and potential risks are well understood. Risks to human safety due to excess rainfall are low to non-existent, and infrastructure and property damage are infrequent. Discharge of rainwater drainage to water bodies is treated as necessary to protect their ecological health. A coordinated and integrated response is undertaken with urban planning to promote retention, reuse, and/or infiltration where possible ("sponge City" concept), and with upstream land management to reduce risk of dysfunction of the drainage and sewer systems and guarantee public health under all scenarios. A long-term rainwater management strategy is in place, accounting for the impact of climate change and promoting low-carbon investments.*

4. Promote robust and adaptive infrastructure

***Description of the ideal utility**: The system has redundancy and by-pass systems, and infrastructure integrity is actively monitored. The number and frequency of failures per capita per year is extremely low. Integrated intelligent system controls are typical across all scales and allows operation and performance of multifunctional assets to be optimised. System capacity and resources across all levels can typically be monitored and adjusted in real time. Access to adequate funding for maintenance activities is available (perhaps secured through user-based charges). Long term maintenance needs are well understood, planned for, and undertaken to a reasonable standard. Maintenance guidelines and procedures are well documented. Assets are all recorded on a GIS system supported by comprehensive databases. Asset audits and proactive maintenance programmes are undertaken. Asset information is used to adapt practices and support innovation. Co-operation between multiple asset owners occurs to ensure all assets at all scales are maintained to enable integrated operation.*

MITIGATION: GHG emissions are reduced

How does the utility compare against the following statements?

***Description of the ideal utility**: The transition to Climate Smart Water is supported by the applicant utility through reducing its GHG emissions, through an array of actions which reduce energy consumption in abstraction, treatment, and distribution, as well as reduction of direct GHG emissions from wastewater management (e.g., reducing N_2O or CH_4 emissions during the treatment, reducing chemicals usage). In addition, the utility can be maximising resource recovery which contributes to reducing global GHG emissions beyond the utility boundary, by producing renewable energy or new materials from waste. This translates into:*

1. Low GHG emissions level

***Description of the ideal utility**: Very low levels of GHG emissions achieved, without accounting for the purchase of carbon offsets. The utility has achieved a significant reduction in the GHG emissions per population served in the last 10 years. GHG emissions are assessed using the latest version of the ECAM tool to ensure consistency of approach between utilities. An alternate tool of GHG assessment can presented, if it covers at the minimum the emissions reported in ECAM, which includes GHG emissions from scope 1 and 2 and some elements of scope 3, as defined by the UNFCC.*

2. Maximised resource recovery to offset GHG emissions within and outside of the Utility boundary through carbon substitution

***Description of the ideal utility**: High levels of resource recovery is achieved across available recoverable resources. The resource recovery approach is common across all new water, wastewater and drainage infrastructure, and progressive upgrades of existing infrastructure is in planning.*

3. High energy efficiency of the water supply and wastewater systems

***Description of the ideal utility**: The water supply system (from abstraction to consumer) has a high degree of energy efficiency and has a very low leakage level. The wastewater treatment system is energy efficient in regard to the type of treatment provided. New assets are being planned with the goal to be low-energy and low-carbon.*

LEADERSHIP: The utility is a local, national, and international leader

How does the utility compare against the following statements?

***Description of the ideal utility**: Climate Smart Utilities are champions making the transition happen through knowledge sharing and innovative solutions to GHG emissions reduction and climate adaptation. This translates into a strong learning and sharing culture at local, national, and international scale.*

1. Empowering citizens and urban planners as partners of the Climate Smart Utility

***Description of the ideal utility**: The transition to Climate Smart Water is supported by the utility playing a leadership role within local governance structures to push for reductions in GHG emissions at the metropolitan area scale and increase awareness and planning capabilities of all urban stakeholders to prepare and respond to the impacts of climate change on water resources. This translates into the utility playing a significant role in 1/ integrating water in urban planning, 2/ increasing water literacy of urban professionals and citizens to ensure community support for actions taken, and 3/ preparing for crisis management for water-related hazards (e.g., floods & droughts). Citizens are part of the solutions through their behaviour. They actively contribute to source control (e.g., reducing micropollutants in wastewater, protection of water sources) to reduce costs of treatment and the associated energy use. They embrace water reuse approaches to become more resilient to future water scarcity.*

