

Innovate UK  
KTN

Global  
Alliance

Africa

[iuk.ktn-uk.org/programme/africa](http://iuk.ktn-uk.org/programme/africa) #KTNGlobalAllianceAfrica

# DCLM Innovation Challenges - Information Session/Q&A -

**DCLM**

Operated by  VEOLIA

# Agenda

09.00 BST / 10.00 SAST – Welcome and Housekeeping

09.10 BST / 10.10 SAST– Introduction to Global Alliance  
Africa and Open Innovation

09.20 BST / 10.20 SAST– Introduction to DCLM

09.30 BST / 10.30 SAST– DCLM Open Innovation challenges

10.00 BST / 11.00 SAST– Q&A

10.20 BST / 11.20 SAST– Next steps

10.30 BST / 11.30 SAST– Close

# Housekeeping

- The Information Session will last up to 1.5 hours
- Please use Zoom chat for submitting your questions
- This session will be recorded and shared later

# Innovate UK KTN

[www.ktn-uk.org](http://www.ktn-uk.org)



Global  
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# Positive Change Commitments

## Positive Change

We create diverse connections to drive positive change

### Deep Expertise

We have wide-ranging expertise and convene the expertise of others

### Powerful Connections

We drive powerful connections with businesses at the heart of what we do

### Future Shaping

We shape the innovation communities of the future

## Our People

We provide an exceptional place of work for our exceptional people

We will collaborate globally to create valuable international connections for innovators.

We will extend our activity beyond economic prosperity to also deliver sustainable societal & environmental benefit.

# OUR STRATEGIC PRIORITIES

## OUR NETWORK

**TRULY  
CROSS-CUTTING  
NETWORK**

**+40K  
UNIQUE  
ORGANISATIONS**

**90%  
SMES**

**+273K  
INNOVATORS  
IN THE UK**

**OVER 30  
COUNTRIES**

## SECTORS

We create diverse **connections** in the following sectors and areas of focus to drive **positive change**

- AgriFood
- Biotechnology
- Chemistry
- Creative Industries
- Design
- Digital
- Electronics
- Energy
- Geospatial
- Health
- Industrial Maths
- Infrastructure
- Manufacturing
- Materials
- Photonics
- Quantum
- Robotics and AI
- Security and Defence
- Sensors
- Space
- Transport
- Water

