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Sweden's
Sustainable Aviation Fuel (SAF) Revenue Assurance Program

A suggestion for a practical proposal to unlock bankable sustainable aviation fuel (SAF) volumes in Sweden using a net contract for difference mechanism.

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Prepared as input *to the Government's inquiry to develop a national action plan for sustainable, fossil-free and low-carbon fuels for aviation and shipping* ***("Uppdrag att främja tillgången till hållbara, fossilfria och koldioxidsnåla drivmedel för sjöfart och luftfart", kommittédirektiv LI2025/01033)****, and as a discussion paper for industry stakeholders. Prepared by* ***Braathens Renavia*** *with selected experts .*

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Sweden's Sustainable Aviation Fuel (SAF) Revenue Assurance Program

Introduction to this report

Why This Report.

Sweden needs bankable sustainable aviation fuel (SAF) at pace, yet early projects struggle to raise debt because future revenues are too uncertain. We believe a clear and proportionate revenue-assurance instrument can stabilise cash flows without dulling market signals, allowing lenders to commit and projects to proceed. This report is a proposal, not a turnkey blueprint—meant to put a concrete, workable option on the table so industry stakeholders and regulators can refine it together and accelerate decisions.

What We Propose.

We recommend a one-sided net contract for difference (net-CfD) referenced to Achieved Sales Price (ASP), with a running pay-back ledger. The State pays when the Achieved Sales Price (ASP) is below the floor and receives repayments when ASP is above the floor until prior support is cleared; after that, producers keep the full upside. By ensuring the State is not a market participant or net profiteer, the design keeps it out of the free market and maintains strong incentives to maximise offtake value.

How to Use This Document.

The main slides explain the design and the implications in simple language; the appendices hold methods, templates, and reference material for a deeper understanding. **Contributions.** This report was produced by Swedish SAF project developer **Braathens Renavia**. The author team comprises **Eric Matsgård** (CEO, Braathens Renavia); **Maria Wetterstrand** (Senior advisor, Miltton Europe; formerly the Government-appointed Special Investigator who led Sweden's *Biojet för flyget* inquiry, SOU 2019:11, on introducing a reduction obligation for aviation fuel); **Dr Neville Hargreaves** (former Vice President, Waste-to-Fuels at Velocys; industry member of the UK Jet Zero Taskforce Expert Group), contributing policy and market insights including lessons from the UK's SAF revenue-certainty discussions **and Erik Furusjö** (CTO, Braathens Renavia; Adjunct Professor of Energy Engineering, Luleå University of Technology)

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Executive Summary (Swedish)

Rekommendationer och Summering

Marknaden för hållbara flygbränslen (SAF) drivs av initiativ som EU:s ReFuelEU Aviation, som kräver successivt ökad inblandning av SAF i flygbränsle på europeiska flygplatser, med start 2025 på nivån 2%. 2030 ska inblandningen vara 6%, varav minst 0,7 % syntetiska flygbränslen (så som e-SAF), och 2035 ökar nivån till 20% SAF, varav 5 % syntetiska bränslen. Liknande initiativ finns på andra håll i världen, exempelvis i Storbritannien och Singapore. Syftet är att minska flygets klimatpåverkan.

Den vanligaste formen av SAF idag är HEFA. Det är dock osannolikt att hela EU:s krav 2035 och framåt kan uppfyllas med HEFA, då råvarubasen är begränsad. Därför behövs produktionskapacitet för andra hållbara flygbränslen, företrädesvis avancerade bränslen från avfall och restprodukter från jord- och skogsbruk. Sverige har unika möjligheter, genom vår goda tillgång till nödvändig råvara, t.ex. i form av skogsindustrins restprodukter, och vår stora kunskap om biobaserade teknologier.

Det system som föreslås skulle inte bara bidra till uppfyllnaden av EU:s målsättning, skapa svenska arbetstillfällen och exportintäkter, utan även stärka Sveriges beredskap.

Eftersom marknaden för SAF skapas av politiska styrmedel - och därmed riskerar att dras undan genom politiska beslut - råder en särskild typ av osäkerhet, som påverkar investeringsviljan i ny produktionskapacitet för avancerade SAF. Detta är det starkaste skälet till varför det är rimligt att införa någon form av stödmekanism som kan minska risken för investerare och öka chansen att produktionskapacitet kommer på plats. Att stödja själva investeringen är inte tillräckligt, det som främst behövs är en ökad säkerhet på efterfrågesidan, eftersom det är där den politiska risken finns.

Den här rapporten skissar vi ett svenskt stödsystem för avancerad SAF (non-HEFA) i form av ett **nettobaserat CfD** som ger **intäktssäkerhet**. Mekanismen adresserar prisosäkerheten på SAF-marknaden: när det kortsiktiga SAF-priset ligger under en förutbestämd intäktsnivå (strike) som krävs för att kunna finansiera en anläggning toppas skillnaden upp; när priset överstiger strike sker återbetalning tills nettot är noll. Till skillnad från modeller som kopplar stöd till skillnaden mot fossilt bränsle syftar detta inte till paritet med fossil jet, utan till en **långsiktigt förutsägbar intäktsnivå som möjliggör finansiering**. När marknaden bär sig själv upphör nettokostnaden för det offentliga och tidigare utbetalningar kvittas..

Genom att teckna CfD-avtal med leverantörer av flygbränsle lyfter regeringen bort den politiska risk som idag är det största hindret för att få till stånd investeringar i den nödvändiga produktionskapaciteten. På så vis kommer även teknikutveckling och innovation att främjas, och Sverige kan bli en ledande aktör på SAF-marknaden som vi borde vara.

Executive Summary (Swedish)

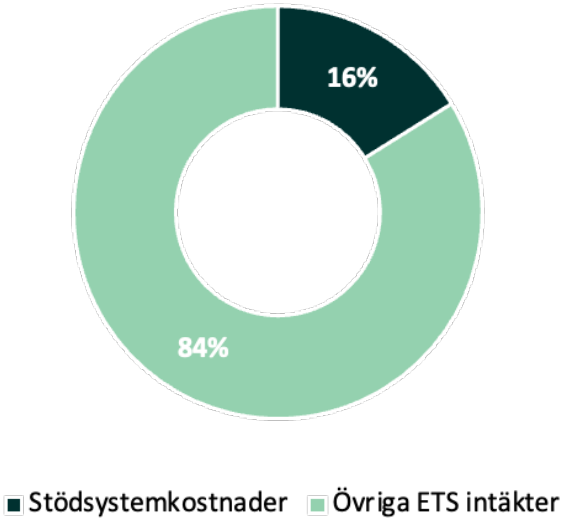
Kostnader och Finansiering

Det föreslagna **Intäktssäkringsprogrammet för SAF** kan finansieras i sin helhet av statens auktionsintäkter från **EU:s system för handel med utsläppsrätter (EU ETS)** för luftfarten.

I denna rapport (avsnitt 3, sid 13-14) argumenterar vi för att programmet bör omfatta och ge intäktssäkring för en **sammanlagd** årlig produktionsvolym om **150-300 kton** för både **Advanced Bio SAF och e-SAF**. Givet antaganden om framtida uppnådda försäljningspriser (Achived Sales Price- ASP) och valda golv-/strike-nivåer uppskattar vi att den **genomsnittliga årliga kostnaden** för svenska staten under ett 11-årigt program uppgår mellan **1,1 och 5,5 miljarder SEK** över hela stödperioden.

