

LOCAL DECARBONIZING ENERGY

Thursday, 11th January 2024
United Kingdom



AGENDA

- 1. Global context, market potential & Energy by Veolia**
- 2. Focus on our business models**
- 3. Key takeaways**
- 4. Zoom UK & Northern Europe**

Estelle Brachlianoff,

**Chief Executive Officer,
Veolia**



GLOBAL CONTEXT, MARKET POTENTIAL & ENERGY BY VEOLIA



A massive, global shift of the energy landscape

Momentum towards local decarbonizing energy

Today

Centralized fossil energy

system reliant on oil, coal and gas, often imported

78% of fossil fuels in the energy mix, 56% imported in Europe

90% of electricity is produced from centralized plants

50% of energy used is heat

37 GtCO₂ Record high energy-related CO₂ emissions (2022)

Tomorrow 2030

Local decarbonizing energy

systems more electrified, decentralized, with greener & smarter production and networks*

x2 Renewable decentralized energy production

x10 Flexible assets to balance the grid demand and intermittent production

+50% of heat from district heating, renewables, electricity for efficiency and affordability

-50% CO₂ emissions to comply with Paris agreement

Local decarbonizing energy: a growing market with high potential to decarbonize the planet

BIOENERGY & RENEWABLES, FLEXIBILITY & ANCILLARY SERVICES

Local and Decarbonized Green Energy Supply

DISTRICT HEATING AND COOLING NETWORKS

Urban Energy Infrastructure

ENERGY EFFICIENCY SERVICES TO BUILDINGS AND INDUSTRIES

Energy Performance Contracts

Market potential
2030 Europe

€150bn market

Bioenergy 150 GW_{th}
30 GW_e electricity

€150bn market

15 GW_{th} efficiency of network
100 GW_{th} recoverable waste heat

€200bn market

120 GW_{th} energy efficiency

€500bn market

400 GW untapped energy potential, in Europe, equivalent to Italy energy demand
30% of EU fossil fuel (coal, gas) imports could be avoided
420 MT CO₂ potential reduction

Customers are moving fast

Fast growing demand for local decarbonizing energy solutions

Our customers' challenges



Carbon emissions reduction

More efficient, less carbon-intensive cities, buildings and industries



Energy security & availability

Local & renewable energy sources on a local scale, self-sufficiency



Affordable energy

Secured price despite geopolitical tensions and minimal energy consumption



Fast growing demand (2030 est.) €500bn Decarbonization market



Bioenergy & Renewables, Flexibility & Ancillary Services

Bioenergy to double to 20% of world energy mix
x10 flexible assets worldwide



District Heating & Cooling Networks

x2 the renewable share for district heating worldwide
20% of heat demand in the UE (from 13% in 2022)



Energy Efficiency Services to Buildings & Industries

-20% energy consumption in the EU
25% of public buildings to be renovated

Energy by Veolia: local decarbonizing energy

Prioritization is key to our success

What we do

Local: at the scale of a city, a district, an industrial park, a large building such as a hospital, a shopping center

Decarbonizing: reducing our customers' carbon footprint (scope 1&2), increasing scope 4 (avoided emissions) for Veolia

Energy: power but also heat, gas produced from low carbon or untapped sources like bioenergy, solar, waste heat recovery, non recyclable waste...

What we don't do

Centralized energy production, even if it's renewables

Consumers direct supply (B2C market)

Major works (only subcontracting)

Facility Management of buildings

Energy Value chain: where Veolia stands

Localized decarbonizing energy: production, distribution, services

LARGE CENTRALIZED ENERGY

Centralized production

- Thermal (gas, oil, coal, biomass), nuclear, hydro
- Large wind farms or photovoltaic farms selling on the market

and distribution

- Transport of electricity on a high voltage network
- Compression, transport of natural gas

LOCAL DECARBONIZING ENERGY

B2B: City, district, building, industry

• Bioenergy & renewables, flexibility & ancillary services

- Production of biomethane from landfills or wastewater treatment plants, power or heat from non recyclable waste, solar panel on landfills, wasted heat recovery..
- Flexibility, storage, ancillary services enabled by digital

• District heating and cooling networks

- Production, distribution of heat and cold for urban or industrial networks
- Decarbonization

• Energy services to buildings and industries

- Operation and maintenance, energy optimization, performance guarantees, utility management, renovation, greening of energy sources, services

