Becoming a renewable natural gas producer

Information Guide

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Who is this guide for?

This best practice guide is intended for anyone interested in renewable natural gas (RNG) production projects.

> Project developers.

> Industrialists with organic matter.

> Agricultural producers who wish to participate in or implement an RNG project.

Lexicon

Biogas

Biogas is one of the main outputs of anaerobic digestion. It is produced by the fermentation of organic matter of plant or animal origin.

Digestate

Digestate is the second major output of anaerobic digestion. It is a liquid, paste or solid residue from the anaerobic digestion of organic matter that can be composted or directly reused as an organic and fertilizing amendment.

Deposit/Source

Available residual organic matter, sometimes from a variety of sources, within a radius of activity, which can be exploited for renewable natural gas production.

RNG

Renewable natural gas (RNG) is the result of the biogas purification process. RNG can be added to the gas network and is interchangeable with conventional natural gas.

Purification

This is the transformation that allows biogas to meet the quality standards required to be added to Énergir's network. The result is a gas almost entirely composed of methane (more than 96%): RNG.

Although there are several types of inputs to produce RNG, this guide focuses on anaerobic digestion with agricultural biomass as the main input—a sector with high development potential.

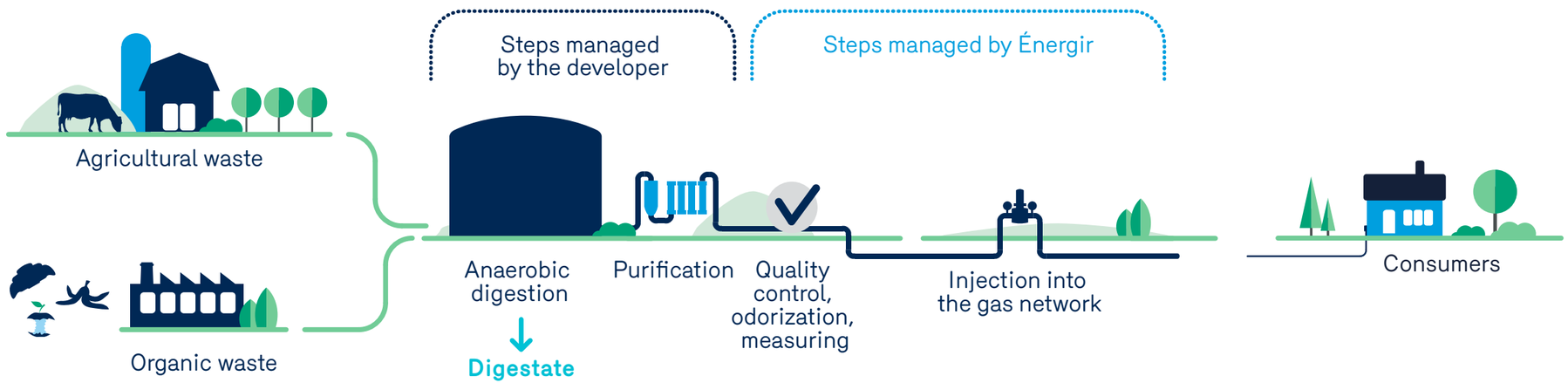
RNG at a glance

RNG is renewable energy, produced from residual organic matter, that has the same physical and energy characteristics as conventional natural gas, allowing it to be added to the distribution network.

Anaerobic digestion

RNG is produced by anaerobic digestion of organic matter. This reaction, also known as biomethanation, can occur naturally in the environment, or for example in landfill. This process can be replicated and optimized in a controlled environment: an anaerobic digestion facility.

RNG production cycle using anaerobic digestion



1

Inputs

RNG is derived from the degradation of residual organic matter, including agricultural and industrial materials.

For example, it can be produced from crop waste or food processing residues, manure, liquid manure, as well as biosolids from wastewater treatment.

2

RNG production

Organic material is sent to a biodigester for processing into biogas, which is purified to produce a gas that is perfectly interchangeable with conventional natural gas: RNG.

The process also produces a digestate that can be used as an organic soil fertilizer and soil amendment.

There are various mature technologies available to produce and purify biogas to choose from depending on the type of inputs and the project context.

3

Injection

RNG is measured, odorized and controlled to meet required standards and specifications, and then added to Énergir's network for distribution throughout Quebec.

4

Recovery

Once added to Énergir's network, RNG replaces conventional natural gas and can be used for the same applications: transportation, heating, cooking, hot water, etc.

In addition, since it is produced locally, RNG enables the development of a circular economy in remote areas.

Benefits of RNG

They fall into three broad categories

RNG production reinforces the positive image of the agricultural community, reduces GHG emissions, recycles fertilizing residual materials (circular economy), and offers on-site RNG consumption.

1 Improved quality of life

- Generates revenue through waste diversion.
- Provides income diversification for agricultural producers.
- Potentially reduces energy and fertilizer costs.
- Reduces odours related to the application of manure and liquid manure.

2 Focus on sustainable agriculture

- Replaces a fossil fuel with renewable energy.
- Produces a digestate that can be used as an organic fertilizer.
- Ensures nutrient recovery and management.
- Reduces pathogens.
- Positions the agricultural community in the renewable energy market.

GHG reduction

- Reduces GHG emissions associated with manure storage.
- Potentially reduces GHG emissions by replacing the use of mineral fertilizers.