Programmet kan helt eller delvis finansieras genom att öronmärka en andel av statens **auktionsintäkter** från **EU:s system för handel med utsläppsrätter (EU ETS)** för luftfarten. På sidorna 27 och 28 beräknar vi—utifrån antaganden om flygbränslevolymer över perioden och ett antaget ETS-pris—svenskt flygs samlade ETS-kostnader och därmed relaterade auktionsintäkter, vilket visar att ett program av denna storlek skulle kräva ungefär 3-16% beroende på utveckling av markandspriset för SAF.

Potentiella programstödskostnader i relation till ETS-intäkter
(Scenario - Höga stödkostnader)



Executive Summary (Swedish)

Frågor om rapporten

Q&A

› **Varför ska det offentliga ta den ekonomiska risken för privata aktörer som investerar i SAF?**
Det är politiska beslut som ligger till grund för omställningen till mer hållbara flygbränslen. Utan dessa politiskt beslutade krav finns inte den marknad för SAF som krävs för att investerarna ska våga finansiera uppbyggnaden av ny produktionskapacitet. För att minska den politiska risken i investeringarna kan det därför vara rimligt med ett politiskt beslutat stödsystem. Dessutom finns förstås samhälleliga vinster, såsom minskad klimatpåverkan, ökad självförsörjning och beredskap.

› **Varför ska stödsystemet vara just ett sk 'Contract-for-Diffrence' (CfD)-system?**
Investeringsstöd i all ära, men det är på efterfrågesidan stödet behövs allra mest. Det är också där den politiska risken finns. Efterfrågan styrs av politiska beslut, och kan därmed ändras av politiska beslut, vilket skulle slå undan benen för de företag som investerat i produktion av SAF. En inkomstsäkerhet för avtalade volymer under en viss tid gör att den politiska risken minskar avsevärt, och därmed ökar chansen att investeringarna blir verklighet. En CfD är bättre än garantipriser eftersom staten bara betalar mellanskillnaden när marknadspriset för SAF ligger under strike och får tillbaka när priset ligger över, så kostnaden minskar automatiskt när prisskillnaden krymper.

› **Räcker det inte att konventionella drivmedel betalar utsläppsrätter?**
Nej. ETS-besparingen när man byter till SAF räcker inte för att täcka kostnadsskillnaden mot fossilt jetbränsle. Därför har EU infört ReFuelEU Aviation med bindande inblandningskrav för att skapa efterfrågan och skala upp produktionen.

› **Ska vi verkligen använda biomassa för att producera flygbränsle?**
Det ska inte huggas ned träd för att göra flygbränsle. Det finns redan idag tillgång till restprodukter från skogsindustrin som med fördel kan användas för att producera flygbränsle. På så vis skapas också nya intäktsströmmar för en av Sveriges basindustrier.

› **Vem tar risken för att teknologin inte fungerar?**
Med det här systemet hamnar den risken på företaget och dess investerare. Om inget bränsle produceras så fås inte heller något stöd. Det finns idag även tillgång till visst offentligt stöd för teknikutveckling och för industriprojekt inom grön omställning, men dessa är separata från detta system.

› **Hur mycket kommer det att kosta för staten och skattebetalarna?**
Vi har i denna rapport räknat på flera utfall (se sidan 25) **för att ge en indikation**. Vår slutsats är att systemet kan kosta cirka **100–500 MSEK per år**. Denna kostnad bedöms kunna finansieras inom ramen för flygets **ETS-intäkter** och motsvarar endast ungefär **3–16 %** av dessa intäkter.

Executive Summary

Frågor om rapporten

Q&A

› **Vilka volymer handlar det om?**
Förslaget är ett stödsystem som omfattar 150-300.000 ton flygbränsle per år. Detta är mindre än de totala volymer flygbränsle som används inom svenskt flyg idag, men högre än den mängd som används av svenskt inrikesflyg. Huvudskälet till förslaget är de fördelar som finns med att stödet kan ges till flera anläggningar och inte bara till en. Detta innebär ökad chans att produktion verkligen kommer till stånd, det stärker kunskaps- och kompetensutveckling då flera parallella tekniker kan användas, samt bibehåller konkurrensen.

› **För hur lång tid ska stödet utlovas?**
Vi föreslår en avtalstid på 10 år (av beräkningsskäl anger vi ett 11 års program i vissa delar av rapporten), vilket baseras på en bedömning av vad som krävs för att investeringar ska komma till stånd. Detta är också i paritet med den tid som använts i Tyskland för CfD till industrin, och i linje med vad som skissats på inom EU (10-15 år).

› **Varför ska Sverige göra detta och inte EU?**
Det finns inget självändamål att det ska vara ett eget svenskt system, men det är ett faktum att flera andra EU-länder ger nationella stöd till sin egen industri för den gröna omställningen. Intäkterna från ETS hamnar också huvudsakligen på nationell nivå. Hållbart flygbränsle är ett område där Sverige har goda förutsättningar att lyckas.

› **Ska inte HEFA få motsvarande stöd?**
HEFA bedöms kunna konkurrera inom gällande regelverk utan stöd.

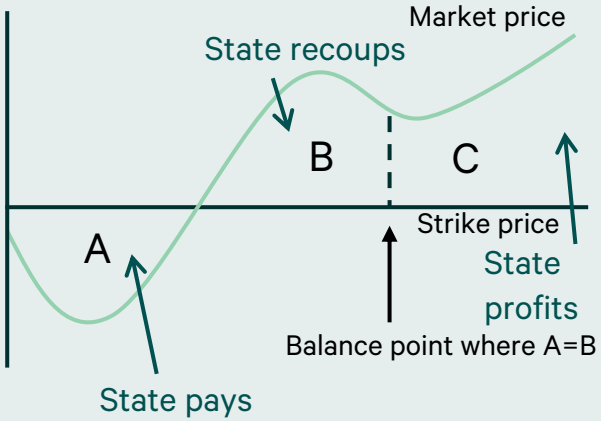
Why a Program (Revenue Assurance Now)

Instrument choice — options

Three Ways to Underwrite SAF Revenues

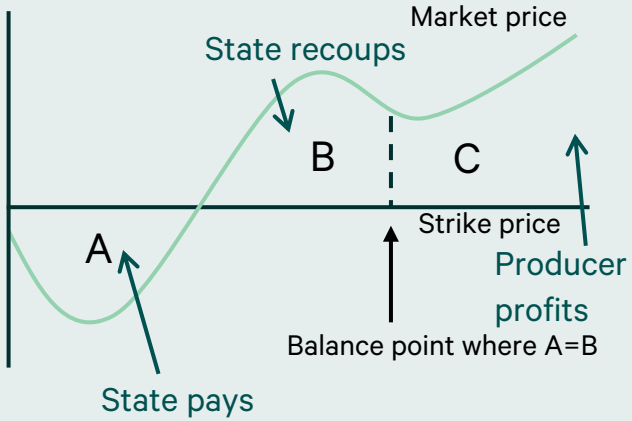
This section walks through three alternative designs for the system, our rationale for the preferred one, and the common objective they share: bankable cash flows, achieved via different incentives.

