VEOLIA

ORGANIC WASTE RECOVERY

ORGANIC WASTE RECOVERY CHALLENGES

Get the best from waste organic components and methanogenic value.

1. Turning organics into a source of green energy

With its high methanogenic value, organic waste can significantly contribute to green energy production (heat, electricity or gas-to-grid) thanks to Anaerobic Digestion technologies.

2. Restoring natural capital as soil fertilizer

Applying compost on top-soil is one of the best solution to revitalize soils. Compost reduces the need for chemical fertilizers, promotes higher yields of agricultural crops and can help reforestation, wetlands restoration, and habitat revitalization efforts.

3. Positively impacting climate change

Compost contributes to carbon sequestration. According to the 4 per 1,000 initiative, an annual growth rate of 0.4% in the soil carbon stocks would halt the increase in the CO_2 concentration in the atmosphere related to human activities.

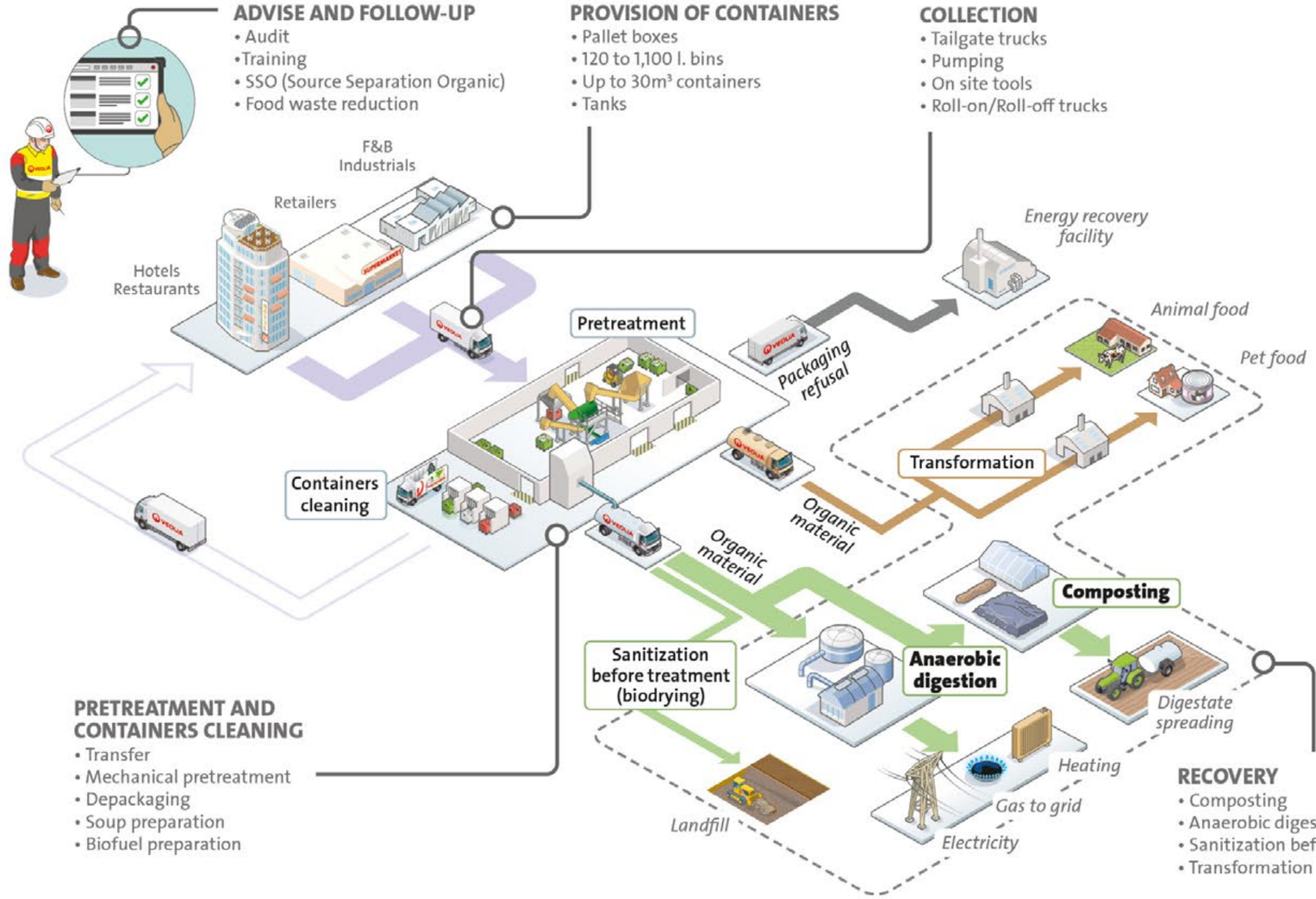
VEOLIA'S SOLUTIONS FOR ORGANIC WASTE RECOVERY

Energy recovery through Anaerobic Digestion

High quality compost as fertilizers

High value products for animal feed through protein bioconversion

RELIABLE SERVICES TO LOCAL AUTHORITIES, RETAILERS, HOTELS, RESTAURANTS AND F&B INDUSTRIALS THAT ENSURE FULL ENVIRONMENTAL PERFORMANCE.