INDIVIDUALIZED ENERGY

Consumer B2C market

- Individual heating, air conditioning
- Individual electricity production

Uniquely positioned on the energy value chain, our portfolio enables the ecological transformation

With unprecedented opportunities

Audit

Works &
equipment

Production

Purchasing

Distribution

Operations &
maintenance

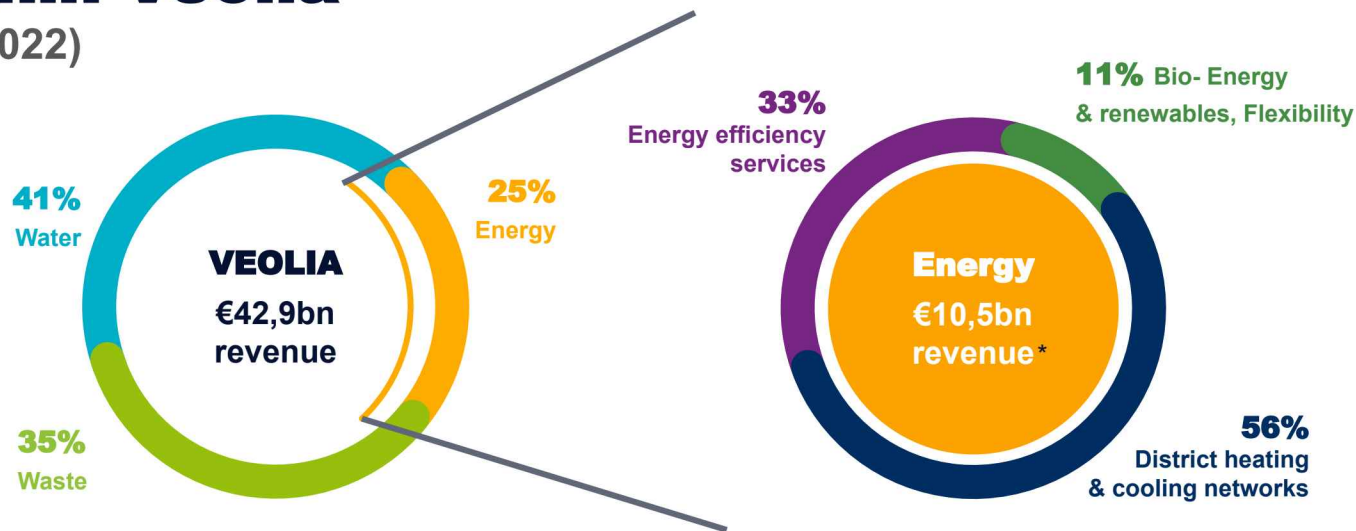
Performance

Veolia's key assets to tackle the local decarbonizing energy market



Energy within Veolia

A core business (2022)



#2 District heating in Europe
#2 Energy efficiency in Europe

Energy Revenue

€10,5bn 2022 (inc. energy revenue from Waste and Water*)
+19,7% CAGR 2019 to 2022 (incl. increase in energy prices)
Or +5,4% CAGR excl. Increase in energy price
EBITDA 1,1bn€

* Energy revenue of €10,1bn excluding energy from waste and water

Our ambition

Sustainable growth in local decarbonizing energy

Our customers' objectives

Carbon
emissions
reduction

Energy security
& availability

Affordable
energy

**Veolia's
Ambitions
2030**



BIOENERGY & RENEWABLES, FLEXIBILITY & ANCILLARY SERVICES

Local and decarbonized
Green energy supply

+50% at 8 GW bioenergy
& renewables production
capacity
+50% at 3 GW flexible
generation



DISTRICT HEATING AND COOLING NETWORKS

Urban energy
infrastructure

N°1 in district
heating networks
in Europe
Coal exit in Europe



ENERGY EFFICIENCY SERVICES TO BUILDINGS AND INDUSTRIES

Energy performance
contracts

N°1 in Europe
N°1 in the Middle East

FOCUS ON OUR BUSINESS MODELS



Claude Laruelle,

Deputy CEO Finance, Digital & Purchasing
Veolia



Our main energy offers



**BIOENERGY &
RENEWABLES,
FLEXIBILITY &
ANCILLARY SERVICES**

Revenue €1.1bn
EBITDA €0.2bn



**DISTRICT HEATING
AND COOLING
NETWORKS**

Revenue €5.9bn*
(*excl bioenergy and flexibility*)
EBITDA €0.7bn



**ENERGY EFFICIENCY
SERVICES
FOR BUILDINGS
AND INDUSTRIES**

Revenue €3.5bn**
EBITDA €0.2bn

BIOENERGY & RENEWABLES, FLEXIBILITY & ANCILLARY SERVICES



Bioenergy & Renewables Production

Business Model

We produce low-carbon energy from untapped “wasted” sources: non recyclable waste, wastewater, wasted heat / cold, unused industrial sites.