Two-sided CfD



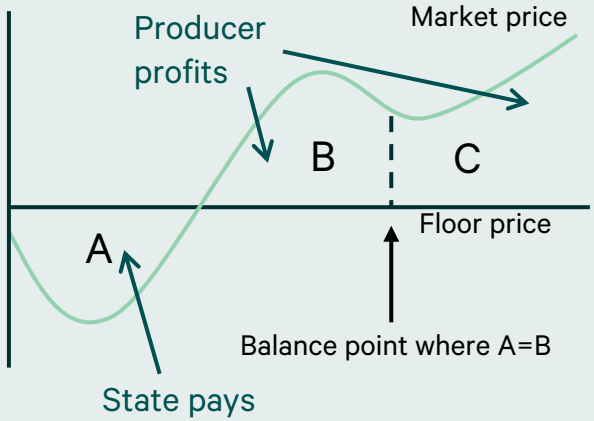
State balance = B+C-A

Net CfD (selected)



State balance = B-A

Guaranteed floor price



State balance = -A

Why a Program (Revenue Assurance Now)

Instrument choice — options

Two-sided CfD

In weak markets the State pays **A** to lift revenue; in strong markets the producer pays back **B**, and the State also keeps the additional upside **C**. The running balance can be positive for the State when markets are strong.

One-sided net-CfD (selected)

In weak markets the State pays **A**. In later strong markets the producer repays **B** until the pay-back ledger is back to zero; beyond that, upside remains with the producer as **C**. The running balance returns to zero over time.

Price guarantee (floor only)

In weak markets the State pays **A**; in strong markets there is no **B**, so the running balance for the State stays negative (**–A**) and can build over time, while all upside shows as **C** for the producer.

Why a Program (Revenue Assurance Now)

Instrument choice — options

Comparing the revenue instruments

Two-sided CfD, one-sided net-CfD, and a price guarantee each trade bankability, incentives, and fiscal exposure differently.

Why this matters. The instrument shapes incentives, bankability, and fiscal optics for years. We believe a fair comparison helps stakeholders see why a one-sided net contract for difference (net-CfD) is the best fit for an early SAF market.

How to read the table. We compare three choices: a two-sided contract for difference (CfD), a one-sided net-CfD referenced to Achieved Sales Price (ASP), and a price guarantee (floor only). Rows cover lender bankability, producer incentives to maximise price and efficiency, fiscal predictability, price discovery, capital attraction, administration, and public optics.

	Two-sided CfD	One-sided net -CfD (selected)	Price guarantee (floor only)
Lender bankability	Bankable.	Bankable	Bankable if floor price high enough (the State might set a lower price in this option, which would be less bankable)
Aligned producer incentives	Upside permanently clawed back → weak incentives to maximise offtake price and efficiency.	Upside kept after clearing the pay-back ledger → strong incentives to maximise ASP and reduce cost burden to State.	Incentives not aligned; potential for producers to profit at expense of State.
Fiscal predictability	Exposure on both sides; optics of the State 'collecting' in strong markets.	Counter-cyclical outlays with opportunity for visible pay-back to State, while further upside stays with the producer	Potentially large and persistent exposure if market stays below floor, with no pay-back opportunity.
Price discovery / market building	Claw-back dampens price-seeking behaviour; weaker discovery; risk of poor value for money.	Linked to ASP → encourages real offtakes and platform development over time.	Muted discovery; no opportunity to build liquidity.
Capital attraction	Pleases lenders but caps equity upside, making capital harder to raise; projects stall despite de-risked cash flows.	Good for debt and attractive for equity due to retained upside.	Good provided the guarantee is robust.
Administration	Heavier settlement and claw-back administration.	Moderate: settlement + running pay-back ledger.	Light mechanics; heavy reliance on policy credibility and indexation choices.
Public optics	Difficult narrative if system keeps fiscal costs unnecessarily high, when market signals are distorted	Simple story: support in weak markets, repay in strong markets.	Risk of 'blank cheque' optics if floor is high.

Why a Program (Revenue Assurance Now)

Why one-sided net-CfD

Why we select a one-sided net-CfD

It best unlocks debt now, preserves upside incentives, and keeps a clean fiscal story as markets deepen.

Requirements for success

- Bankability
- Attractiveness to equity investors
- Defensible fiscal profile: State neither overpays nor profits
- Market building: supports transition to liquid market Simple administration

Necessary design features to meet requirements

- Certainty of enough revenue to cover debt, irrespective of market conditions or regulatory changes
- Producer incentive to achieve higher market prices, reducing cost to State
- Support in weak markets, repay in strong ones until balance cleared, after which producer retains upside
- Use Achieved Sales Price while supporting the growth of a liquid market platform

How the options score

- Two-sided CfD lacks producer incentive – risk of overpaying, and unattractive to equity
- One-sided CfD has all the required features
- Guaranteed floor price causes producers to profit at expense of State

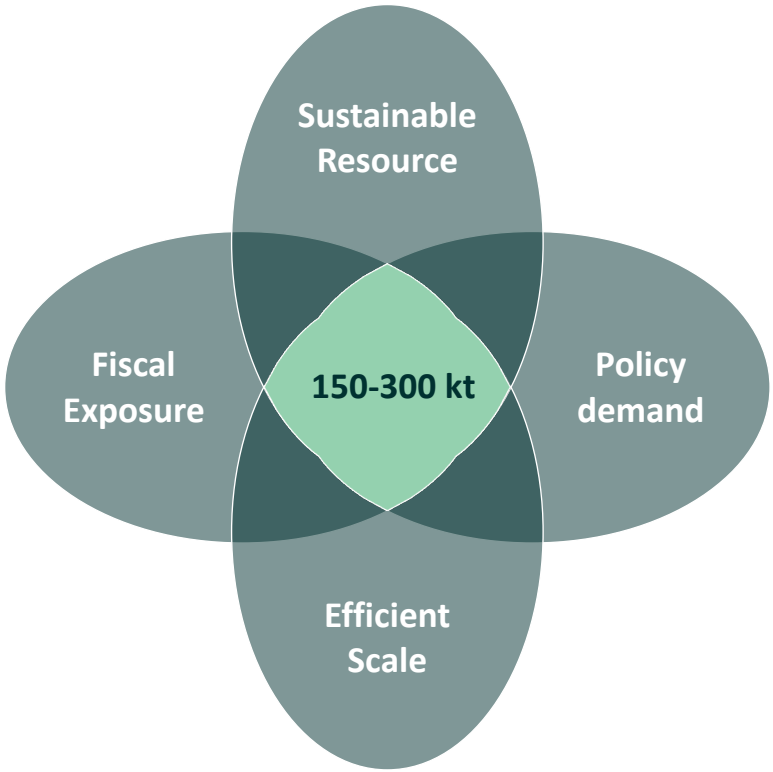
- **Bankability without dulling incentives.** We believe lenders need confidence that Achieved Sales Price (ASP) plus support reaches the floor in weak markets; the one-sided net contract for difference (net-CfD) provides that assurance while allowing producers to keep upside once pay-back clears prior support. Therefore, producers still chase the best offtake value.
- **Predictable and defensible fiscal profile.** The argument is simple: pay in weak markets, repay in strong markets, and the State never profits overall. This is easier to defend publicly than an open-ended claw-back (two-sided CfD) or a standing guarantee that blunts price discovery.
- **Market building, not market freezing.** A net-CfD referenced to ASP keeps the focus on real transactions and strengthens incentives to develop offtakes and platforms over time. We suggest starting with ASP and, as liquidity forms, moving toward partial platform-based pricing with clear triggers.