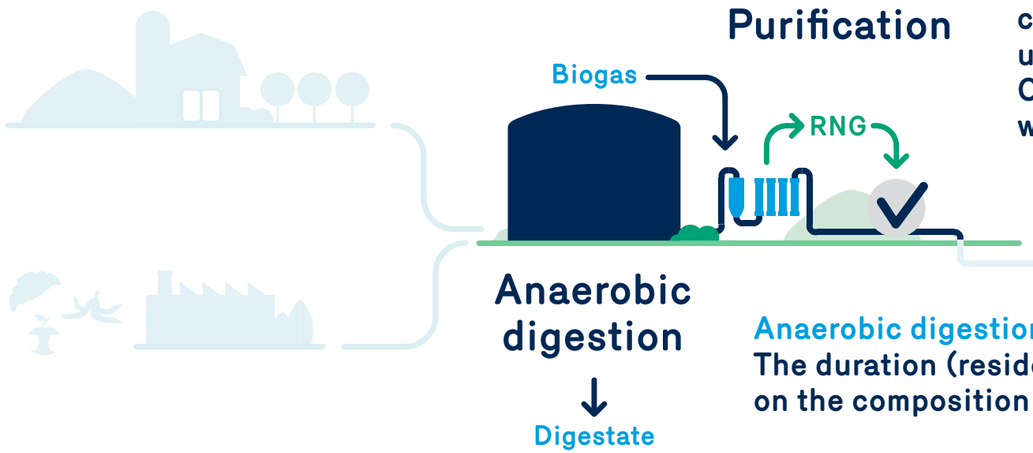
3 Renewable and locally produced energy

- Produces 100% renewable energy.
- Is part of a circular economy by creating wealth from residual organic matter.
- Promotes economic development in regions where RNG production facilities are located.

Contribution to regional development

- Contributes to the vitality of rural areas.
- Creates or maintains jobs on farms.
- Creates a community project.
- Develops energy autonomy by reducing dependence on energy imports from outside Quebec.

What is anaerobic digestion?



RNG is the result of purifying biogas, which is mainly composed of methane (CH4), carbon dioxide (CO2) and undesirable compounds. Biogas purification removes CO2 and unwanted compounds to produce a clean gas with **a methane content of more than 96%.**

Anaerobic digestion transforms inputs into two categories of outputs: **digestate and biogas.** The duration (residence time) of this stage is **approximately one month**, and may vary depending on the composition of the inputs, the digestion technology used and the operating conditions.

Production method

Anaerobic digestion is continuous and consists of four phases.

① Hydrolysis	Transformation of complex organic matter molecules into sugars, amino acids and fatty acids
② Acidogenesis	Transformation of sugars into **volatile fatty acids**
③ Acetogenesis	**Production of acetates,** direct methane precursors
④ Methanogenesis	Biomass **decomposition**

It is essential to surround yourself with the right people (experts, consultants, developers) and to adopt the right tools (training, technology) to ensure the project's success.

Sources: ADEME – Réaliser une unité de méthanisation à la ferme (in French only) (2019) | Biogaz en 50 questions-réponses (in French only) – Observ'ER (2015)

Inputs

Inputs should be rich in biodegradable organic matter, low in woody matter and have minimal digestive disruptors.

The objective is to use a stable and balanced supply of inputs—the most methanogenic possible—all within a limited collection scope.

Agricultural waste

Organic waste

For agricultural projects, the main inputs are:

Livestock manure
- Rich in methanogenic bacteria
- Stabilizes the acidity of the mixture and the quantity of biogas

Agricultural plant material
- Rich in carbon
- Easy to digest and store

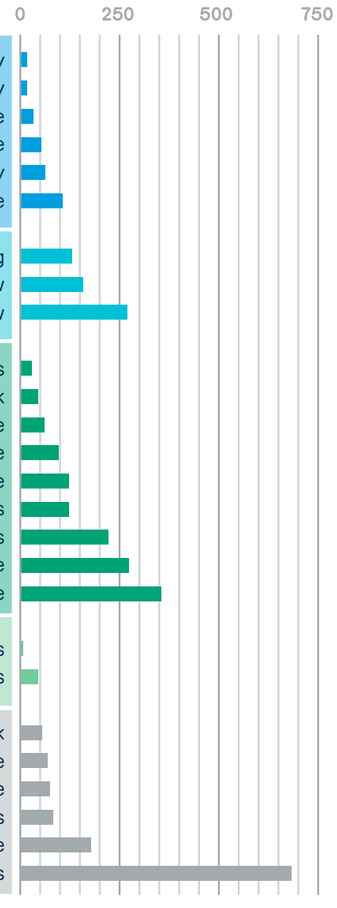
Agri-food industry waste
- Requires appropriate storage
- May warrant larger collection radii

Municipal and industrial biosolids
- Stable supply over time
- Presence of inorganic contaminants

Community organic waste
- Additional solution for the management of territorial organic materials
- Collection and pretreatment challenge

Average methanogenic potential of main inputs

m^3 of methane per tonne of raw material



Sources : ADEME – Réaliser une unité de biométhanisation à la ferme (2019) | CTGN

Digestate

Digestate is the other product of anaerobic digestion that has not been transformed into biogas. It contains fertilizing elements and more stable organic matter, which give it interesting agronomic properties. Once spread, digestate can help improve soil quality and fertility.