## CROSS-CUTTING AREAS

**GLOBAL  
INNOVATION**

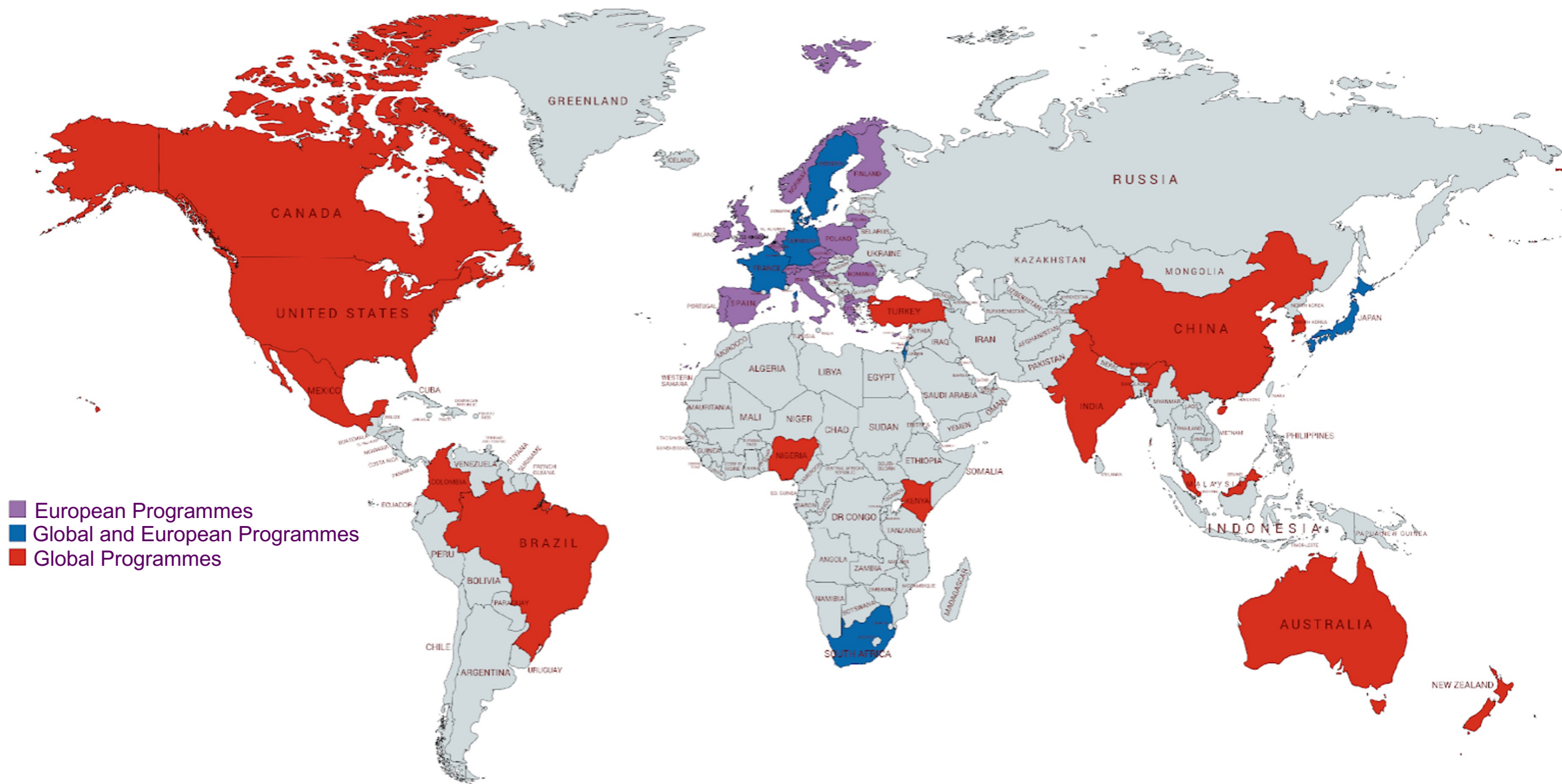
**DIVERSITY  
AND  
INCLUSION**

**PLACE**

**NET ZERO**

**ADOPTION  
AND  
DIFFUSION**

# Our Reach



# Impact to innovation



**66%**

Introduced by  
KTN go on to  
**collaborate**



**42%**

Reach outcomes  
**faster** by 1-2  
years



**60%**

Increased  
**investment** in  
R&D as a direct  
result from KTN  
engagement



**£100m**

Per year  
increased  
**investment** in  
R&D

# Building UK-Africa Partnership through...



## Local to Global

Open Innovation

Place-Based Innovation



## Access to Funding

Collaborative R&D Funding

Strengthening the Investment Pipeline



## Connected Innovation

Global Innovation Network

## Deep Expertise

\* Manufacturing & Materials | Transport & Mobility | AgriFood | Health | Climate Technologies | Digital Economy \*

\* Sector coverage subject to funding level & project priorities



# Open Innovation (OI) programme

# Local Empowerment Through Collaboration

Innovation Exchange is a KTN programme specially designed to introduce company with technical challenges to innovators who are already working on the solutions.

## Sector Technical Challenges

Large organisations, OEMS and Local Authorities have:

- Confidential challenges to solve with no time to explore markets
- Low exposure to companies outside the traditional industry supply chain

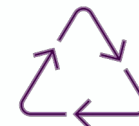
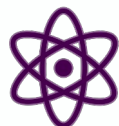
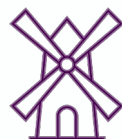


## Innovative solutions *from other sectors*

Solution providers find it difficult to:

- Open the right doors at a large org, OEM or local authority
- Prove the value proposition of products
- Understand customer's time constraints

## Challenge owners



## Solution providers

# Previous Challenge Holders



# The iX process



## (1) Challenge translation

Identify and translate innovation challenges with KTN



## (2) Competition

Prepare and release competition to extended KTN and innovation networks



## (3) Solution selection

Filter and select responses by Solution Providers to the call



## (4) Relationship building

Engage with chosen companies and identify routes for technology development



## (5) Pilot project

Run collaborative pilot project with KTN seed funding



Workshop

Public competition

Selection and pitching

Technology development

Milestones

Workshop

KTN

KTN & Challenger

KTN support

KTN support

# Benefits for Challenge Holders

## Supply Chain Strengthening

It helps build a route for greater and more diverse innovation content in supply chains