Volume & Scope

Program Sizing (model)

Program sizing via four lenses

We believe that target volume sits where sustainability, policy need, taxpayer value, and competitive scale overlap — between 150-300 kilo tons (kt) per year.



We suggest treating the target as a corridor—centred around 150-300 kt/year—validated through four complementary lenses, with details on the next slide.

- **Resource lens.**
  We test whether Sweden can sustainably mobilise forest residues and Municipal Solid Waste (MSW), spare electricity and captured CO_2—at the right quality, seasonality and cost—without crowding out other transitions.

- **Policy lens.**
  We align volume with EU SAF mandates, ETS trajectories and Sweden's net-zero path so demand is met securely while avoiding overbuild.

- **Fiscal lens.**
  We judge what is a sensible programme level, benchmark it against the ETS-only financing alternative, and set a reasonable, bounded cost exposure for government.

- **Industry lens.**
  We confirm the ecosystem can site, finance, build and operate at efficient scale—feedstock logistics, grid and CO_2 access, supplier depth, skills and O&M—on the required timeline.

Volume & Scope

Program Sizing (reasoning)

Why the four lenses converge on 150-300 kt per year

Sustainable inputs, policy-anchored demand, disciplined public cost, and efficient scale.

We size the programme using four complementary lenses. Looking through resources, demand, financing, and efficient industry structure, we consistently converge on a combined annual volume around **150-300 kt/year**

1) **Sustainable resources**
   Keep volumes grounded in what Sweden can mobilise without harming nature or the power system: residues and wastes for advanced bio routes, and renewable electricity plus captured CO_2 for power-to-liquids (e-SAF). Indicatively, **~6.4 TWh** waste/residues **+ ~4 TWh** power can support **~400 kt** SAF; alternatively, **~4 TWh** waste/residues **+ ~6.4 TWh** power. With both resource bases available, at least 300 kt sits within sustainable limits without crowding out other sectors.

2) **Policy-anchored demand**
   Link the volume to RefuelEU Aviation mandates, the EU ETS, and Sweden's timeline for effectively fossil-free domestic aviation—so the number is policy-justified rather than aspirational. Swedish aviation today uses ~700 kt fuel per year, ~100 kt of which is domestic. By **2035**, mandated SAF share is **20 %**, of which **5 %** is e-SAF. On pages 27 we estimate Sweden-related SAF demand at **~160 kt/y** in 2035 (plus ~65 kt/y to **total 225 kt/y** if domestic traffic is fully fossil-free), implying that **300 kt/y** allows Sweden to cover its share and export to the EU/UK.

3) **Disciplined fiscal exposure (ETS-backed)**
   A one-sided **net-CfD** focuses support in weak markets and repays in strong ones. On page 25 we quantify the programme costs under assumed Achieved Sales Prices (ASP) and floor/strike levels and relate them to aviation's ETS compliance costs and associated **EU ETS** auction revenues. The result – assuming a low ASP Scenario (highest cost to government) the cost is around 16% of the ETS system, and in a high scenario, the cost is around 3%.

4) **Efficient industry scale & structure**
   Projects need minimum efficient scale to be bankable and competitive. Current evidence indicates **advanced bio-SAF** plants in the **~50–150 kt/y** range and **e-SAF** plants **≥30 kt/y**, preferably larger. A resilient Swedish cluster therefore implies several plants across both pathways to drive learning, competition, and supply security—naturally summing to **~300 kt/y** when optimally configured

Conclusion

Taken together, these lenses point to **~300 kt per year** as the right target for Sweden, with an initial **150-300 kt** range and a paced ramp aligned to resources, mandates, fiscal discipline, and bankable plant scale.

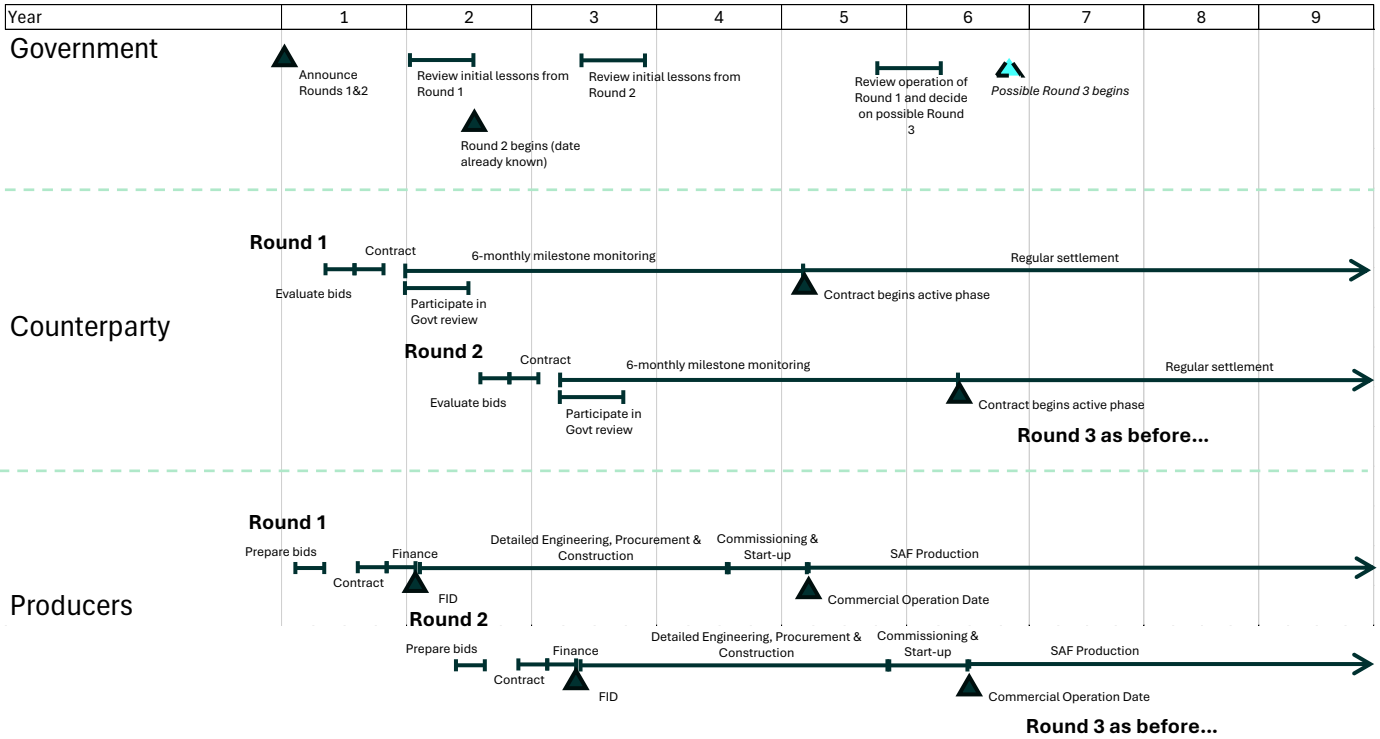
Volume & Scope

Phasing

Phased rollout with learning and reallocation

Phase commitments, review between rounds, and reallocate capacity; add a maritime tranche once administration is proven.