Composition

- **Digestate is composed mainly of water, more stable organic matter and mineral matter, the proportions of which will vary according to the type of inputs and technologies (type of anaerobic digestion, phase separation, post-treatment, etc.).**
- **The choice of technologies for digestate management should be made based on established local opportunities, the preferred application method and the nutrient requirements of the surrounding soils.**
- **Any fertilizer component (NPK) present in the input will also find its way into the digestate in a form that can be more easily assimilated by crops.**

Recovery

- **The way the digestate is used must take into account the regional phosphorus balance and the effects on spreading agreements.**
- **Digestate can be used as is or after one or more additional treatment steps.**
- **The use of digestate allows natural minerals and fertilizers to be returned to the soil, potentially reducing or even replacing the need for mineral fertilizers.**
- **The application of digestate on agricultural land in Quebec is regulated. For more information, refer to fertilizing residuals[1] regulations.**
- **The ability to manage and market digestate is critical—it requires designing optimal digestate storage and handling for each use such as application, fertilizer and compost, and to control costs.**

[1] Guide sur le recyclage des matières résiduelles fertilisantes (in French only) – Government of Quebec (December 2015)

Source: Canadian Biogas Association – Anaerobic Digestion Guideline (2019)

Potential challenges of an anaerobic digestion project

Replacing 5% of 2018 natural gas consumption with RNG would represent a reduction of more than 500,000 tonnes of GHGs, and would be the equivalent of taking more than 100,000 cars off the road.

1 Economic

Requires a realistic and profitable business model.

Defining optimal economic models and financing structure.

Securing exogenous inputs over the long term.

Optimizing sizing to ensure the project's profitability.

2 Social acceptability

Ensuring that you are well supported at every project stage.

Implementing an effective communication and consultation strategy throughout the project to promote social acceptability.

Will result in possible increased road traffic to the production site.

3 Technical and operational

Selecting the right technologies and partners for design and operation.

Proper management of digestate and livestock biosecurity issues.

Must be integrated according to specific local conditions in terms of soil requirements.

Involves a variety of tasks and an appropriate level of training.

This guide will provide you with the tools you need to meet these challenges.

Sources: ADEME – Réaliser une unité de méthanisation à la ferme (in French only) (2019) | Biogaz en 50 questions-réponses (in French only) – Observ'ER (2015) | ADEME – Montage de projet de méthanisation (in French only) (2018)

How to ensure the success of your project

Defining clear objectives adapted to developers' reality is an essential condition for the project's smooth operation.

Once the project objectives have been defined, there are certain rules and steps to follow to ensure that the conditions for success are in place.

We will also examine the importance of local integration and communication associated with the project to ensure its success.

– reference p. 20

Project objectives

Why go into anaerobic digestion? This is an important question to ask yourself before developing a project in order to define your objectives.

For example:

- **Income diversification/enhancement**
- **Improved agronomic recovery of livestock effluents**
- **Potential reduction in mineral fertilizer use**
- **Improved energy and environmental balance**

Steps in an RNG production project

From conception to realization, there are eight main steps that are essential to set up a realistic project that is well integrated into its territory.

Depending on the context, it takes two to four years to complete an anaerobic digestion project.

- **Feasibility study**
- **Site selection criteria**
- **Legal strategy**
- **Financing package**
- **Detailed engineering**
- **Required authorizations**
- **Construction and commissioning**
- **Operation and maintenance**

Sources: ADEME – Réaliser une unité de méthanisation à la ferme (in French only) (2019) | ADEME – Montage de projet de méthanisation (in French only) (2018)

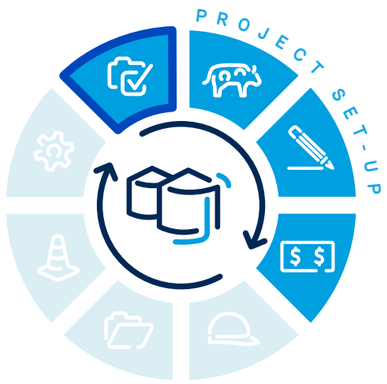
Feasibility study

The feasibility study confirms the project's main assumptions to ensure its potential and feasibility.

This is a critical step

It includes:

- Preliminary design and initial estimation of inputs and outputs
- Basic economic data
- Geographic location
- Analysis of biogas and digestate recovery
- Preliminary analysis of risks and issues
- Reflection on the implementation method
- Preliminary life cycle analysis (carbon intensity)



From the first step of your project, contact the Énergir team at projetGNR@energir.com. We will be happy to assist you in the development of your project.

How to size your project

- It is up to the developer to guide and validate the project's sizing.
- The available quantity of livestock manure often constitutes the basis of the material deposit.
- Depending on the objectives and needs, co-products can be added, including plants and residues produced on the farm, grouping with neighbouring farms, etc.

Beware of over-sizing: it is tempting to improve the project's theoretical profitability, but this can have the opposite effect if the unit lacks materials or depends too heavily on exogenous materials.

Training

It is advisable to receive training during the study phase in order to acquire the basic knowledge required to have an overall understanding of the project and to understand its impacts on the farm. Visiting operating facilities is highly recommended at this stage.

Support

It is essential to obtain quality support right from the start of the project. In fact, this phase makes it possible to identify needs and risks, and the partners and stakeholders involved, and thus to launch the project on a realistic and objective basis. This support should be maintained throughout the project. It represents an investment at this stage, but it is essential to ensure better cost control in the long term.

Source: ADEME – Réaliser une unité de méthanisation à la ferme (in French only) (2019)

Checklist of key feasibility study components

Feasibility study

Preliminary design

- [ ] Conduct a comprehensive inventory of potential inputs.
- [x] For each type of input, assess ...
  - [ ] The nature of the input: composition, possible storage time, contaminant level, methanogenic capacity, etc.
  - [ ] The available resources: available tonnage, location, current disposal method, logistics for centralizing the resource (distance from the resource, seasonal variations, etc.).
  - [ ] Their sustainability over time.