## Quick and simple exposure to new technologies and markets

KTN delivers technology solutions from areas to which challenge holders do not normally have exposure (both in- and cross-sector)

## Time efficient

It requires little time commitment, with the bulk of the resource and time provided by GAA

## Expertise at no charge

We are fully funded by the UK Government and there is no charge to you for our professional services



# Benefits for Solution Providers

## **Immediate access to large business**

Successful applicants will be given the opportunity to pitch their solution to the Challenge Holder

## **Ongoing collaboration on project**

The selected Solution Provider/s will collaborate with the Challenge Holder and gain access to local facilities, eg: farmland to carry out trials for piloting the solution

## **Seed Funding provision**

Up to GBP 25,000 seed funding to work on the solution for this specific challenge in collaboration with the Challenge Holder

## **Pitching and development support**

Support from KTN and mentoring from our development partners throughout the challenge process

# Global Alliance Africa Open Innovation Challenges FY21/22

- **Kenya**

- **Flamingo Horticulture**

- False Codling Moth detection
    - False Codling Moth control

- **WEEE Centre**

- CRT recycling – new products
    - CRT recycling – energy reduction

- **South Africa**

- **Unilever**

- Plastic packaging reuse for online retail
    - Plastic packaging reuse for small traders



**ktn** | Global Alliance | Africa

KTN Global Alliance Africa

**Rapidly find Innovative Solutions to Circular Economy Challenges**

We are looking for Kenya, Nigeria and South Africa based companies wanting to find rapid innovative solutions to their industry challenges.

Deadline to apply: 14 September 2021

Connecting for Positive Change

[ktn-uk.org/programme/africa](http://ktn-uk.org/programme/africa)



**ktn** | Global Alliance | Africa

KTN Global Alliance Africa

**Rapidly find Innovative Solutions to AgriFood Challenges in Kenya**

We are looking for large\* Kenya-based companies from the AgriFood Sector wanting to find rapid innovative solutions to their industry challenges.

Deadline to apply: 30 August 2021.

Connecting for Positive Change

[ktn-uk.org/programme/africa](http://ktn-uk.org/programme/africa)

# Global Alliance Africa Open Innovation Challenges FY22/23

## • Kenya

- Airport navigation Web3 challenge
- Improved packaging for sea freight
- Unilever challenges TBC

## • Nigeria

- Battery second life challenge
- Battery inventory system challenge
- Bird management challenge
- Unilever challenges TBC

## • South Africa

- WTR drying challenge
- WTR beneficiation challenge
- Leachate concentration challenge
- Paper waste valorisation challenge

Funding Opportunity

Global Alliance Africa iX Challenges  
Innovative Solutions to  
Beneficiation of Water Treatment  
Residue

Opens | 16.11.22

Closes | 17.02.23



Hinckley Recycling  
Battery Innovation  
Challenges -  
Live Launch and Virtual Tour