Design
Concept design and choice of technologies in partnership with a constructor: analysis of the demand load curve, choice of equipments, authorizations.

Build
Tendering for construction supervision and support for commissioning.

Financing with partners
Possibilities for different business models: BOT, BOO, DBO, etc.

Operation & Maintenance
Operation and maintenance, major maintenance and asset replacement.

Performance guaranteed
Technical, environmental and financial performance guarantees.

Online Market Place
Veolia operates dedicated online platforms for organic resources allowing buyers and sellers to connect and trade at the best value.

DEDICATED SOLUTIONS FOR ORGANIC WASTE RECOVERY

VEOLIA HAS DEVELOPED AN EXTENDED EXPERTISE ON ALL BIOLOGICAL TREATMENT TECHNOLOGIES AND RECOVERS OVER 3 MILLION TONS OF ORGANIC WASTE EACH YEAR.

ANAEROBIC DIGESTION (AD) WET OR DRY

Biological process that transforms, in the absence of oxygen, organic matter into biogas (rich in methane and CO_2), and into a solid or pasty residue, called digestate. Rich in non- degraded organics and minerals, the digestate can undergo another stage of treatment, depending on local regulations, to be recovered. This is a continuous process.

ENERGY RECOVERY (HEAT, ELECTRICITY, GAS-TO-GRID)

PERCOLATION

Physical and biological process which allows washing (leaching) of soluble organic matter contained in the waste by recirculation of leachate. This process operates in batch. At the end of the process, solid matter can be treated by composting or biodrying, depending on the expected final recovery (compost or SRF respectively). The liquid fraction will be treated by wet AD.

PRETREATMENT

BIODRYING

Physical process that removes humidity from biodegradable waste, by ventilation (that may be heated), to produce a Solid Recovered Fuel (SRF) which will be recovered as energy.

STABILIZATION OR ENERGY RECOVERY (RDF / SRF)

COMPOSTING

Biological process that transforms, with the presence of oxygen, the organic matter into a stabilized and sanitized product, rich in humic compounds, called compost. This reaction generates heat and CO_2. Compost is an organic soil fertilizer.

MATERIAL RECOVERY

OUR ADDED VALUE

Bioconversion

We transform biowaste/coproducts into proteins for animal feed thanks to insect farming (Black Soldier Fly) to create high value by-products.

METHA-Data™

METHA-Data™ is a web application which provides online access to characteristics, composition parameters and methane potential of organic waste. A key tool to determine the best recipe of organic waste to optimize Anaerobic Digestion process.

AEROcontrol™

With AEROcontrol™, we measure the temperature and automatically adapt the air flow rate to achieve optimal biological degradation conditions and improve the quality of the compost produced.

Qualiagro™

Our Qualiagro™ 20 years research program on composting with the French National Institute of Agronomic Research (INRA) is an unparalleled knowledge base on the agronomic value of composts and their positive impact on the environment.

http://www.inra.fr/qualiagro

CARBO PRO™ & SOIL ADVISOR™

Developed in partnership with INRA (French National Institute for Agronomic Research) CARBO PRO™, is a decision making tool to define spreading scenarios for residual organic products and their impact in carbon stocks in soil over time.

SOIL ADVISOR™ is a smart application to help farmers to optimize fertilization using organic fertilizers such as compost.

VALOBIO™

Our internal blended training program VALOBIO™, created in 2002, shares the expertise on biological treatment across all our teams in every country to ensure operational and environmental performance.

OUR REFERENCES IN THE ORGANIC WASTE RECOVERY

MEETHA, SOUDAN

Territorial Anaerobic Digestion — France

SAS Meetha, located in Soudan (western France), is a solution to treat the 20,000 tonnes of organic waste coming from agriculture (manure, slurries, cereal waste,...) and food industry by-products (whey, glycerin, organic waste, green waste,...)

Developed in collaboration with a farmer, the site is a local response to recover organic waste into biogas through Anaerobic Digestion. As from September 2019, the biomethane is directly injected in the gas grid. The digestate is then spread on nearby agricultural fields for a quick assimilation by the soil and the plants.

The site is a great example of circular economy including local farmers all along the process with a territorial approach.

170 Nm³/h
of biomethane

16,000 m³ of
liquid digestate per year

BARDOWICK

Anaerobic Digestion — Germany

Based in Northern Germany, the wet Anaerobic Digestion (AD) facility offers a recovery solution for nearby municipalities, retailers and Food & Beverages industries.

Due to the large scope of organic waste, a 40,000tpa wet-AD process was implemented along with depackaging units to best fit with incoming waste streams.

The 600-800 Nm³ per hour of biogas, with high methane content, are converted into electricity supplied to the national grid thanks to Combined Heat and Power (CHP) engines. The digestate is used as a liquid fertiliser for agricultural amendments, meeting the German standards.