We produce a broad range of energy: power, heat, gas etc

E.g. Biomethane from landfills or wastewater treatment plants, power and heat from non recyclable waste, solar panel on landfills, waste heat recovery etc

- Energy is a “by-product” associated with other main activities usually long term infrastructure or contracts
- Local sourcing to address energy sovereignty needs
- Secured sales and hedging policy to limit exposure to energy price
- Usually low Capex / high ROCE as energy is often a “by-product” of profitable activities

5.3 GW

bioenergy
& renewables
capacity

**30%-70%
less CO₂**

when using energy
from waste rather
than fossil fuel

Key financials

Revenue 2022 €0.9bn

CAGR (2019 to 2022) 5.5% per year*



Typical competitors include:



ARCHAEA
ENERGY

a bp company

USA, acquired
by BP



ALBIOMA

France, acquired
by KKR



nature
energy

Denmark, acquired
by Shell

*2019-2022 average annual growth, excl. impact of energy prices

Bioenergy & Renewables Production

Veolia's ambition

Growth drivers

Market driven by commitment to decarbonization and the demand for local sources of energy to reduce dependency from fossil fuel and protecting against cost volatility

- X2 bioenergy worldwide to 20% energy mix by 2030
- EU targets x2 production of biomethane by 2030 to reach 10% of gas mix
- Eg: In France, biomethane from non recyclable waste & wastewater could replace 25% of pre-war Russian gas imports

Veolia key differentiators

Circular

Tap into "wasted" sources of energy

Synergies

with water and waste activities

Local

positioning

close to production and consumption

Veolia ambition 2030

8 GW

Bioenergy & Renewables
production capacity

+50% vs 2022

Bioenergy & Renewables Production

Innovative examples



Biogas from wastewater

Ex: Sofia wastewater treatment plant (1 Meq pop.) energy positive since 2019 and generating 24 GWh



Biogas from landfill

Ex: landfill near São Paulo in Brazil, to produce 35GWh of biogas to be used by nearby industrial customer
Ex: Landfill East of Paris, producing 73 GWh injected in the gas network

Power and heat from non recyclable waste

Ex: Veolia produces 11 TWh of electricity + 2 TWh of heat for industry from alternative fuels (RDF -refuse derived fuel, waste wood, sludge)



Self-sufficiency

Ex: In France, increase of production (PV on landfills and sites, energy from waste, bioenergy) allowing Veolia to produce as much as it consumes (2 TWh of electricity, 0.7 TWh of natural gas)



Flexibility & Ancillary Services

Business Model

We help to balance power grids with innovative digital solutions, in order to consume less or produce more when needed.

Rapidly expanding service made even more necessary by the development of renewable energy, which creates intermittent power supply.

- High expertise needed to aggregate any flexible assets that produce or consume electricity
- Strong counterparty: national electricity grid operators, with long term needs for balancing
- Revenue: paid by electricity grid operators ; mix of fixed fees (for availability) and variable fees (for activation)
- Low Capex, high ROCE

2 GW

flexible capacity

10 000

sites
aggregated

Key Financials

Revenues 2022 €0.2bn

CAGR (2019 to 2022) 15% per year* 0,24



Typical competitors include:



*2019-2022 average annual growth, excl. impact of energy prices

Flexibility & Ancillary Services

Veolia's ambition

Growth drivers

Market driven by very fast addition of intermittent solar and wind capacity to the grid, creating a large and long term need for grid balancing between supply and demand.

- X10 need of flexible asset by 2030 globally
- over 500 GW PV & Wind in Europe, 300 GW in the US

Veolia key differentiators

Aggregate

small units
to serve the grid
(flexibility) and
customers (PPA*)

Large base

of owned assets
and industrial
customers

Veolia ambition 2030

3 GW

flexible power generation

+50% vs 2022

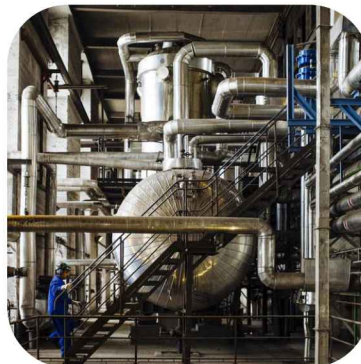
Flexibility & Ancillary Services

Innovative examples



Demand response & ancillary services

Ex: 50 MW of flexible capacity
made available by Veolia to
RTE in France



Extra capacity

Ex: in Hungary, up to 150 MW
of flexible electrical production
capacity thanks to our
cogeneration assets