29 Sep | 10:00-12:00 BST



# Introduction to DCLM

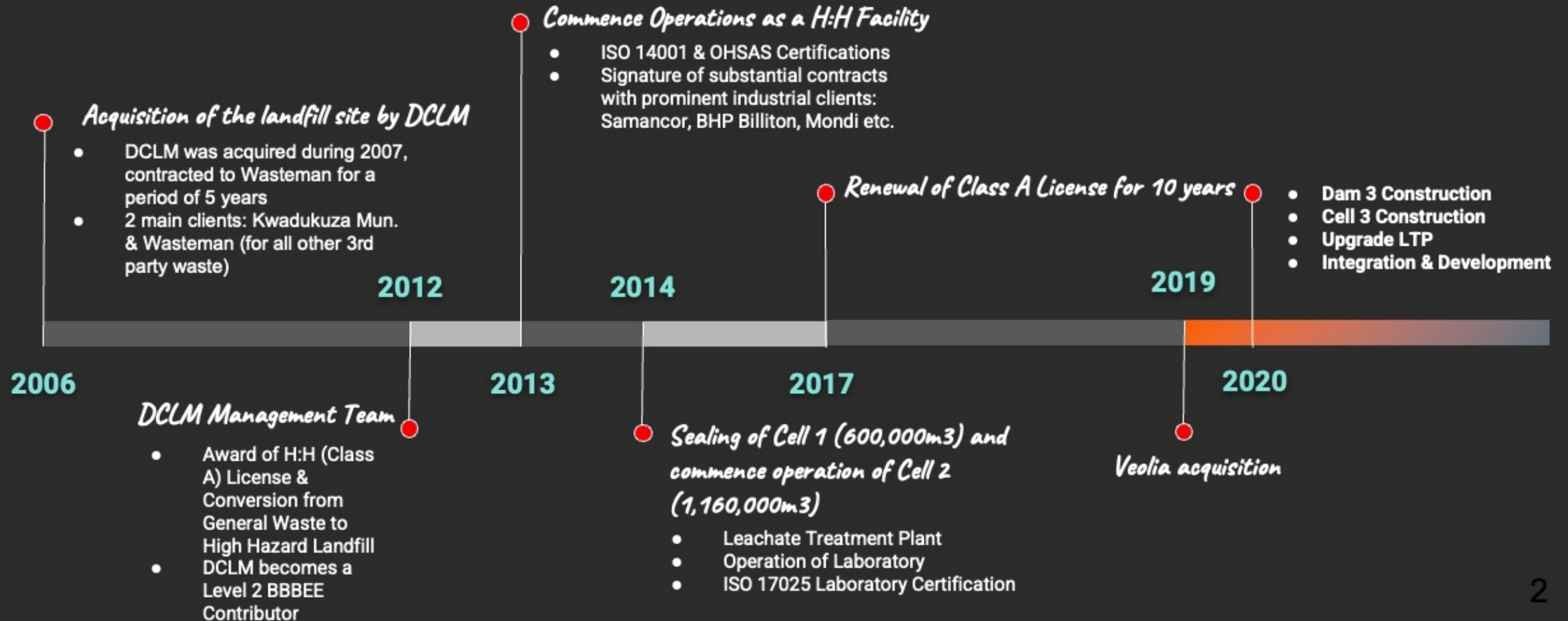


# DCLM

*Operated by*  **VEOLIA**



# DCLM ABOUT US



**DCLM**

Operated by  **VEOLIA**

# 01

# VEOLIA GROUP

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 *Veolia Waste Services*

## VEOLIA GROUP LEADER IN OPTIMIZED RESOURCE MANAGEMENT

With nearly **179,000 employees** worldwide, Veolia Group designs and provides water, waste and energy management solutions which contribute to the sustainable development of communities and industries.

Through its three complementary business activities, Veolia helps to develop access to resources, preserve available resources, and replenish them.



**95 million**  
people with drinking water



**62 million**  
people with wastewater service



Produced nearly  
**43 million**  
megawatt hours of energy



Converted  
**47 million**  
metric tons of waste



# IMPACT 2023

## THE COMPASS OF OUR NEW STRATEGIC PROGRAM

Veolia's success is founded upon its usefulness to all its stakeholders:

- Planet
- Customers
- Shareholders
- Employees
- Society

Maximizing Veolia's impact for all with five performance aspects:

- Economic and financial performance
- Commercial performance
- Social performance
- Societal performance
- Environmental performance



## DCLM ABOUT US

Total Land Area: 144.6 hectares

Total Landfilling permitted: 49.2 hectares

Total Airspace, up to: 15 million m<sup>3</sup>

Total no. of cells in the future: 13

Airspace:

Cell 1: 700.000m<sup>3</sup> / Temporarily capped in 2014

Cell 2: 1.3000.000 m<sup>3</sup> / Temporary Capping underway

Cell 3: 1.550.000 m<sup>3</sup> (approx.) / phase 1 complete





## Management Systems Certification

As an accredited service provider, we have a responsibility to ensure the correct handling, classification, analysis, transportation and disposal of hazardous waste. DCLM further recognizes that these operations have an impact on the health and safety of our employees, and we therefore identify such risks to minimize, reduce and eliminate any harm to employees and any other persons associated with any of our business activities.