2. Strong learning culture

***Description of the ideal utility**: The utility has a strong learning culture, meaning knowledge and skill needs are regularly reassessed and updated. Staff enrich their skills and knowledge by taking part in research with the local and international scientific community. Utility staff develop multi- disciplinary skills and knowledge in fields related to water (for example, landscape and ecology, social and urban design, architecture) to support projects and decision-making in metropolitan institution or governance structures.*

3. National & international leadership

***Description of the ideal utility**: The utility shares its experiences with other utilities at national and international level, seeking to learn more on achieving and improving the climate smart water agenda (e.g., it participates in benchmarking and best-practices programmes). It develops partnerships to exchange knowledge on specific operational issues related to climate adaptation or to reducing the carbon footprint of operations.*

Table 1: Potential indicators to be considered to support your narrative (Optional)

The applicant may fill out as much information as they wish, with the objective to inform the Jury beyond the narrative provided and to foster knowledge sharing with other applying utilities.

This table is OPTIONAL. The applicant doesn't have to provide this table. If provided, it will remain confidential, for the Jury. We encourage you to use it as a preparation prior to the event for you to decide to share (fully or partially) with other utilities during the Congress, to facilitate knowledge exchange.

Pillar	Section	OPTIONAL Indicators	Current situation	Goals/targets in your existing planning
1. ADAPTATION: Essential services are delivered while reducing the risk of failure in the face of climate change	1.1 Diversifying the water portfolio and lowering water use	% of urban population with access to safe water within 1 km of their house		
		Litres/person/day of drinking water consumption per serviced population		
		% reduction in water per capita consumption since 1990 or more recent date depending on available data		
		Indicator of the local water scarcity trends (based on Aqueduct Risk atlas or other reliable source)		
		Annual water balance of water sources over the past 5 years available (YES/NO + description of understanding)		
		A multi-stakeholder groundwater management plan is in place (YES/NO + description)		
		A long term (2030 to up to 2050) water supply strategy is approved by the utility Board (YES/NO) • Does it include a fit-for purpose water approach? • Does it include the protection of water sources using nature-based solutions? • Does it include a low-carbon investment approach?		
		Diverse water sources: • Number of water sources delivering safe water, • % share of each source in the water supply portfolio, including recycled water loops, and		

Pillar	Section	OPTIONAL Indicators	Current situation	Goals/targets in your existing planning
		• Rating high/medium/low of the vulnerability of the source to climate change and why (to show understanding of vulnerability)		
	1.2 Adapting sanitation strategies to the impacts of climate change	% of urban population with access to a hygienic toilet facility in house. Does the utility apply the City-Wide Inclusive Vision?		
		% of wastewater or septic tank sludge managed in a way that protects the ecological health of water bodies		
		A long term (2050) sanitation strategy is approved by the utility Board (YES/NO) • Does it include adaptation to the impacts of climate change on the receiving water bodies to absorb the treated wastewater discharge? • Does it include a low-carbon investment approach?		
	1.3 Adequate drainage to manage rainwater and reduce the risk of flooding rivers	% of urban area that experienced drainage or sewer systems dysfunction in the past 3 years due to rain events.		
		Governance structures in place to support the coordination with urban planning (YES/NO + description)		
		Governance structure in place to support upstream land management coordination (YES/NO + description)		
		Long term (2050) rainwater management strategy is approved by the Utility board (YES/NO + description)		
	1.4 Promote robust and adaptive infrastructure	Frequency of system failures in the past 3 years, as defined by: • Number of unplanned service interruption in the service area (due to pipe burst, quality compliance, or any other cause) • amount of sewer overflow in m3/year/serviced population (within the utility boundary) • number of days/year with non-compliant WWTP discharge		