Corporate PPA*

Ex: 40 MW solar panel under
development on closed
landfills in France,
to secure green electricity to
water installations from 2027

LIVE

BIOENERGY & RENEWABLES: HEAT AND COLD RECOVERY

Jakub Patalas, Vice President and Chief Operating Officer, Veolia Energy Poznań (Poland)

Franck Arlen, Deputy country Director, Veolia Spain (Barcelona)



Veolia Poznan, Poland

Heat recovery from Volkswagen foundry

VEOLIA IN POZNAN

- **Over 20 years** of operation
- **930 MWt** of thermal capacity in owned CHP plant
- **600 km** length of District Heating Network
- **60% of residents** in Poznań and surroundings with heat from Veolia

VOLKSWAGEN IN POZNAN

- **30 years** in Poland
- **The largest plant in Europe** is the VW plant in Poznań producing cylinder heads used in cars
- **226 284 cars** produced in 2022
- **4 m cars** have been produced since 1993

THE TWO "TAILOR-MADE" SOLUTIONS

One of the first projects in CEE focused on the **recovery of waste heat into DHN**



1st stage
Heat recovery from compressors



2nd stage
Heat recovery from furnaces



THE PROJECT

Initial talks with VW

Heat recovery from compressors **comes into operation**

New contract for heat recovery from **furnaces**

First heat recovery from furnaces **comes into operation**

Further **analysis of development opportunities** with VW

2012

2017

2021

2022

2024



KEY INFORMATION & BENEFITS

70k GJ
waste heat recovered

4k tons
annual reduction in coal consumption

6,5k apartments
using recovered heat

17k m³
annual reduction in water consumption

3,5k tons
annual reduction of CO₂ emissions

Residual cold recovery in the port of Barcelona, Spain

Pioneering cold energy recovery solution to produce local, carbon-free energy

Solution

- World's first residual cold recovery solution at Barcelona's Enagás LNG terminal
- Recovers the energy released during the traditional regasification process, which sends liquefied natural gas (LNG) into the seawater loop at -160°C , before delivering it to the grid in gaseous form at a temperature of around -2°C / 0°C

Impact

- 131 GWh of local, low-carbon, low-cost energy generated for the Barcelona port area
- 42,000 tons of CO_2 avoided per year, compared with the energy production that would have been necessary without recovered cold

Potential

With over 150 regasification terminals worldwide, this innovation offers considerable energy recovery potential, particularly for sites where urban and industrial densities are sufficiently suitable for its implementation.



42 kt/year
of CO_2
avoided per year

Start in the
second
quarter of 2024

131 GWh
of low-cost,
low-carbon local
energy generated

DISTRICT HEATING AND COOLING NETWORKS



District heating and cooling networks

Business model

Essential infrastructure with strong resilience:

- Full asset ownership by Veolia (no contract duration)
- Captive customer base of residential customers
- No commodities exposure : pass-through energy price via indexation, public counterparties

Key assets for decarbonization of cities, as heating is two-third of energy needs of residents connected:

- Higher efficiency thanks to waste heat valorization and cogeneration
- Performance management of losses and fuel consumption
- Decarbonize at scale by switching to other fuels, with good return (typically double digit IRR)

#2 District heating player

In Europe

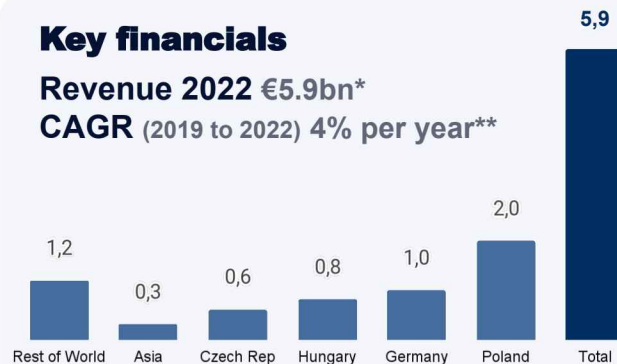
500+ networks

Operated by Veolia

Key financials

Revenue 2022 €5.9bn*

CAGR (2019 to 2022) 4% per year**



Typical competitors include:



* €6,5 bn in Local Loop of Energy excluding €0,6 bn ancillary services and

** 2019-2022 average annual growth, excl. impact of energy prices

District heating and cooling networks

Veolia 2030 ambition

Growth drivers

Organic growth due to population growth and cheaper / secured tariff than individual solutions: more connections to existing networks and development of new networks in all European countries

Privatisation of urban networks in Central and Eastern Europe, driven by need for modernisation, efficiency and decarbonization

Development of new low carbon networks (4/5th generation)

➔ District heating 20% of heat demand in UE (from 13% in 2022)

Decarbonisation of production and coal exit.

➔ X2 renewables use in district heating to reach 20%

Veolia ambition 2030

n°1

IN DISTRICT HEATING NETWORKS

in Europe

Veolia key differentiators

Unique
infrastructure
network in Europe
highly efficient
(cogeneration)

Best in class
operating
performance
including latest
innovation (AI)

Synergies
With water
and waste
activities

District heating and cooling networks

ZOOM Coal exit in Europe by 2030: from commitment to action

Planned investments

€0.5 billion spent

€1.6bn cumulated by 2030

With IRR > 10% thanks to energy efficiency improvement and high CO₂ price in EU market

Key projects

Czech Republic Energy Assets:
from Coal to Refuse-Derived Fuel + Biomass



75 M€ capex
IRR > 10%
↘150 000 tCO₂

Germany: city of Braunschweig generation of
Power & Heat from Coal to Biomass + Natural Gas



270 M€ capex
IRR > 10%
↘270 000 tCO₂

District heating and cooling networks

Examples



Heat and electricity production plant

Budapest, Hungary

Strategic heat & electricity production plants (1,000 MW heat and 400 MW power)

Acquired in 2020, with many improvements achieved or planned by 2025: cogeneration units valorized on the flexibility market, new turbine leading to increased capacity and gas efficiency

Value creation: IRR > 10%



Heat Network

Prague, Czech Republic

Heat network of the Right Bank acquired in 2020 (900MW) to complement left bank already owned, with connection between the two ongoing in order to improve efficiency and reliability.

Project to recover heat from the water network operated by Veolia.

Value creation: IRR > 10%

LIVE

DISTRICT HEATING AND COOLING NETWORKS

Jean-François Nogrette,
Senior Executive Vice President, Veolia France
and Special waste Europe (Saclay)



5th generation heat and cold network, Paris-Saclay, France

Solution

- New generation ambitious energy mix combining deep geothermal energy, waste heat from the CNRS supercomputer, and heat recovery from the cooling network. Decentralized substations are connected to each other by a temperate loop.
- Every connected building (houses, companies, research institutions...) is both a producer and a consumer of heat and cold.

Impact

- 650 000 sq. meters already connected, network automatically operated 24/7, 365 days a year, adjusts to demand
- Goal: double the power by 2028 (100 GWh/year of heat, 20 GWh/year of cold) and reach the average consumption of 10,000 households each year

Potential

- Large potential of duplication in European cities
- Backed by EU regional development programme "D2Grids"
- Saclay network is one of the demonstrators for this project in North-West Europe



**One of the most
innovative District
Heating and
Cooling network
in the world**

> 50%
Renewable energy

**Local &
decarbonized
solution**

ENERGY EFFICIENCY SERVICES FOR BUILDINGS AND INDUSTRIES



Energy Efficiency Services to Buildings and Industries

Business model

Low risk-fast growing business model with recurring business and limited installation works

- Energy performance based contracts, typically 5-8 years, up to 20 years for the largest projects, including limited works (subcontracted)
- Production of energy, locally produced with a best combination of renewable fuels and green technologies
- Customers are hospitals, shopping centers, industries (chemical, pulp & paper, food & beverage)
- Assets owned by customers, low Capex
- Pass-through energy price, no commodity exposure

**Veolia
figures
2022**

**15-20%
savings**

energy & CO₂
in a typical
contract

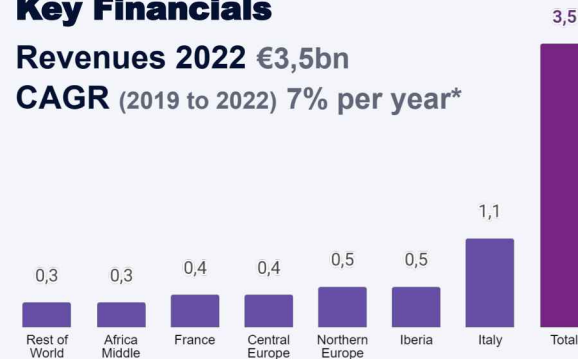
**Onsite
generation
capacity**

usually included
(cogeneration,
solar, RDF)