Economic data

- [ ] Evaluate the capital expenditures, also known as CAPEX: studies, land acquisition, equipment purchase, cost of connection to the network.
- [ ] Evaluate the detailed operating expenses, also known as OPEX: operating costs, labour, spare parts, consumables, injection costs, etc.
- [ ] Estimate potential income: RNG sales, reception fees for inputs, marketing of digestate, avoided expenses (carbon tax, mineral fertilizer reduction, bedding material, etc.).

Technical dimensioning

- [ ] Analyze the pretreatment steps: reception and storage area, conditioning, etc.
- [ ] Choose the type of digester: liquid or dry digestion, capacity, storage, etc.
- [ ] Evaluate further treatment of the digestate: direct application, post-treatment, filtration, dehydration, nutrient concentration, composting, etc.
- [ ] Analyze the conditions conducive to the integration of the facility on the farm: optimization of the existing system, operating mode, service contract with suppliers, supervision method, etc.
- [ ] Analyze potential biosecurity issues and establish mitigation measures.
- [ ] Evaluate the capacity of the nearby network and the connection's technical and economic feasibility.

Environmental impact

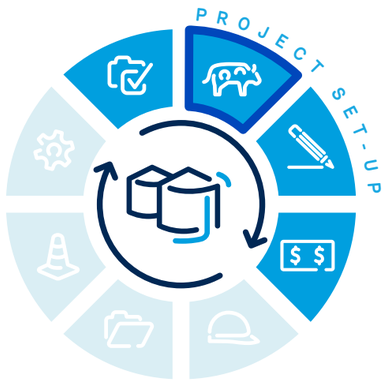
- [ ] Calculate greenhouse gas emissions avoided through a life cycle analysis (carbon intensity), the impact on soil fertilization and other environmental impacts of the project (noise, odour, traffic, etc.).
- [ ] Calculate the overall environmental balance (pollutant emissions, positive externalities, etc.).

Source: ADEME – Cahier des charges étude faisabilité méthanisation (in French only) (2018)

Site selection criteria

The main objective of site selection is to determine whether a project can comply with regulatory requirements while meeting major technical criteria.

Before starting local representations, it is important to have already identified several possible options for the site's location and to have a clear idea of the project.



For example, you should consider:

- Separation distances defined by guidelines for the management of anaerobic digestion in Quebec;
- Adjacent protection areas;
- Municipal siting and local zoning criteria;
- Convenient access to transportation routes;
- Watershed planning, water protection and other natural features;
- Landscape integration into the environment (minimizing the visual impact);
- Having adequate space for the construction and operation of the digester, considering a future increase in its treatment capacity, as required;
- Maximizing access to raw materials and end markets for the digestate;
- Being within a reasonable distance of an injection point to the gas network that will have the capacity to inject RNG throughout the project;
- The location of the site and choosing the one with the least impact.

At the outset of your project, contact Énergir at projetGNR@energir.com to ensure that the preselected site will enable the injection of all RNG that will be produced by your facilities.

Sources: ADEME – Réaliser une unité de méthanisation à la ferme (in French only) (2019) | Lignes directrices pour l'encadrement des activités de biométhanisation (in French only) – MELCC (March 2018) | Canadian Biogas Association – Anaerobic Digestion Guideline (2019)

Legal strategy

Several options are possible for the legal structure of the anaerobic digestion facility. For example:

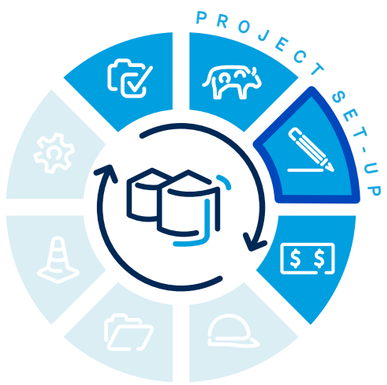
> Integration in a farm

> Creation of a dedicated company

> Creation of an agricultural co-operative

> Establishment of a territorial group

The choice of model is very important because it will have a direct impact on taxation, and thus on the project's economic analysis.



Cost-effectiveness is not the only factor to consider, however, and the following parameters should be assessed in particular:

- **What is the desired level of involvement by the various stakeholders?**
- **What is the level of investment sharing?**
- **Is it possible to secure the inputs and the use of the digestate by sharing the participation in the project?**
- **How should risk be distributed among project participants?**
- **Will the proposed model allow for harmonious integration into the community?**
- **How can you ensure that the level of wealth redistribution will be adequate according to the participants' level of investment and involvement?**

Several conditions must be met for an agricultural producer to join an anaerobic digestion project:

1. **Being located a reasonable distance from the site.**
2. **Participating in the down payment (optional).**
3. **Having the ability to receive digestate on their land (optional).**
4. **Applying digestate instead of liquid manure.**
5. **Being a member of the co-operative (if applicable).**

Source: ADEME – Réaliser une unité de méthanisation à la ferme (in French only) (2019)

Steps in an RNG production project

According to the "lignes directrices"[1] (in French only), in order to obtain the status of an agricultural project and thus benefit from a less restrictive regulatory framework, an anaerobic digestion facility must be installed on the site of a farm and recover agricultural inputs, possibly combined with up to 25% of exogenous waste[2].