Phasing



- Why phasing. Early markets have thin liquidity and long lead times; phasing reduces execution risk, smooths fiscal exposure, and builds credibility by delivering a repeatable process rather than a one-off event.
- How rounds work. Each cohort has a defined envelope and public calendar. Conditional awards set conditions precedent, such as permits, grid and carbon dioxide connections, engineering, procurement, and construction status, and offtake evidence, with longstop dates and proportionate security.
- Learning and transfer. After each cohort, we suggest publishing a short parameter note (observed Achieved Sales Prices, cap utilisation, settlements) and announcing adjustments for the next round. A maritime tranche can follow once aviation implementation is stable.

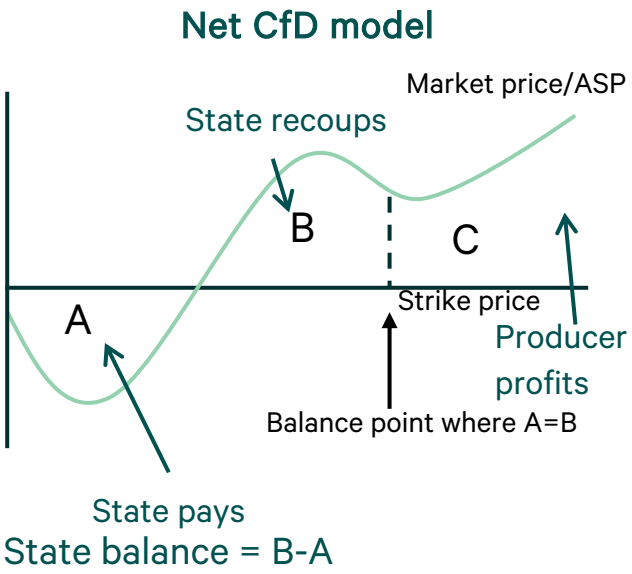
The Model (Mechanics)

Contract Logic

One-sided net-CfD at a glance

Quarterly compare ASP to floor; add shortfalls to the ledger, clear it with later upside, then the producer keeps the rest.

Net cfd



- On page 10 we explain why **we suggest** using a one-sided net-CfD for Sweden. The model has two parts: the **Achieved Sales Price (ASP)** and the **floor (strike)**.
- **ASP** is the volume-weighted average price actually earned from arm's-length offtake contracts that meet minimum quality and tenor. Related-party sales are disclosed and capped against an agreed benchmark; if qualifying sales are thin or irregular, a published fallback index is used.
- The **floor** is a calibrated minimum revenue per tonne that covers operating costs, scheduled debt service, and a modest risk-appropriate return. **We also suggest** transparent indexation with limited lags and caps so settlements are predictable for both sides.
- **Quarterly settlement and ledger.** Each quarter, compare ASP to the floor. If ASP is below the floor, the State tops up the shortfall and adds that amount to a project **ledger** (a negative running balance). If ASP is above the floor, the producer repays until the ledger returns to **zero**; any remaining upside is kept by the producer. The ledger never goes positive for the State—there is no profit-sharing. *(In the figure: **A** = top-ups, **B** = pay-backs, **C** = upside retained after the ledger is cleared.)*

Eligibility & Selection

Eligibility

Eligibility focuses support on deliverable Swedish projects

Bankability starts with sustainability, deliverability, offtake evidence, and a financeable plan.

- **Fit for purpose**. Eligibility concentrates scarce envelopes on projects that can deliver Swedish sustainable aviation fuel (SAF) into aviation with traceable logistics and recognized sustainability. Focus on abundant Swedish domestic feedstocks—sustainable biomass, waste residues, and fossil-free electricity.
- **Evidence that matters**. Applicants should show access to key inputs—sustainable feedstocks, power, and where relevant CO_2—and a proportionate permits/grid plan. Evidence demand via indicative offtake interest and a plausible path to a market-credible ASP; full contracts aren't required at this stage.
- **Finance and integrity**. Evidence of lender and equity engagement, know your customer (KYC) checks, and solvent entities are required. An optional bid bond may apply to deter speculative entries without burdening credible projects.

	Area	Proposed requirement	Rationale
✓	**Location**	Sweden	Focus scarce resources on local production
✓	**Pathway**	Non-HEFA, but ASTM approved	Align with Sweden's main resources (e.g. biomass, renewable power); focus on projects that will produce qualified fuel immediately
✓	**Sustainability**	>65% GHG saving; Annex IX A feedstocks	Aligned with EU mandate
✓	**Deliverability / project maturity**	**Evidence to include:** › Site with path to permitting › Feedstock Heads-of-Terms › EPC relationship › Cost estimate (at least Class 4) › Offtake MOU/LOI (subject to CfD)	Essential to focus on projects with high chance of success, for which maturity is the most important determinant
✓	**Finance**	Evidence of lender and equity engagement; KYC (Know Your Client) check / solvency;	Focus on projects with a credible path to financing. Finance due diligence is also a useful check of maturity

Eligibility & Selection

Award Criteria

A transparent scorecard for fair selection

Weighted criteria balance value for money, readiness, and system value.

Clarity for bidders and lenders. A published weighted scorecard sets expectations and reduces diligence friction. Value for money measures expected fiscal cost per tonne abated under the contract, accounting for top-up and pay-back dynamics rather than focusing on strike price alone.

Readiness and risk. Evidence of proximity to final investment decision (FID), engineering, procurement, and construction (EPC) status, site control, permit maturity, schedule credibility, and counterparty strength are central. These factors lower financing costs and increase deliverability.

System value. Diversity across pathways and regions, resilience in feedstocks and infrastructure, jobs, and learning spillovers build a durable Swedish SAF ecosystem. Suggested weights of 40/40/20 can evolve as the market deepens.

Parameter	Weight	Comments
Value for money	40%	Measure expected fiscal cost per tonne abated under the contract, accounting for top-up and payback dynamics
Readiness and risk	40%	**Even after screening through eligibility, this remains a vital element of selection – the scheme only works if projects get built. Evidence includes:** › Financing progress / proximity to FID › Status of Engineering, Procurement and Construction contract, including level of cost certainty › Site control › Permit maturity › Schedule credibility › Counterparty strength
System value	20%	Diversity across pathways, resilience in feedstocks and infrastructure, contribution to regional economic development, Swedish IP generation

Transparency of the published scorecard gives clarity for bidders and lenders. See p24 for more details of the proposed criteria.