Pillar	Section	OPTIONAL Indicators	Current situation	Goals/targets in your existing planning
		Emergency and Risk mitigation plan to manage and recover from extreme events (floods and droughts) – Note that the social component of this plan is to be described in the next section. (Yes/NO)		
		Proportion of the assets (explicit if based on total number, on capital cost or on flow managed) identified as critical in the emergency plan that benefit of redundancy measures or by-pass capabilities.		
		% of the assets, identified as critical in the emergency plan, that benefit of integrated intelligent system controls		
		Proportion of operational budget spent on maintenance and renewals.		
		Status of Preventive maintenance guidelines (established / in development / none).		
2. MITIGAION: GHG emissions are reduced	2.1 Low GHG emissions level	GHG Emissions in kg CO2eq/ serviced population/year		
		% reduction since baseline year together with the list of measures implemented to explain the reduction.		
	2.2 Maximised Resource Recovery to offset GHG emissions within and outside of the Utility boundary through carbon substitution	% energy produced/energy consumed (all energy types converted to kJ)		
		Hydraulic potential energy transformed to electricity (the unit is KW produced per linear meter of water supply network times the elevation drop)		
		Calories/ population served of fatal heat recovered (fatal heat is heat that is otherwise dissipated in the ambient air)		
		Materials recovered from wastewater replacing fossil-fuel based products (e.g.: use of sludge as fertiliser) and contributing to avoided emissions or carbon substitution. These products may be used for self-consumption or sold to external parties.		
	2.3 High energy efficiency of the	A holistic energy optimization plan is in place (Yes/NO / being developed / in planning)		

Pillar	Section	OPTIONAL Indicators	Current situation	Goals/targets in your existing planning
	water supply and wastewater systems	The following indicators are assessed annually (and compared to ECAM benchmark) • kWh/m3 of billed or unbilled authorized water supply calculated as the average energy consumption of the system (including abstraction, treatment, and distribution) • Wastewater treatment energy efficiency in kWh /kg of BOD removed and kWh/ m3 treated. • Water and wastewater pumping efficiency in KWh/m3/100m • % of ground- or surface water infiltration in the sewer networks • Water Loss KPI = 0,1000*(Volume Distributed in m3 – Volume of authorized consumption in m3)/(main length in meters) OR other more elaborate water loss KPI.		
3. LEADERSHIP: The utility is a local, national and international leader	3.1 Empowering citizens and urban planners as partners of the Climate Smart Utility	List of roles of utility staff in formal or informal groups that contribute to integrating water in urban planning, promoting mitigation and adaptation.		
		Description of citizen outreach programmes on water related topics (possibly in partnership with other stakeholders) and: • the number of citizens benefiting of the outreach programme (with a per total population ratio). • a “citizens charter” establishing good behaviour exists (YES/NO) and is endorsed by citizens (with a per total population ratio) • % population involved in local water-related initiatives • Industries within the watershed endorse a “charter” establishing good industry practice to support a climate smart utility (with a per total number of industries ratio)		
		Description of how the Disaster & Crisis Management plan contributes to strengthening the community capacity to respond to extreme events.		
		Consultations held with the community to develop climate action plans (type of consultation: Inform / Involve / Empower)		

Pillar	Section	OPTIONAL Indicators	Current situation	Goals/targets in your existing planning
	3.2 Strong learning culture (inspired by WSC Index Indicator 1.1)	Number of research projects related to climate smart topics in the past 5 years. Include list and topics.		
		Number of utility staff participating in working groups of IWA or others.		
		Capacity building approach: description of measures in place.		
		Demonstration of the knowledge and skills acquired around mitigation and adaptation practices that are being applied in the Utility		
	3.3 National & International leadership	Number of case studies or other communications shared in national or international communities (National association, IWA, other) in the past 5 years. Include list and topics.		
		Number of partnerships with other utilities involving climate smart related measures. Include list and topics.		
		Number of partnerships with relevant organisations such as research or policy institutions involved on climate smart related topics. Include list and topics.		