Key Financials

Revenues 2022 €3,5bn

CAGR (2019 to 2022) 7% per year*



Typical competitors include:



*2019-2022 average annual growth, excl. impact of energy prices

Energy Efficiency Services for Buildings and Industries

Veolia 2030 ambition

Growth drivers

Strong regulation to increase security of energy supply and self-sufficiency

- Globally, half of CO₂ reduction by 2030 will come from Energy Efficiency
- +40% energy efficiency in buildings by 2030, of which 50% comes from avoided demand through better management: optimising building temperatures, behavior, operations...
- +15% energy efficiency in industry

Rising energy prices lead to more energy savings with limited Capex investment

Strong appetite for a greener energy mix in building and industrial sites (biomass, biogas, solar, RDF) to reduce GHG emissions

More customers are looking for innovative partnerships to deliver results more quickly (e.g. Enova in the Middle-East) including financing (green funds)

Veolia ambition 2030

n°1
IN EUROPE
& MIDDLE
EAST

Veolia key differentiators

One-stop shop
solution provider
including greening
energy production

Best in class operating performance
including latest
innovation (AI)

Technology agnostic
guaranteeing
energy
efficiency

Customer Portfolio
of commercial
industrial waste
and water

Energy Efficiency Services for Buildings and Industries

Innovative examples



Biomass

Ex: Braskem, Brasil

160 MW biomass boiler
installed to replace gas
147 kT CO₂/y reduction
representing -90%



Hubgrade

60 Hugarade live piloting
centers, of which 35
specialized in energy with
more than 2,700 sites
connected, in 25 countries

Energy Performance Contracts

Ex: Parma University, Italy
15-year contract
20% energy savings thanks to
tri-generation plant using
biomass, geothermal
& digital monitoring tool
Hubgrade (1.600+ meters)
enhanced with
Eurekam AI algorithm



Cogeneration

Ex: Norske Skog
Pulp & Paper Golbey,
France

170 MW installed
(waste wood)
210 kT CO₂/y reduction



LIVE

ENERGY EFFICIENCY SERVICES FOR BUILDINGS AND INDUSTRIES

**Renaud Capris, Chief Executive Officer,
Enova by Veolia (Dubai)**



Energy performance management: ENOVA by Veolia

Position

- JV Veolia with Majid Al Futtaim (shopping centers and real estate), to provide integrated energy services.
- Typical customers include: malls, airport, hospitality, retail, entertainment.
- Turnover 267m€, and Fast growing CAGR 17.4% (2019 to 2022), EBIT 7.4%, very high ROCE >50%, Now leader in energy performance contracting and photovoltaic services in the middle east

Solution

- Increasing the energy efficiency of our clients, reducing their carbon footprint, and delivering clean energy solutions
- Key references: Dubai airport, Majid Al Futtaim Malls, Tarsheed, Dubai waterfront market etc

Impact

- 615 million kWh of energy savings since 2019
- 500 kt of CO₂ avoided

615
million kWh
of energy savings

500 kt
of CO₂ avoided

20 years
of experience



Energy performance management: ENOVA by Veolia

Hubgrade

Hubgrade and Digitalization

- At Enova, we combine operations with digital technologies to elevate our client's facilities with comprehensive sustainable solutions
- We have embedded our digital solutions in our smart monitoring center: **Hubgrade**
- We integrate Artificial Intelligence in Hubgrade to support predictive maintenance and energy efficiency
- AI is a game changer as it effectively interprets a substantial volume of data collected on various sites.
- We are now offering Hubgrade as-a-service (HaaS) to our customers operating their facilities in-house
- HaaS is a non-intrusive business model where Enova provides monitoring and energy efficiency management without operating the facilities
- This new business model is generating 5 to 10% savings without investment, by interpreting data and setting-up the right parameters



Energy performance management: ENOVA by Veolia

Chiller Energy Efficiency with AI

- **Optimize efficiency of the chiller systems** expecting 5% energy reduction
- Target **increase** of supply temperature by a minimum of 0.5°C
- **Maintain comfort level** condition for facility occupants: temperature, indoor air quality, and relative humidity
- **Identify best setpoints values** of associated assets based on various inputs such as supply water temp, return water temp, outside temp, inside temp, etc....
- **Automatically change/control setpoints at** a 30 minutes interval (93 points)

**5%
Energy
reduction**

**Increase supply
temp by 0.5°C**

**Control setpoints
at 30 mins
interval**



KEY TAKEAWAYS



Key takeaways

A fast developing local decarbonizing energy market



Fast-paced growing markets

(2030 est.)