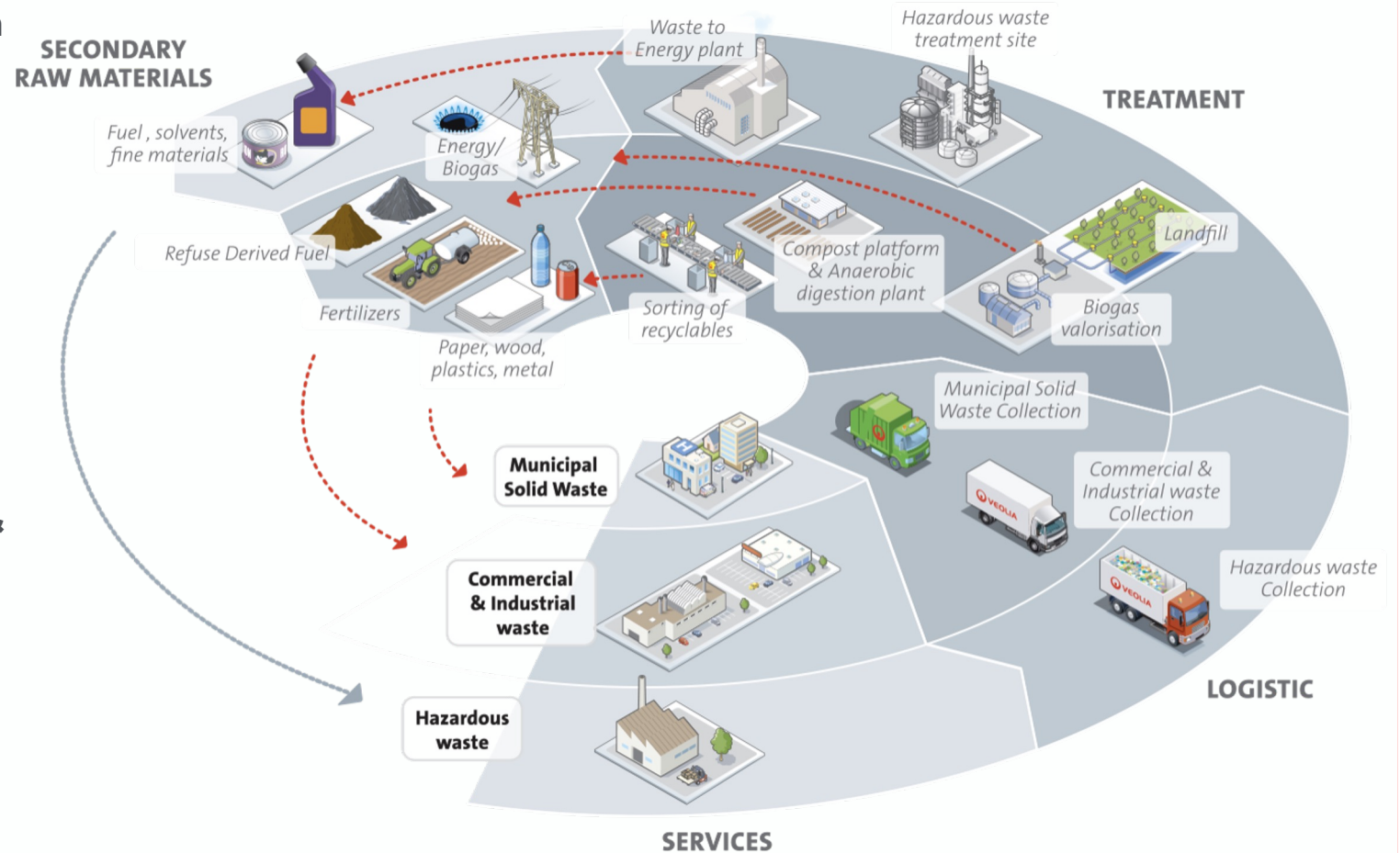
SHEQ Certifications / Professional Affiliations:

- SANAS ([South African National Accreditation System](#)) 17025
- ISO( [International Organization for Standardization](#)) 14001
- ISO( [International Organization for Standardization](#)) 45001
- [IWMSA](#) ( [Institute of Waste Management of South Africa](#)) Member
- CAIA ([Chemical & Allied Industries Association](#)) Member



## OUR STRATEGY

- Accompany the Republic of South Africa to achieve its **sustainable development goals** by managing carefully its **resources**
- Design a **viable, durable & environmental friendly** waste management global system for the future
- Bring the **entire range of waste & hazardous waste solutions** to South Africa
- Adapt the **treatment processes** to the waste typologies & quantities produced





**THANK YOU**

# DCLM – Innovation Challenge for Solidification of Leachate Concentrate



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# Challenge

**DCLM (operated by Veolia) would like to find more environmentally friendly and economically viable ways to solidify the concentrate of their effluent treatment plant. They are seeking solutions utilising innovative solidification agents that can deal with large and increasing volumes of concentrate.**



# Background

**DCLM operates a hazardous waste landfill site** and one of the challenges of landfill sites is the production of leachate. Leachate is produced when water percolates through the waste disposal site, accumulating the contaminants, which creates the highly concentrated hazardous liquid. The leachate must be effectively treated by concentration and solidification, and accommodate larger volume increases as the landfill capacity increases.

