

# Airfix Guide to getting started with BECCS



## Phase 0: Opportunity screening [optional]

1–3 months

- What sites or emitters have the highest biogenic CO<sub>2</sub> potential?
- What transport and storage infrastructure is nearby?
- What is the policy and demand context for the site?

### Key outputs

- Opportunity shortlist
- CO<sub>2</sub> potential ranking



## Phase 1: Opportunity framing

3–6 months

### Feedstock & CO<sub>2</sub> source assessment

- What type of facility and CO<sub>2</sub> volume?
- What share is biogenic and capturable?
- Is feedstock sustainable and long-term?

### Market & monetisation options

- Who are the potential buyers and what demand exists?
- What quality & eligibility requirements must be met?
- What revenue potential is realistic?

### Policy & regulatory environment

- Which national/EU schemes apply?
- What permitting or legal barriers exist?
- Eligible CDR standards (CRCF, Puro, Isometric, GS, Verra, national)?

### Key outputs

- Opportunity brief
- Market study
- Policy memo



*Decision gate: Viable opportunity with market & policy fit?*



## Phase 2: Feasibility & design

6–12 months

### Technical feasibility

- Which capture tech fits the site?
- What transport & storage routes exist?
- Are utilities, space & energy sufficient?
- What are lifecycle emissions in value chain?

### Economic & financial viability

- What are CAPEX/OPEX estimates?
- What is the break-even CO<sub>2</sub> price?
- Are grants or subsidies available?

### Regulatory pathway, certification & compliance

- What permits are required?
- Which MRV standards ensure compliance?
- Which CDR certification methodology best fits?
- Who are the relevant authorities?

### Key outputs

- Pre-FEED
- Financial model
- Permitting roadmap
- Certification strategy & MRV design



*Decision gate: Technically, financially & regulatorily feasible?*



## Phase 3: Structuring & development

6–12 months

### Commercial structuring

- How are risks and revenues allocated?
- What offtake structures fit best?
- How is CO<sub>2</sub> traceability ensured?

### Financing & bankability

- Who are potential investors?
- What returns and guarantees are needed?
- What de-risking mechanisms apply?

### Stakeholder engagement & communication

- Who must be aligned (emitters, storage)?
- How to manage community & regulator relations?
- Who champions the project?

### Key outputs

- Term sheets
- Financing plan
- Engagement materials



*Decision gate: Offtakes, financing & partnerships ready for FEED & FID?*

↓ **Project FEED & FID**

# Guide to getting started with BECCS

## Supplementary details

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### About the project

This work was funded by CETPartnership, the Clean Energy Transition Partnership under the 2022 CETPartnership joint call for research proposals, co-funded by the European Commission (GA N°101069750) and with the funding organisations detailed [here](#).

The project is supported by the French Environment and Energy Management Agency ADEME and the Swiss Federal Office of Energy SFOE.

Within this framework, the Carbon Rhine Route project is developing pathways for inland European emitters to access carbon capture and storage, supporting the scale-up of carbon dioxide removal (CDR). Consortium partners comprise Airfix, Carbon Impact, ChemOil Logistics and Northern Lights.

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### Purpose:

Bioenergy with carbon capture and storage (BECCS) is a viable pathway for delivering durable carbon removals and long-term decarbonisation. Yet for many emitters, authorities and regional stakeholders, the early steps toward evaluating or developing a BECCS project remain fragmented and difficult to navigate.

This *Guide to Getting Started with BECCS* provides a practical, non-prescriptive onboarding toolkit to clarify what is involved in identifying and maturing BECCS opportunities. It outlines the typical stages from initial screening to feasibility assessment and pre-FID structuring, highlighting the decisions, information and partnerships required along the way. Its aim is not to provide detailed engineering guidance, but to give a clear sense of the breadth of activities teams should expect when exploring BECCS and to support early coordination among emitters, policymakers, transport-storage developers and market actors.

### How to use this guide:

The guide is organised into three core phases, each concluding with a decision gate.

- **Phase 0: Screening** [*optional*] – Identifying high-potential sites or emitters based on biogenic CO<sub>2</sub> volumes, infrastructure proximity and policy context.
- **Phase 1: Opportunity framing** – Assessing feedstocks, CO<sub>2</sub> sources, market pathways and policy environments to determine whether a BECCS opportunity is worth pursuing.
- **Phase 2: Feasibility & design** – Conducting technical, economic and regulatory assessments to understand the viability of the concept.

- **Phase 3: Structuring & development** – Preparing commercial, financial and stakeholder arrangements that enable progression toward FID.

Each phase outlines the key questions to ask, the information required and the outputs typically developed by project teams. Users may adapt the structure to their own organisational processes or integrate the steps into existing decarbonisation or investment frameworks.

## Phase 0: Opportunity screening [*optional, if multiple opportunities*]

**Goal:** Identify high-potential BECCS sites or emitters efficiently

**Timeline:** 1–3 months

### 1. Opportunity screening

- What sites or emitters have the highest biogenic CO<sub>2</sub> potential?
- What transport and storage infrastructure is nearby?
- What is the policy and demand context for the site?

**Key outputs:**

- Opportunity shortlist
- CO<sub>2</sub> potential ranking

## Phase 1: Opportunity framing

**Goal:** Identify whether a BECCS opportunity is worth pursuing (plausible feedstock-market-policy fit)

**Timeline:** 3-6 months

### 1. Feedstock & CO<sub>2</sub> source assessment

- What type of facility is it (e.g. WtE, biomass, ethanol, biomethane)?
- How much CO<sub>2</sub> is emitted annually and what share is biogenic?
- What is the expected capturable fraction (technical + spatial constraints)?
- Are feedstocks available long term and are they sustainably sourced (e.g. RED III)?
- Are plant operations expected to continue for at least 10-15 years?