Pressing customers' challenges

Carbon emissions reduction
Energy security & availability
Affordable energy



€500bn market



**400 GW untapped energy potential,
equivalent to Italy energy demand**



**30% of EU fossil fuel (coal, gas)
imports could be avoided**



420 MT CO₂ potential reduction

Key takeaways

Veolia, a unique positioning & strong ambitions for 2030



Bioenergy & Renewables, Flexibility & Ancillary Services

+50% bioenergy and renewables capacity to 8 GW

+50% flexible capacity to 3 GW



District Heating & Cooling Networks

N°1 heating networks in Europe and Coal exit



Energy Efficiency Services to Buildings & Industries

N°1 Energy efficiency services

N°1 in Europe

N°1 in Middle East



Local Decarbonizing Energy for our customers

+50% scope 4 / avoided emissions

ZOOM UK & NORTHERN EUROPE



Gavin Graveson,
Senior Executive Vice-President,
Northern Europe Zone Veolia

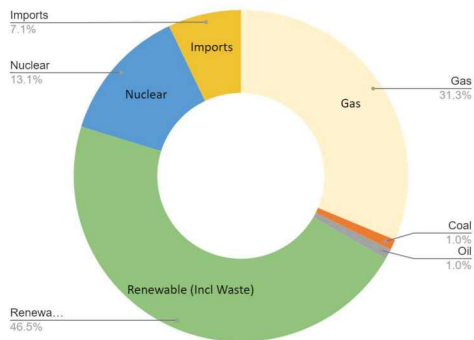


Overview of UK energy market

Electricity

Renewables largest contributor, fast growing
Lowest level of fossil fuels in 66 years

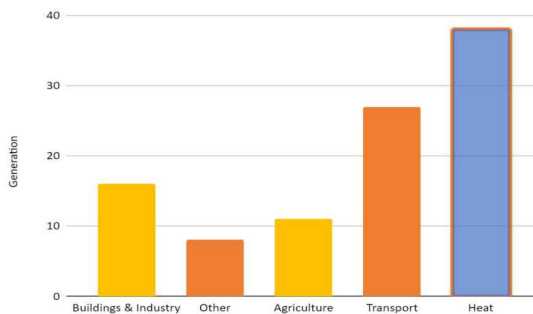
UK Electricity Generation Fuel Mix (2023)



Heat

Heat is the biggest contributor to emissions and significant opportunity lies in district heating

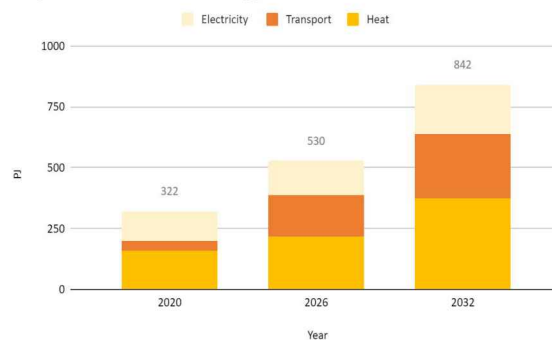
UK Emissions (2023)



Bioenergy

Use of bioenergy is a key part of decarbonising electricity, transport and heat to achieve Net Zero.

Projected Increase in Bioenergy



UK Government Ambition

- Achieving 95% low carbon electricity by 2030 and fully low carbon by 2035
- Growing district heating from 3% to 20% of total heat by 2050 (13TWh to 95TWh, saving 15 MT CO₂), including £80 billion support for investment
- Decarbonizing transport by 2050
- Driving demand for biogas and alternative fuels via dedicated schemes and policies

Veolia UK Ambition

- Provide local decarbonising energy and heat solutions
- Secured over £25M in funding and investment for district heating, which will deliver 100 GWh of heat to homes and businesses by 2027.
- Solar panels on restored landfill
- Explore biogas opportunities following introduction of food waste collection