DCLM are seeking **practical, feasible, and economically viable ways to solidify the concentrated leachate** from the effluent treatment plant, comprising approx. 8,750m<sup>3</sup> per annum. These solutions should aim to solidify the concentrate utilising innovative solidification agents (alternatives to the current agents: ash and lime) in an environmentally friendly way. The goal is to effectively block any toxins from causing ground contamination.

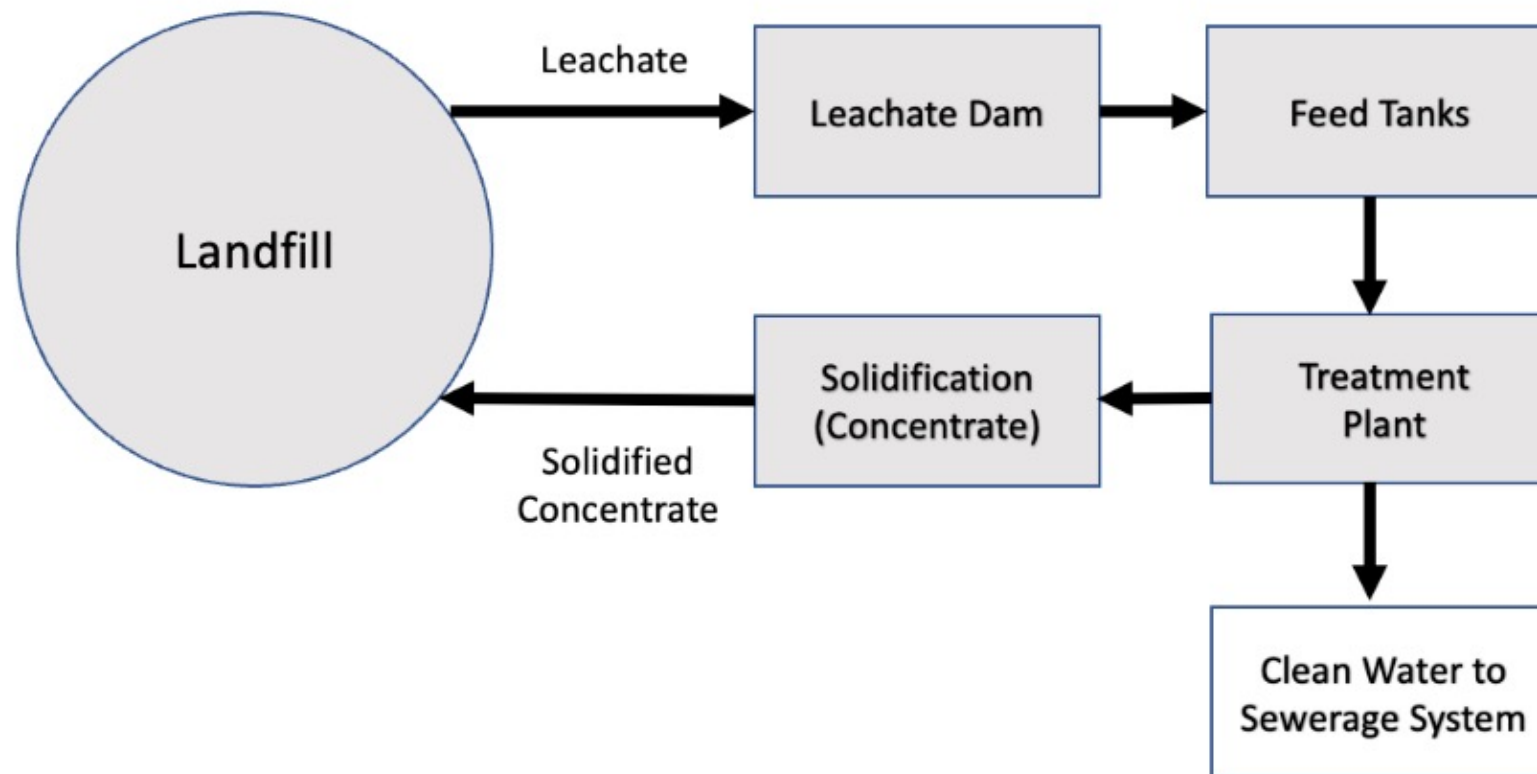
# Background

DCLM will provide current leachate analysis for technical specs (requiring NDA). Following solidification, **innovative methods of concentrate valorisation** would be particularly welcome for industry use. Using any by-products from alternate industries will produce higher value solutions in terms of business responsibility.