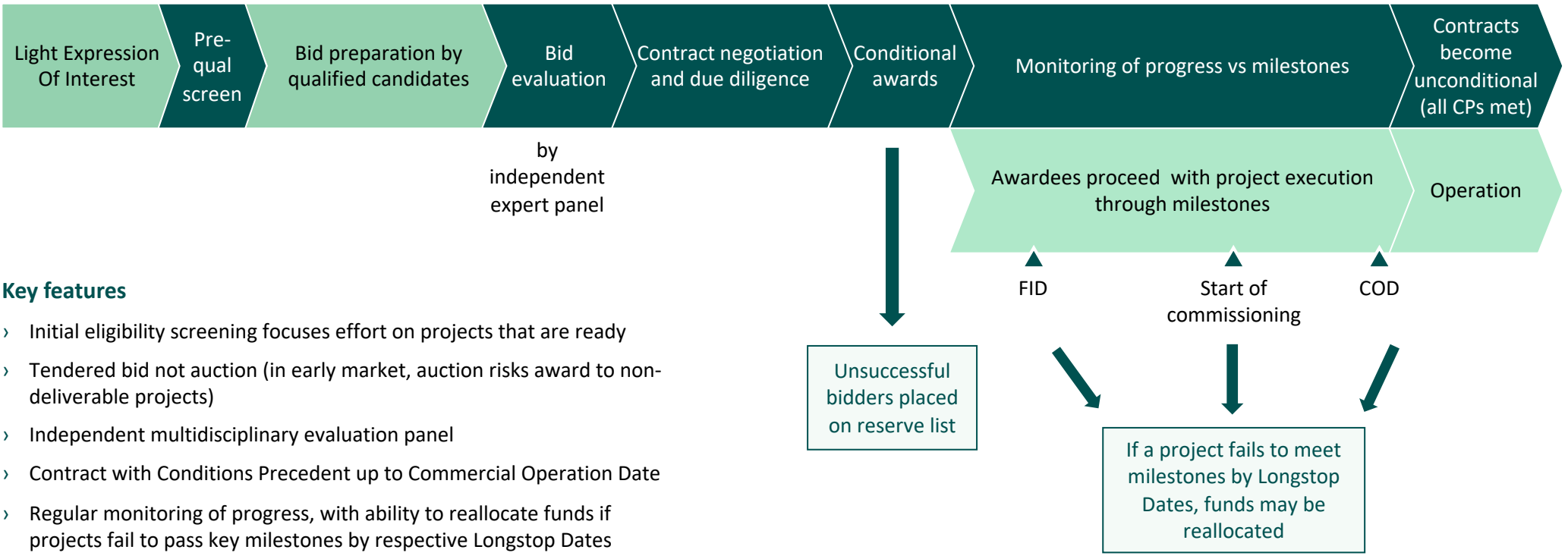
Eligibility & Selection

Allocation Process

A lean stage-gate for bankable awards

Pre-qualify must-haves, evaluate independently, and issue conditional awards with clear conditions and longstop dates.

Allocation process



Key features

- Initial eligibility screening focuses effort on projects that are ready
- Tendered bid not auction (in early market, auction risks award to non-deliverable projects)
- Independent multidisciplinary evaluation panel
- Contract with Conditions Precedent up to Commercial Operation Date
- Regular monitoring of progress, with ability to reallocate funds if projects fail to pass key milestones by respective Longstop Dates

Eligibility & Selection

Allocation Process

A lean stage-gate for bankable awards

Pre-qualify must-haves, evaluate independently, and issue conditional awards with clear conditions and longstop dates.

› **Tendered bid, not auction.** In an early industry, a price-only auction risks awarding non-deliverable projects. We recommend a tendered bid with published criteria so competition focuses on deliverability and value rather than headline price.

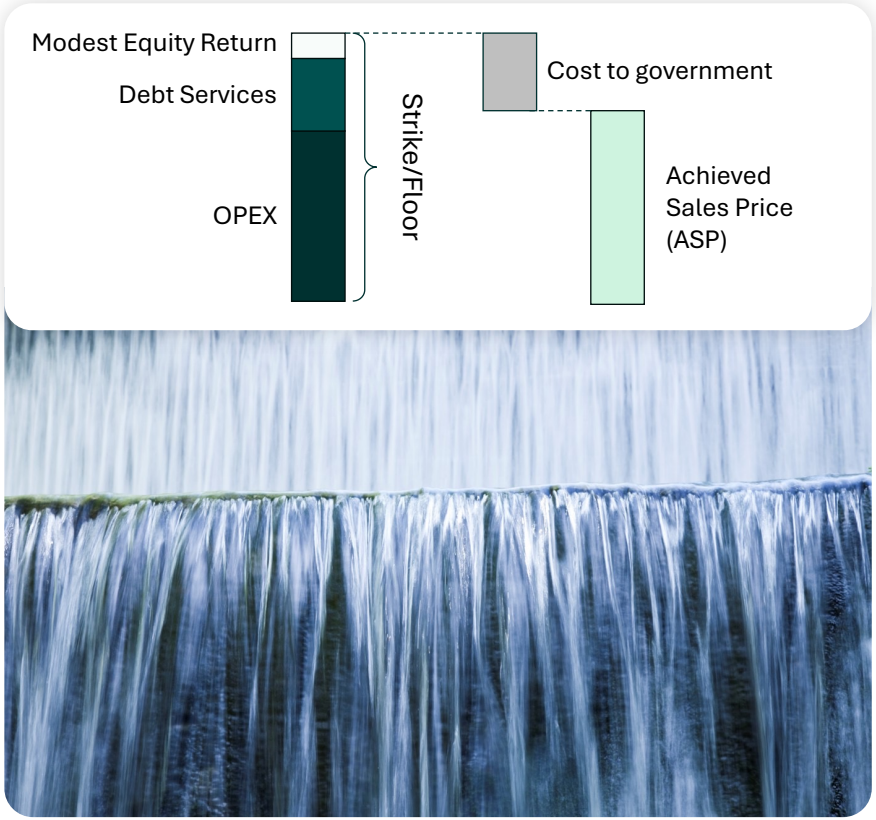
› **Stage-gates.** A light Expression of Interest and pre-qualification screen must-haves; shortlisted projects submit focused applications; a multidisciplinary panel evaluates; Independent Engineer and specialists confirm technology, cost, sustainability, and finance in due diligence.

› **Conditional awards and flow-through.** Contracts embed milestones such as final investment decision, start of commissioning, and commercial operation date, each with longstop dates. Missed milestones can trigger reallocation to the reserve list under transparent rules; non-material changes follow standard change-control.

Cost to Government & Funding

Cost Logic

Programme cost to the State is based on projected ASPs and awarded floor/strike levels over a 11-year horizon.



Important note (methodology).
Estimating programme cost is inherently difficult: there is **no official consensus** on forward **Achieved Sales Prices (ASP)** for SAF, nor on credible **strike/floor** levels for Swedish SAF projects. Few projects have reached FID and public disclosures are limited. The framework below is therefore **illustrative**, built from best-available information, our own project experience, and structured discussions with market participants.

How the cost logic works.
Each awarded project receives a **floor/strike** guaranteed by the State within the programme contract. The floor is calibrated to cover **OPEX, scheduled debt service (interest + amortisation), and a modest risk-appropriate return**—i.e., the lender-underwritten cash flows. We model a **10-year term (40 quarters)**; profiles can be level or shaped to the debt schedule for predictability.

Programme composition assumptions.
We assume **pathway-specific floors/strikes**: one for **Advanced Bio SAF** and another for **e-SAF**. The producer base includes **pure e-SAF producers** and **co-producers** delivering both Advanced Bio and e-SAF. The total programme volume is split **70% Advanced Bio / 30% e-SAF**.