[1] Lignes directrices pour l'encadrement des activités de biométhanisation (in French only) – Government of Quebec (March 2018).

[2] Materials other than products from the farm. See the list of permitted inputs in the "Lignes directrices" document (in French only).

Legal strategy

There are different types of RNG projects with different business models. Here are the main three:

Independent developers

- Carried out by a project developer or by several farmers who can eventually be shareholders in the project.
- Integrating as a priority agricultural inputs from partner farms and, in addition, exogenous materials from the region.
- The project owner bears the investment and operating costs, and benefits from the revenues (RNG, digestate, etc.).

Co-operative / territorial group

- Carried out by a group of farmers or by a structure majority owned by one or more farmers, notably in the form of a co-operative.
- Integrating as a priority agricultural inputs from partner farms and, in addition, exogenous materials from the region.
- Investments, operating costs and income are shared among co-operative members according to predetermined ratios.

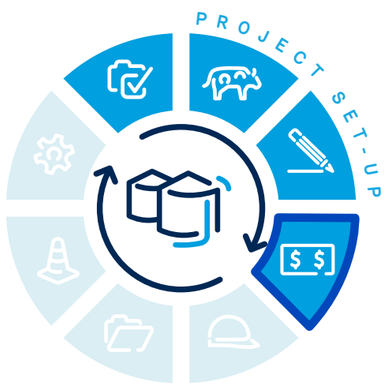
Industrial developer

- Carried out by a project developer who can ask farm businesses to be project shareholders.
- Integrating different types of organic matter available in the area (agricultural, industrial, wastewater treatment plant, etc.).
- The project owner bears the investment and operating costs, and benefits from the income.

Financing package

Preparing the business plan is one of the most important steps in the project set-up phase.

The project set-up phase can take between one and two years. It is something to consider in the financing arrangement.



It reflects the results of the feasibility study in a financial perspective and integrates the mitigation measures identified for the main risks, all in order to confirm the project's profitability, investment structure and the level of financing required.

Once the business plan is established, the developer can contact banking institutions and potential financiers to find out about financing opportunities and their requirements.

They must also take steps to validate the types and amounts of grants available for their project. In the current context of developing the sector, an adequate grant level is essential for carrying out projects.

Finally, the developer must work with Énergir to define an RNG tariff that will allow the required level of profitability.

Énergir commits to long-term contracts (up to 20 years) to reassure investors that they are guaranteed a long-term income.

Financial guarantees

In Quebec[1], the operation of agricultural anaerobic digestion facilities is subject to the establishment of a financial guarantee, based on the purpose of the facility, to ensure the performance of the operator's obligations under the *Environment Quality Act* and its regulations.

Financial guarantees must be provided 60 days prior to the start of operations.

[1] Lignes directrices pour l'encadrement des activités de biométhanisation (in French only) – MELCC (March 2018)

Detailed engineering

Detailed engineering is used to expand on the results of the feasibility study in order to bring the project to the construction phase.

This step will also provide the technical information required to complete the request for authorization.

It represents a significant cost for the project owner, but it greatly improves the chances of success.

The project's detailed engineering includes, for example:

- **Technical studies required to confirm the site location;**
- **Confirmation of the quantities and compositions of all inputs and outputs;**
- **Validation of the type of technology selected and the choice of suppliers;**
- **Technical data to be used for equipment procurement;**
- **Construction plans and specifications;**
- **Measures to be implemented to manage identified nuisances;**
- **Emergency response, start-up, operating and training plans;**
- **Measures to be put in place to mitigate potential biosecurity issues.**

Connection to the gas network

Throughout the project, it is necessary to work with Énergir to ensure that the conditions for injection and sale of RNG will allow the project to proceed. This will include the following:

- **Validating the network's capacity to accept the full volume of RNG;**
- **Defining the cost and technical feasibility of the connection;**
- **Signing a connection service contract with Énergir for permission to inject.**

Source: ADEME – Réaliser une unité de méthanisation à la ferme (in French only) (2019)

Steps in an RNG production project

Required authorizations

Prior to building and operating an agricultural anaerobic digestion facility, authorization must be obtained from the Ministère de l'Environnement et de la Lutte contre les changements climatiques (MELCC). The conditions for obtaining this authorization are described in the *Lignes directrices pour l'encadrement de la biométhanisation au Québec* (in French only).

Content of a request for authorization

The detailed engineering work will provide you with the information you need to submit your request for authorization to the MELCC, including:

- **The nature and source of all inputs and opportunities for outputs**
- **The facility's process and instrumentation diagram**
- **Air dispersion study**
- **Odour management plan**
- **Hydrological studies**
- **Emergency response and contingency plans**
- **The operating specifications**
- **Details of the financial guarantees calculation**

Authorization for site selection (CPTAQ)

It will be necessary to verify beforehand and obtain, if necessary, an authorization from the *Commission de protection du territoire agricole du Québec* (CPTAQ). If applicable, a copy of the CPTAQ decision must be attached to the request for authorization to the MELCC.

Refer to the "Lignes directrices de la biométhanisation" (in French only) for more details and updates.

It is also important to obtain authorizations from municipal authorities for the construction and operation of such a facility.

Source: Lignes directrices pour l'encadrement des activités de biométhanisation (in French only) – Government of Quebec (March 2018)

Construction and commissioning

To be injected, RNG is sent to an “injection station,” where it will be measured, analyzed, odorized and its pressure checked.

Construction

This is an important step that will require time and follow-up.

It lasts an average of eight to twelve months, starting when authorizations are obtained, and includes the sourcing phase.