Bioenergy & renewables, flexibility & ancillary services

Examples



Energy from non-recyclable waste

1.4 TWh delivered by 10
energy recovery facilities,
powering 400,000 homes



Renewables

76 MW generated from
solar panels installed
on 3 restored landfills,
powering 20,000 homes



Extra capacity

1.1 TWh produced by
recovered landfill gas,
CHP engines and biogas at
wastewater treatment plants

Bioenergy & renewables, flexibility & ancillary services

Examples



Virtual Power Plant *Ireland*

Aggregating 32MW across 8 units, providing 10.6 MWh of grid support



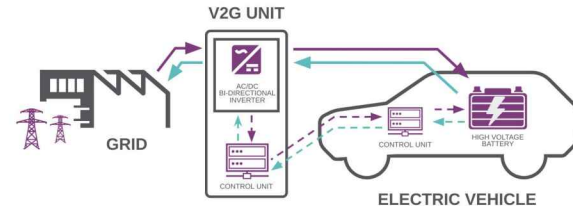
Decarbonizing collection fleet

New infrastructure capable of charging 54 vehicles simultaneously via private wire from adjacent ERF



Demand response & ancillary services

Supporting the balancing of the European grid



World's first Vehicle-to-Grid technology provides network resilience

District heating and cooling networks

Examples



Heating networks

Decarbonizing cities with 3 networks connected to ERFs heating 13,000 homes (Sheffield, London, Leeds)

27 kT CO₂ reduction pa



Industrial parks

Delivering low carbon heating and cooling for new high-tech F&B manufacturing and distribution campus at SmartParc in Derby

30 kT CO₂ reduction pa



Innovation

Using AI to deliver 25% more heat on Sheffield's district heating network

Energy efficiency of building and industries

Ensuring efficiency, decarbonization, security



Energy efficiency for public buildings

Energy performance contracts for 7 NHS Trusts delivering on average -15% energy efficiency

23 kT CO₂ saved pa



Energy efficiency for industries

Energy supply at the UK's largest single site life science campus at Alderley Park, delivering more than 30% reduction on energy bill

5 kT CO₂ saved pa



Hubgrade

~340 sites monitored

Supporting the delivery of £45m guaranteed savings across 35 Building Energy Services contracts

Summary

Veolia is uniquely positioned
in the energy value chain
Our expertise is the missing link
in decarbonising local energy

BIOENERGY & RENEWABLES, FLEXIBILITY & ANCILLARY SERVICES

Efficient production
of electricity from
renewable and bioenergy
sources.

Support customers and
the grid by optimising
assets through
flexibility, aggregation
and storage.

DISTRICT HEATING AND COOLING NETWORKS

Distributing heat and
cooling by district or
industrial networks
and decarbonising
networks.

ENERGY EFFICIENCY SERVICES FOR BUILDINGS AND INDUSTRIES

Efficient operation and
maintenance of energy
plants. Implementation
of energy efficiency
projects and sourcing
of renewable energy.





The Association for
Decentralised Energy

Caroline Bragg, **Interim CEO of the Association** **for Decentralised Energy (ADE)**

The medium-term outlook:
Shifts towards decentralised energy

THANK YOU



Glossary

- **Biogas**: a mixture of methane, CO₂ and small quantities of other gases produced by anaerobic digestion of organic matter in an oxygen-free environment. The precise composition of biogas depends on the type of feedstock and the production pathway (biodigestors, landfills, wastewater treatment plants...)
- **Biomethane**: a near-pure source of methane produced either by “upgrading” biogas (a process that removes any CO₂ and other contaminants present in the biogas) or through the gasification of solid biomass followed by methanation
- **Biomass**: derived from organic material such as trees, plants, and agricultural and urban waste. It can be used for heating, electricity generation, and transport fuels
- **Bioenergy** = biogas + biomass: Bioenergy is produced from organic material, biomass or biogas, which contains carbon absorbed by plants through photosynthesis (ie biogenic carbon). When this biomass or biogas is used to produce energy, the carbon is released during combustion and returns to the atmosphere.
- **Biofuel**: liquid fuels derived from biomass, and used as an alternative to fossil fuel based liquid transportation fuels such as gasoline, diesel and aviation fuels
- **Other renewables**: at Veolia, other renewables = thermal and photovoltaic solar, geothermal, wind, waste heat & cool recovery, energy from waste and biofuels. By 2030, Veolia will reach a global capacity of 8 GW in bioenergy & other renewables.

Sources: IEA, UE

Thank you for attending our event showcasing Veolia's local decarbonizing energy solutions.

If you have any questions please reach out to us.

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