What follows (next section).
Section **6.2 Assumptions & Scenarios** sets out the **quarterly ASP paths** (low/high) for each pathway and the **awarded floor/strike schedules** over **11 years / 44 quarters**. All other modelling settings are standardised and described where relevant later in the report.

Cost to Government & Funding

Assumptions & scenarios

What We Assume for SAF Prices

High and low price scenarios based on a multiple of the fossil Jet A-1 + ETS baseline (anchored in historical market multiples), combined with production-cost projections for advanced-bio and e-SAF.

Advanced Bio SAF (non-HEFA)

- **Pricing basis.** We price SAF off **fossil Jet A-1 plus an ETS add-on** (the "fossil-equivalent"). SAF ASP is then a **multiplier of that fossil-equivalent**. Historically, analysts have used a **2×–5×** range for that multiplier; we stick to that framing here.
- **High ASP case.** By the mid-2030s the mandate jumps to **20% in 2035** while most available SAF is still HEFA and those feedstocks are scarce. Advanced-bio supply isn't yet wide enough to set the price, so HEFA becomes the clearing benchmark. Against the **fossil-equivalent** basis, the market moves toward the **upper end of the 2×–5× range**, creating a **real undersupply around 2035** and a few years of upward pressure. Even as new plants arrive, the step to **30% in 2040** lifts required volumes again, so prices **stay elevated into the early 2040s** rather than dropping quickly.
- **Low ASP case.** HEFA availability remains "good enough" for longer and **effectively caps the market**, keeping SAF closer to the **lower half of the 2×–5× range** versus the same **fossil-equivalent** basis. Advanced-bio supply shows up earlier and more steadily, so when **20% in 2035** hits, supply keeps up better—prices tighten but **don't spike**. By **2040**, additional advanced-bio capacity helps meet **30%** without a blow-off, and prices **drift back toward the fossil baseline** instead of holding a late-2030s peak.

Cost to Government & Funding

Assumptions & scenarios

What We Assume for SAF Prices

High and low price scenarios based on a multiple of the fossil Jet A-1 + ETS baseline (anchored in historical market multiples), combined with production-cost projections for advanced-bio and e-SAF.

E-SAF

- **Pricing basis (no liquid market).**
  Because there's effectively no traded e-SAF market yet, we anchor price to **producers' levelised cost**. Project SkyPower's insights report[1] puts **Europe e-SAF LCO at ~€5,000–€8,000 per tonne by 2030** (cost, not ASP). We use that band as the starting reference.
- **High case (start mid/high, ease slowly).**
  Early projects clear **in the mid/higher €5–8k/t band** due to first-of-a-kind capex, tighter execution/financing, and limited early supply. As projects learn and scale, costs **decline gradually** through the 2030s—but not fast—so prices **stay elevated** into the early 2040s.
- **Low case (start lower, fall faster).**
  Early projects clear **closer to the lower end of the band**, and prices **fall faster** as larger plants, standardised offtakes, and maturing supply chains **pull costs down**. With more capacity online, the market **softens earlier**, keeping e-SAF closer to the lower half of the initial range over time.

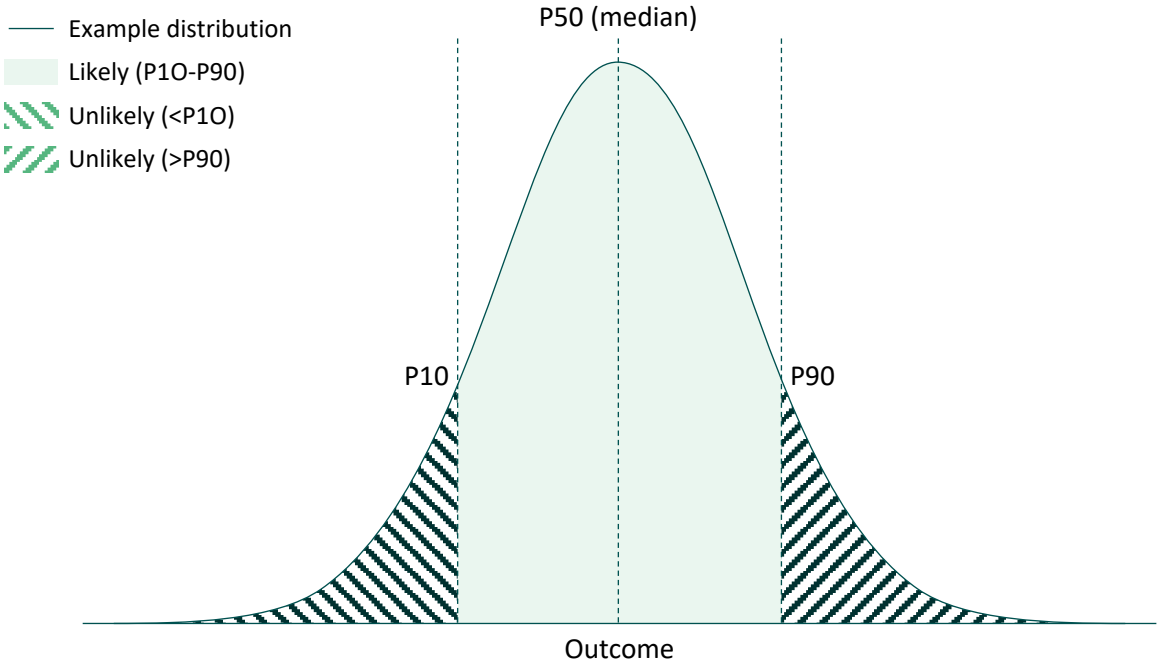
[1] *Project SkyPower, Accelerating the take-off for e-SAF in Europe: Insights report (Oct. 2024),*

Cost to Government & Funding

Assumptions & scenarios

What We Assume for SAF Prices

High and low price scenarios based on a multiple of the fossil Jet A-1 + ETS baseline (anchored in historical market multiples), combined with production-cost projections for advanced-bio and e-SAF.



How to read probability bands (P10 / P50 / P90)

- This is our P10/P50/P90 for State support needs, calibrated to historic HEFA SAF price volatility.
- We show three probability bands: Support-heavy (**P10 / ~10% likely**) is the downside tail where weaker prices mean higher support—larger magnitudes (farther from zero) are worse; Central (**P50 / 50% likely**) is our best single-point view; Low-support (**P90 / ~90% likely**) is the taxpayer-friendly case where support is at or below this level and can be ≈0 (no support needed).
- We present these bands for both the Low and High price scenarios.