The current treatment **process removes impurities and suspended solids**, thereby separating the leachate into a permeate stream and a concentrate which contains the hazardous impurities removed, as per the diagram below.



## Current Treatment Process



# Background

The concentrate composition is **variable depending on the waste streams involved**. However, the salinity remains about the same. Samples, full spectrum analysis and further information on the treatment process are available upon request (requires NDA).

Separation processes are of interest if they can **generate industrial value**. A Circular Economy perspective would be most valuable as the ability to reuse, repurpose or recycle into another value change would create a genuine difference. The game changing waste industry innovation would be the creation of a fraction or process ingredient that reduces reliance on natural resources.

The focus of this challenge is to solidify the concentrate. However, solutions involving water treatment to make the extracted water (from Treatment Plant to sewerage system) **viable as drinking water** would also be considered alongside the primary intervention.

# Target Audiences

**Solutions are invited from, but not limited to, the following sectors:**

- Waste management
- Transport
- Water
- Environmental services
- Manufacturing
- Chemistry
- Engineering
- Industrial biology

# Functional Requirements

The identified solution must/should address the following:

- Deal with **40m<sup>3</sup> of concentrate** per working day.
- Be applicable on **DCLM landfill site**
- Be able to be **integrated** with DCLM's current effluent treatment plant
- Be practical for the **South African environment**
- Solution must be applicable in **modular format**, so it may be scaled progressively
- Please detail any **new infrastructure** requirements for this solution

# Technical Requirements

- Solutions must be able to solidify the concentrate in **1 to 2 days** (high priority)
- Solution must be able to deal with **hazardous** materials
- Solution must be **sustainable** with the intent to reduce carbon emissions.
- Solution to be **non-exothermic**
- **By-products** from alternative industries are desirable
- Solutions involving **valorisation** for industrial use are desirable

[A site visit can be arranged upon request]

# DCLM – Innovation Challenge for Valorisation of Paper Industry Waste

# Challenge

**This Innovation Exchange challenge, delivered by Innovate UK KTN through the Global Alliance Africa project, is supporting DCLM (operated by Veolia) to find economically viable ways to valorise paper industry waste. They are seeking solutions utilising innovative methods to transform waste materials into resources with internal or external commercial value.**



# Background

There are vast quantities of materials that may be recycled to extract commercial value. DCLM, through their long standing work in the Waste Management industry has identified several waste streams that have the potential to be valorised and contribute to a more sustainable waste industry. One of the industries identified is the pulp and paper industry that **has two waste streams currently being landfilled**, namely, effluent fibre and dregs.

Veolia is seeking **practical, feasible and economically viable ways to utilise both of these waste streams productively**, aligned with new waste regulations related to the Circular Economy. They are looking for solutions harnessing the beneficiation or valorisation possibilities of these materials. Veolia will share technical specs of current waste streams. Any solutions must be scalable across 10,000 tons per annum and be cost-neutral or profitable.

# Background

**Local solutions** are preferable to minimise storage requirements of waste and to reduce transport costs. Solutions may lie within the fields of chemistry and industrial biology.

The **waste composition is slightly variable** and tonnages are dependent on production. Samples and full spectrum analysis are available upon request (requires NDA agreement). The SVOC and VOC analysis both indicate that all determinants for volatile organic compounds measured were below detection limits.

A Circular Economy perspective would be most valuable as the ability to reuse, repurpose or recycle into another value chain would create a genuine difference. The game changing waste industry innovation would be the creation of a fraction or process ingredient that **reduces reliance on natural resources and/or contributes in the reduction of waste to landfill.**

# Dregs Overview

During the Kraft pulp process, **black and green liquor dregs** are produced. These dregs are then sent to a furnace for drying, and once cooled this material is then sent to landfill in a filter cake like consistency.