The involvement of the project owner at this stage depends largely on the chosen method of implementation (turnkey, design, construction, operation, etc.).

Optimal work and equipment integration planning is required.

Finally, it is important to work with Énergir to ensure that RNG production and connection schedules are aligned.

Commissioning

An anaerobic digestion facility is a biological process. As such, the commissioning and ramp-up period is critical to stabilizing the process and achieving optimal digestion conditions as quickly as possible. Depending on the inputs and technologies used, this phase can last from one to six months.

Phasing and planning are critical during this period. It is also important to ensure that sufficient inputs are available as needed.

It is essential that the operating personnel be very involved during this phase and that the transfer of responsibilities and performance tests be carried out according to a predetermined schedule with the various parties involved.

The commissioning of the RNG injection station is the last step in the start-up process. It occurs when the RNG is available in the required quantity and quality.

Source: ADEME – Réaliser une unité de méthanisation à la ferme (in French only) (2019)

Steps in an RNG production project

Operation and maintenance

The operation of an anaerobic digestion facility requires daily attention. The amount of time required to operate the unit will depend on its size, the mix of recovered inputs, the type of technology and the chosen operating model (subcontracting, service contracts with main suppliers, etc.).

How to operate an RNG facility

Several factors must be considered:

- Biological conditions: The facility will accommodate a diverse population of living microorganisms whose health depends on conditions created in the digester.

If the biological needs of these organisms are not met, the bacterial health of the digester will be compromised, leading to process problems or failure.

The operator must therefore maintain stable operating conditions, including:

- A constant supply of inputs according to set ratios;
- An oxygen-free environment in the digester;
- Temperature, pH and humidity level within the desired range;
- Continuous control of potentially inhibiting factors (e.g., ammonia);
- Management of potential nuisances in accordance with established plans;
- A safe operation that complies with safety rules at all times;
- Strict adherence to biosecurity measures in farms.

Maintenance

Planning the maintenance and availability of a sufficient quantity of on-site spare parts is a key parameter.

It is also strongly recommended to ensure support from main suppliers to maintain and optimize equipment and processes as required.

Sources: ADEME – Réaliser une unité de méthanisation à la ferme (in French only) (2019) | Canadian Biogas Association – Anaerobic Digestion Guideline (2019)

Steps in an RNG production project

Local integration and communication

Success factors

How to ensure the success of an anaerobic digestion project

> Public acceptability is a key factor in a project's success.

Anaerobic digestion projects and those for adding RNG to the natural gas network can involve many benefits at the local level for agricultural producers, municipalities and citizens. RNG contributes to the development of a circular economy by locally recovering agricultural and other organic materials generated on the territories.

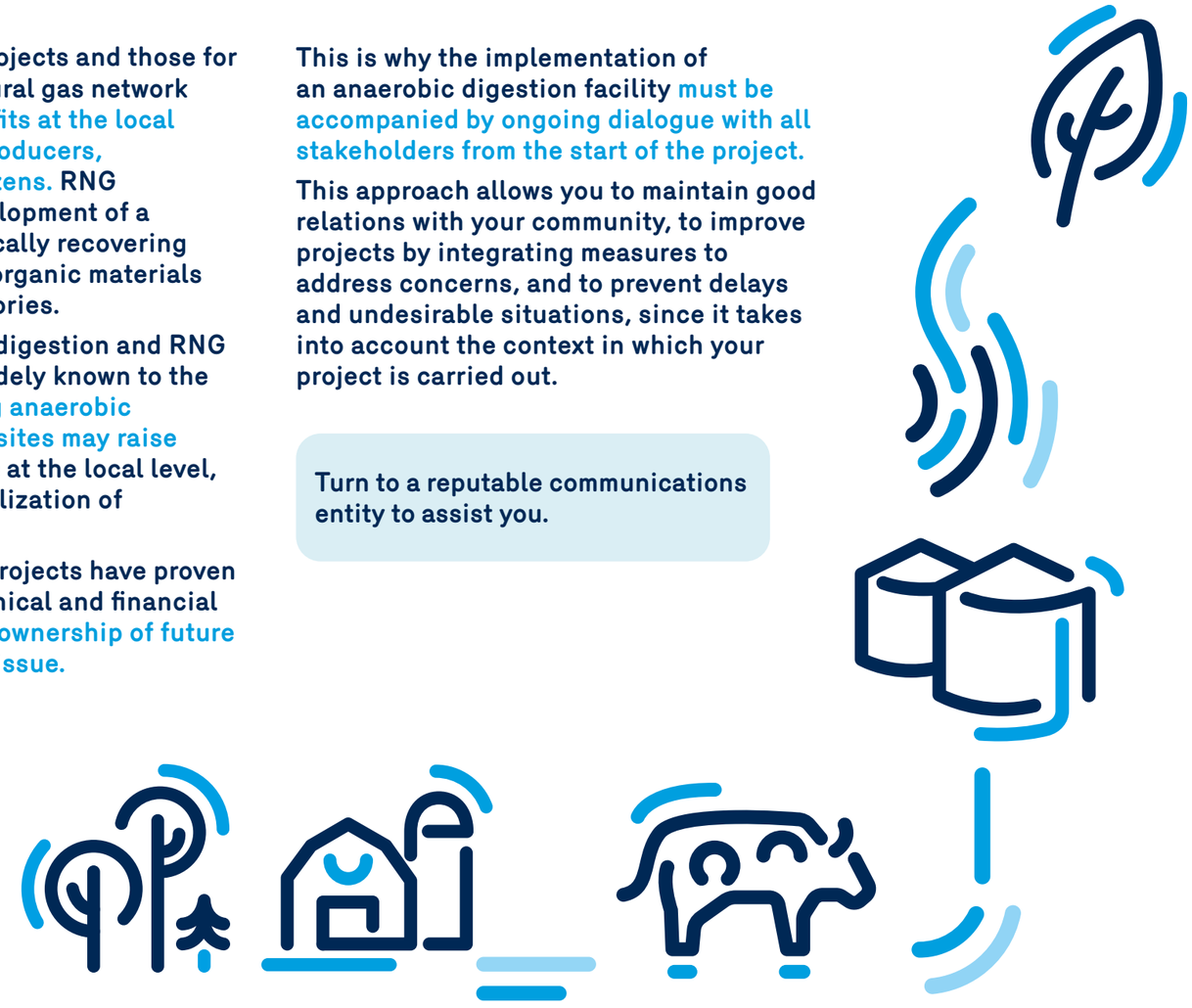
However, as anaerobic digestion and RNG injection are not yet widely known to the general public, existing anaerobic digestion projects and sites may raise questions or even fears at the local level, which may lead to mobilization of opposition.