40,000tpa
wet-AD process

EARTHPOWER

Anaerobic Digestion — Australia

EarthPower is Australia's first food Anaerobic Digestion (AD) facility designed and licensed to accept solid and liquid food biomass from municipal, commercial and industrial sectors in the Sydney region. The facility processes food waste to produce green electricity and a nutrient-rich-by-product fertiliser for the agriculture and horticultural markets.

EarthPower can receive up to 50,000 tons of food waste per year and is able to produce enough green electricity to power over 3,600 homes. Waste heat from the cogeneration engines is used in the fertiliser drying process and also to heat the digesters.

Food waste wet AD to produce
4,900 MWh of electricity per year

PARCÉ-SUR-SARTHE

Composting — France

The small size composting platform in Parcé-sur-Sarthe faced the challenge of treating larger volumes with no additional surface.

Veolia developed and implemented AEROcontrol™, an innovation based on taylor-made composting windrow aeration system and an algorithm designed to control the aeration according to compost temperature. The system measures the compost temperature in different windrow spots and adapts the amount of air to be blown under each windrow to optimize biological degradation conditions.

This innovation makes organic material composting more efficient, quicker and easier to manage.

25,000tpa optimized aerobic biological treatment of green and organic waste

LITTLE BUSHY WARREN

Composting — United Kingdom (in Hampshire near Basingstoke)

The site aimed at receiving large quantities of green garden waste and targeted the recycling of garden waste through an optimised natural open air windrow process, resulting in an high-quality product.

The temperature, moisture and oxygen content for each windrow is monitored to ensure optimum conditions are met.

Little Bushy Warren produces a PAS-100 and Soil Association accredited compost, trade marketed as Pro-Grow through BtoC retailers.

The facility also provides space and access to recycling education for the public in order to raise awareness on the environmental benefits of recycling.

75,000tpa
composting facility

55,400tpa
of compost

ESSENHEIM

Anaerobic Digestion — Germany

The challenge was to integrate a percolation and a dry AD process into the 48,000tpa Mainz-Essenheim existing composting plant.

The objectives were the plant's emissions reduction, a design of the composting unit as "a system within a system", the production of a high-quality compost and the production of electricity from renewable resources using a percolation and an AD process. 8 tunnel digesters were implemented using the biogas for the production of electricity and heat.

The input waste (green waste and organic waste) are recovered into biogas and compost, or recycled into secondary raw materials.

Percolation and
7,000 MWh
of electricity generated per year

ROSTOCK

Others — Germany

Subsequent to the statutory prohibition on the dumping of unsorted solid waste materials, the municipality of Rostock looked for a service provider for an all-round process management.

Veolia operates a 195,000tpa mechanical sorting facility aiming at producing Solid Recovered Fuels (SRF).

For the organic fractions, the facility also includes a 45,000tpa dry Anaerobic Digestion (AD) process that produces over 22,000 MWh of raw biogas annually.

The resultant biomethane (approx. 75%) is both fed into the public gas grid and used in a cogeneration plant producing >4,700 MWh of electricity annually.

45,000tpa
organic waste dry AD with gas-to-grid

ARTOIS MÉTHANISATION

Anaerobic Digestion — France

Located in the heart of a farming region which supplies the food & beverage industry, the Artois Methanisation site (near Arras, North of Paris) is a Veolia owned Anaerobic Digestion facility developed on an existing composting site partly supplied through river transport.

With a mobile depackaging unit, the site can treat any flow of biowaste and recover various packaging (PP, PET and PEHD bottles, tin cans, etc...).

Artois Methanisation hosts a pilot center of expertise offering advanced methanogenic sampling and testing capabilities used to optimize the “recipes” to improve the AD throughput. It also comprises biogas as well as digestate quality proof testing.

32,000tpa
organic waste wet AD on an integrated organic waste center

VEOLIA IS THE LEADING PROVIDER OF ENVIRONMENTAL SERVICES FOR ORGANIC WASTE RECOVERY

With a strong experience all across the organic waste value chain, from collection to recovery and land spreading. Operating in 8 countries more than 120 Composting and Anaerobic Digestion sites using different technologies.

Veolia is recognized globally as a leading R&D actor with our Qualiagro™ 20 years research program on composting as well as partnerships with major institutes such as the French National Institute of Agronomic Research (INRA) or Agro-Paritech.

Veolia facilities are equiped with detection and fire protection systems in accordance with NFPA rules (US National Fire Protection Association).

Based on high quality and certified products, Veolia developed dedicated compost and fertilizer brands such as ProGrow, Vital and ADS.

For more information

CORPORATE

Development, Innovation & Markets
guillaume.wallaert@veolia.com

Technical & Performance Department
boris.efremenko@veolia.com

Resourcing the world

Veolia
30, rue Madeleine Vionnet • 93300 Aubervilliers • France
www.veolia.com