**Process flow diagram** of Dregs by-product formation (ONLINE)

**Analysis on Composition** - based on waste classification of metal content (ONLINE)



# Effluent Fibre Overview

Effluents from pulp and paper mills contain solids and dissolved matter. The paper industry uses a variety of effluent treatment systems. The **preferred process combination** for each individual case depends on the grade-specific quality of the effluent that is going to be treated.

Before disposal to landfill the effluent fibre goes through a screw press separator designed to mechanically separate solid and liquid fractions of the fibre-rich effluent, before being sun dried. The **sun dried, cotton-texture material** is then disposed of.

**Analysis on Composition** - based on waste classification of solid material (ONLINE)



# Target Audiences

**Solutions are invited from, but not limited to, the following sectors:**

- Waste management
- Transport
- Water
- Environmental services
- Manufacturing
- Chemistry
- Engineering
- Industrial biology

# Functional Requirements

The identified solution must/should address the following:

- Provide a **sustainable solution** with the intent to reduce carbon emissions
- Possible solutions into the **sale or re-use** of the waste streams.
- Solutions must be practical for **South African environment**
- Solutions must deal with **10,000t of dregs and 10,000t of effluent** annually
- Solutions must be applicable on **DCLM or client sites**



# Technical Requirements

- Solutions can be incorporated into the **landfill site**
- Be able to treat approximately **10-15,000 tons** per annum
- Please detail any new **infrastructure requirements** for this solution
- Solution must be able to deal with **hazardous materials**
- Solution must be applicable **in modular format**, so it may be scaled progressively

[A site visit can be arranged upon request]

# Operating Conditions – BOTH CHALLENGES

- Solutions to be able to be used or operated between **Monday and Friday 7am to 3.30pm**
- Solution to be implemented in **wet and dry** weather conditions
- Solution must **not be odorous**
- Solution should operate in normal **temperatures and light** levels
- Solutions must be to able to **recover or re-use 100%** of the waste stream (Valorisation)
-

# Cost Requirement & Market Opportunity – BOTH CHALLENGES

- Decrease the cost of landfilling. **Cost reduction** on the current process is essential.
- The solution must be able to treat the **required volume and be able to expand** as the feed capacity expands.
- Opportunity to be expanded to the **paper & pulp industry** (Valorisation)
- Winning solution providers will become **long-term partners**, gaining access to DCLM/Veolia's facilities
- For Circular Economy interventions, please include costings for the **full lifespan** of treatment.

# Out of Scope – BOTH CHALLENGES

Proposed solutions will not be viable if they cannot deal with common scenarios including:

- Unable to deal with **variability** of wastestream composition
- Unable to deal with **variable rates** of wastestream production

# Application Information



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# Deployment Timescale

- 18 May 2023 - Competition Launch
- 20 Jun 2023 – Information session/Q&A (TBC)
- **14 July 2023 - Deadline for applications**
- Jul 2023 - Selection and notification of finalists
- Aug 2023 - Pitch days and Selection of Winners
- Aug 2023 – Collaboration Discussions
- Sep 2023 – Pilot programme activated

# Eligibility

## Applicants must be:

- **Established** businesses, start-ups, SMEs, individual entrepreneurs or academics.
- **Collaborative** solutions (Business to Business B2B and B2R&D) are valid applications. If collaborative solutions are being submitted, a single lead organisation (industrial or academic partner) needs to register the application.
- **Africa-based entrants, UK-based entrants and those from RoW are invited to apply**

# Assessment

## Applications will be assessed on:

- **Relevance** to the topic
- **Innovative** nature of the subject
- **Coherence** of the proposed business model
- **Feasibility**/economic viability
- **Development potential**
- **Maturity** of project/solution
- **Ease of implementation**/ability to launch project quickly
- **Suitability** for the African Market

# Rewards & Benefits

- Up to **GBP 25,000** seed funding (Subject to T&C)
- Opportunity to pitch your solution and **collaboration/partnership** with DCLM
- **Access to materials** and DCLM facilities
- **Technical support** from DCLM team
- **Mentorship programme** facilitated by IUK KTN
- **Sector expertise** from IUK KTN
- **Support in the development** of a prototype or pilot
- Invitation to attend or present at **IUK KTN events**
- **Investor** introductions (if investment is required)

# Q&A Session



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# Thank you.



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