To date, international projects have proven their worth from a technical and financial point of view, but local ownership of future projects remains a key issue.

This is why the implementation of an anaerobic digestion facility must be accompanied by ongoing dialogue with all stakeholders from the start of the project.

This approach allows you to maintain good relations with your community, to improve projects by integrating measures to address concerns, and to prevent delays and undesirable situations, since it takes into account the context in which your project is carried out.

Turn to a reputable communications entity to assist you.



Sources: ADEME – Informer et dialoguer (in French only) (2018) | Observ'ER – Biogaz en 50 questions-réponses (in French only) (2015)

A few questions to ask yourself

Who should you inform?

Stakeholders are the actors, individual or collective, whose interests may be affected by the project. They can generally be categorized as follows:

- Neighbours – citizens adjacent to the facility
- Local interest groups – local agricultural organizations, businesses, environmental groups, local chamber of commerce
- Municipalities, Regional County Municipalities, and other potentially affected municipal entities
- Aboriginal communities (if applicable)

All stakeholders will want to interact with you, at different levels, depending on their situation. It is advisable to identify the stakeholders beforehand, and then measure their attitude toward your project at the beginning, during and at the end of the project. Their attitude may change favourable or unfavourably depending on the phase. It is important to make sure that you respond quickly to their concerns and questions, as this is a guarantee of good neighbourly relations!

When should you start?

As soon as possible. The best time to communicate is when everything is going well and the project owner has relevant initial information to share. In this sense, the end of the feasibility study phase may be an ideal time to begin this process. Stakeholders are then in a more favourable position to receive information.

What are the steps you should follow?

1. Make sure you have the right expertise on your project team from the start.
2. Identify key external stakeholders for your project as soon as possible.
3. Identify potential issues and community expectations (assess the economic and social context of your project).
4. Develop a communication plan that will allow you to be in control of the situation.
5. Put in place the tools to support communications about your project.
6. Use the opportunities available to you to get your messages out.
7. Communicate frequently.

What means should you use to inform?

The means of communication may vary depending on the stakeholder involved. Public information sessions, meetings with local elected officials, follow-up meetings or invitations to the media are all ways to communicate.

Talk about yourself and your approach:

- Explain your motivations. Starting a new venture usually addresses long-standing questions or issues you may have. The reasons for your decision to produce RNG are worth knowing.
- Introduce anaerobic digestion and RNG, which are still not well known, and remember that beyond the production of renewable energy, it is a way to recycle organic matter locally and sustainably.

Explain what impacts the project will have on your environment and the associated mitigation measures, for example:

- How long will the work last?
- What measures are planned to limit construction and operation nuisances?

How can the stakeholders be more involved?

You can learn from discussions with the community in order to improve the project.

- Plan a simple way for stakeholders to get in touch with you (website, telephone number).
- Showcase your project at local chamber of commerce events.
- Provide an opportunity for local farmers to fund the project (if applicable).
- Use the concerns raised to improve the project where possible.

Sources: Énergir – Guide des bonnes pratiques en matière d'acceptabilité sociale (in French only) (January 2020) | ADEME – Informer et dialoguer (in French only) (2018)

Have you considered the following measures?

Local integration and communication

	Project set-up	Prior to construction	During construction	After construction
Informing elected officials	✓	✓	✓	✓
Taking key stakeholders on tours of existing facilities		✓		
Engaging regularly with local stakeholders	✓	✓	✓	✓
Organizing public information meetings		✓	✓	
Organizing open houses			✓	✓
Contacting local media		✓	✓	✓
Publishing materials on anaerobic digestion and your project		✓	✓	✓
Creating and maintaining a website	✓	✓	✓	✓
Advertise your project as a sponsorship				✓

Sources: ADEME – Réaliser une unité de biométhanisation à la ferme (in French only) (2019) | Énergir – Guide des bonnes pratiques en matière d'acceptabilité sociale (in French only) (January 2020)

Frequently asked questions

Is this a profitable project for the farmers involved?

How are they making money from this project?

This is an essential condition for a project. It is vital that farmers have an economic advantage to participate, either through the sale of RNG to Énergir, or through the sale of inputs, or both; in addition to avoiding the costs associated with buying organic fertilizers thanks to the digestate.

What are the hazards associated with the operation of the project and what are the health and safety issues?