**Key outputs:**

- Opportunity brief / plant factsheet
- CO<sub>2</sub> emission and feedstock assessment
- Sustainability and certification pre-check

### 2. Market & monetisation options

- Who are the potential buyers of CDRs (e.g. voluntary, compliance, internal offset)?
- What quality attributes (e.g. MRV, permanence, additionality) do they require?
- Are there risks of double counting or lack of eligibility under standards?
- What CDR or ETS price levels are realistic?  
Are there existing demand signals, tenders or bilateral interest?

**Key outputs:**

- Market & buyer landscape
- Preliminary revenue model (CDR or ETS)
- Risk and eligibility screening

### 3. Policy & regulatory environment

- What national or EU schemes apply (e.g. funding, contracts-for-difference, ETS)?
- What CDR standards could be used (e.g. CRCF, Puro, Isometric, GS, Verra)?
- What permitting or legal barriers could exist for CO<sub>2</sub> capture and storage?
- Are there specific incentives for biogenic CO<sub>2</sub> capture?

**Key outputs:**

- Policy and regulation summary
- Incentive overview and gaps
- Permitting pre-check memo

### Decision gate 1:

→ *Is there a technically and politically supported opportunity with a viable market pathway?*

If yes → move to **Phase 2 – Feasibility & design.**

If not → stop or re-scope.

## Phase 2: Feasibility & design

**Goal:** Determine whether the concept is technically, economically and regulatorily feasible.

**Timeline:** 6–12 months

### 1. Technical feasibility

- Which capture technologies are suitable (e.g. amine, membrane, oxyfuel)?
- Is there space and utility availability on-site?
- What are the heat and electricity requirements of the capture system and can they be met on-site or via external supply (e.g. waste heat, grid, new infrastructure)?
- What are the possible CO<sub>2</sub> transport routes (e.g. pipeline, truck, ship)?
- Are there compatible storage partners and capacities available?
- What is the preliminary energy demand and integration concept?
- What are the full lifecycle emissions across capture, transport and storage, and what net CO<sub>2</sub> removal factor does the project achieve (incl. upstream/downstream impacts)?

**Key outputs:**

- Technical screening / pre-FEED summary
- CO<sub>2</sub> transport & storage options report
- Site integration and utility requirements memo

### 2. Economic & financial viability

- What are indicative CAPEX and OPEX estimates for capture and logistics?
- What subsidies, grants or tax incentives could reduce costs?
- What price per tCO<sub>2</sub> is needed for profitability?
- How sensitive is the project to energy price and OpEx assumptions?
- What financing structure could work (e.g. equity, debt, blended finance)?

**Key outputs:**

- Preliminary financial model and sensitivity analysis
- Financing structure concept
- Cost and revenue benchmark summary

### 3. Regulatory pathway, certification & compliance

- What permits are required for capture, transport and storage?
- Which authorities are involved and what are the timelines?
- Which standards and methodologies are applicable (e.g. CRCF, Puro, Isometric, GS, Verra)?
- Which methodology best fits the project's design, boundaries and target market?
- What are the key trade-offs (e.g. stringency, eligibility, issuance timelines)?
- What data must be monitored and how will it be verified?
- How will CO<sub>2</sub> flows be tracked across the value chain?
- What are the main certification risks (e.g. additionality, double counting)?

**Key outputs:**

- Permitting roadmap
- Methodology selection & certification approach



Co-funded by  
the European Union



- MRV plan and data requirements
- Certification risk overview
- Regulatory engagement plan

## Decision gate 2:

→ *Is the project technically feasible, financially sound and regulatorily viable?*

If yes → move to **Phase 3 – Structuring & development.**

If not → iterate or seek partnerships to fill gaps.

## Phase 3: Structuring & development

**Goal:** Secure offtake, financing and stakeholder alignment toward FID.

**Timeline:** 6–12 months

### 1. Commercial structuring

- What is the structure of offtake (e.g. spot, forward, long-term contracts)?
- How are risks and revenues shared among capture, transport and storage partners
- Which contracting models (e.g. BOO, JV, consortium) are suitable?
- How to ensure traceability of captured CO<sub>2</sub> to sold CDRs?

**Key outputs:**

- Offtake and risk allocation term sheets
- Draft commercial framework (e.g. MoU, JV outline)
- Traceability and registry plan

### 2. Financing & bankability

- Who are the potential investors or lenders (public, private, infrastructure funds)?
- What are their requirements (e.g. IRR, tenor, ESG alignment)?
- Are guarantees, grants or CCfDs available?
- What due diligence will they expect (e.g. technical, legal, ESG)?

**Key outputs:**

- Investor landscape and engagement tracker
- Draft financing plan
- Updated financial model and de-risking summary

### 3. Stakeholder engagement & communication

- Which key stakeholders must be aligned (e.g. operators, authorities, communities)?
- How can concerns about safety, storage or additionality be addressed?
- How to coordinate between emitter, transport and storage partners?
- Who champions the project internally and externally?

**Key outputs:**

- Stakeholder map and engagement plan
- Meeting summaries / letters of intent
- Communication and outreach materials

### Decision gate 3:

→ Are offtake, financing and partnerships sufficiently mature for FEED and FID preparation?

If yes → **move to FEED, FID & execution.**

If not → address outstanding gaps.