There are many anaerobic digestion projects around the world, so the risks are known, low and controlled. Each project will have its own contingency, response and emergency plans. These plans will be based on a combination of supplier expertise, the maturity of the technologies used and the adequate training of the operating personnel. Being supported by experts also helps reduce these risks.

Is the resulting digestate that can be applied to the land as odorous as manure?

Digestate, when used for land application, is considered a fertilizing residual material. Fertilizing residuals are classified according to the standards in force[1]. Since the anaerobic digestion process removes a large part of the odour load, the fertilizing residuals that will be spread will have a lower odour load than the original organic inputs.

Will there be more trucks on the roads to collect the inputs and transport the digestate?

Inputs will be transported by tanker truck from farms to the anaerobic digestion complex. In general, there is no significant increase in truck traffic. This may vary depending on the size of the facility.

Does the biomethanation or anaerobic digestion process generate odours?

Biodigestion is done in sealed tanks and, during the process, a large part of the odorous elements are digested by bacteria. However, some of the odorants may end up in the biogas, where they will eventually be eliminated during the purification stage.

[1] Lignes directrices pour l'encadrement des activités de biométhanisation (in French only), MELCC (March 2018)

Frequently asked questions (cont'd)

How does anaerobic digestion reduce agricultural sector GHGs?

There are three main sources of GHG reductions:

1. The capture of methane emitted by manure and slurry pits;
2. The substitution of natural gas by RNG;
3. The substitution of mineral fertilizers, whose production and transportation generate GHGs, by a locally produced organic fertilizer.

Contact

If you have any questions, please contact the Énergir team at projetGNR@energir.com

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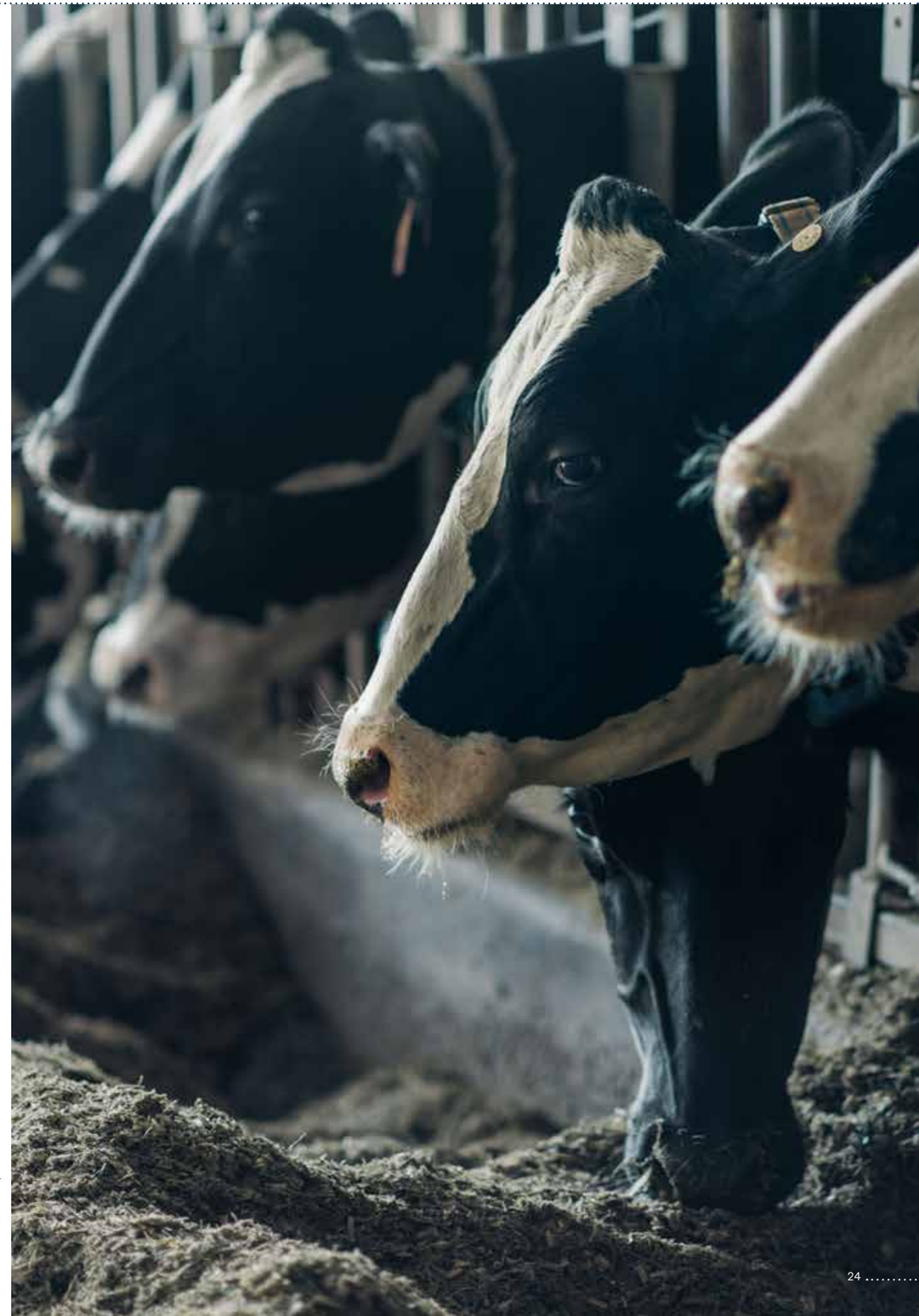

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