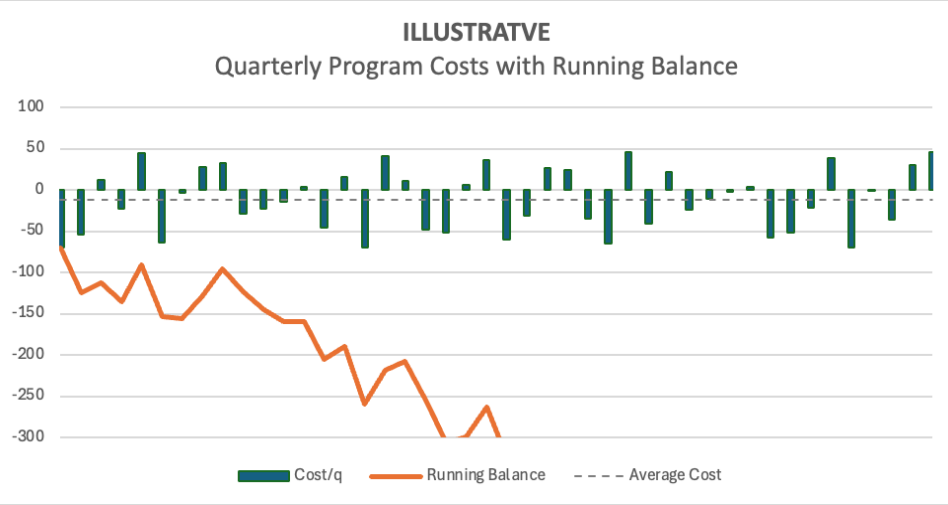
Cost to Government & Funding

How are cost calculated

Quarterly Cost of a Program and Running Balance

This is how cost are calculated in the program

- In a **net CfD**, each quarter the **strike** (support level per ton) is compared to the **Achieved Sales Price (ASP)**. If ASP is below the strike, the program pays the difference on eligible volumes. If ASP is above the strike, the producer pays back the difference for that quarter
- All payments flow into a **running balance (ledger)**. In a net CfD the balance **cannot go above zero**: repayments continue until the ledger reaches zero, then any further upside stays with the producer. The balance therefore shows the cumulative net cost (negative) or that the program has been fully repaid (zero)
- The dashed line shows the **average cost perquarter**: the final balance divided by the numberof periods. In this example the final balance is**–528** (out side chart) over **44** quarters, so the average is **–12 per quarter** (negative = cost to the state; zero = break-even)



Cost to Government & Funding

Results & funding

Results and funding — costs and pay-back

*Most likely, a 11-year program for 300kt would have a **cumulative net cost of SEK 1,1–5,5 billion**, depending on the program's size and the **achieved sales prices (ASP)** realized by producers, with a rough yearly midpoint cost of between **SEK 0,1-0,5 billion** per year*

Annual production capacity (MT)	**300 000**	**Currency conversion**	**9,5**	**SEK/US$**	
Proportion of e-SAF produced	30%				

Gross cumulative government support estimate
Period: 2031-2041

	Low			High		
(SEK billion)	P10	P50	P90	P10	P50	P90
SAF production volume(MT)						
150 000	-11,1	-2,8	-0,1	-6,7	-0,5	0
300 000	-22,2	**-5,5**	-0,3	-13,5	**-1,1**	0

Here's how to read the table, step by step.

- The numbers at the top define the programme setup: the total annual SAF volume under consideration and the assumed eSAF share (here 300 000 tonnes and 30%).
- The light-green box at bottom left shows the programme-size cases we illustrate (150 000 and 300 000 t/y). Results in the table are the **cumulative 11-year net State support** for each case under our **CFD-net** logic (SEK bn; closer to zero is better for taxpayers).
- Across the middle, we compare **two market price scenarios**—**Low** and **High**—and within each we show **P10 / P50 / P90** probability bands calibrated to historic HEFA-SAF price volatility. P10 (≈10% likely) is the support-heavy tail where weak prices require more top-ups; P50 (50/50) is the central view; P90 (≈90% coverage) is the low-support case and can be ≈0 if prices outperform. Because top-ups and paybacks vary year-to-year, we show totals over the full decade; if you want a rough annual figure, divide the 10-year total by 10.

Cost to Government & Funding

Results & Prognosis

Results and Prognosis — Strike and ASP assumptions

Price assumptions

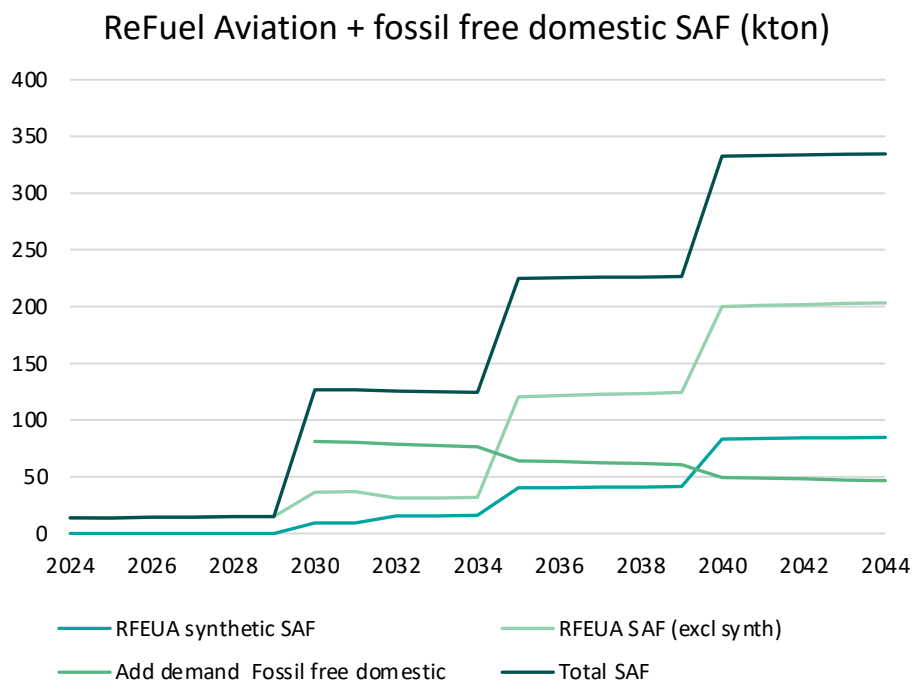
- **Disclaimer**. The program cost estimates in this report are illustrative and indicative. They reflect our best judgement at the time of writing, recognizing that there are currently no commercial-scale non-HEFA SAF or e-SAF plants operating in Europe and no transparent market prices for advanced bio or e-SAF. Our assumptions and ranges are informed by internal analysis and discussions with industry participants, engineering firms, advisors, and peers. These estimates should be viewed as decision aids rather than precise forecasts and will evolve as technologies mature, projects advance, and market data emerges. We offer them with humility as our best knowledge today and welcome constructive review and dialogue.
- The cumulative outcome depends on the *timing* of where ASP sits relative to the floor: even with the same long-run averages, different sequences of quarters above/below the strike produce materially different programme costs. Because support is settled period-by-period, the path (and volatility) matters—not just the mean.
- Our base case assumes Sweden's strong competitive profile for sustainable-fuel production enables producers to achieve global market prices at competitive costs. Accordingly, over a longer horizon we expect ASP to trend at or above a strike/floor set to reflect a competitive cost level versus global suppliers. This is an assumption, not a guarantee; we also test downside paths where ASP remains below the floor for extended periods.
- We set the **strike/floor** at **USD 2,700–3,200/ton** for advanced bio and **USD 5,000–6,000/ton** for eSAF. For **achieved sales prices (ASP)**, the **P50 (most likely)** level varies by scenario: in the **Low** case Advanced bio is **USD 2,600–3,000/ton** and eSAF **USD 5,000–5,700/ton**; in the **High** case Advanced bio is **USD 2,800–3,400/ton** and eSAF **USD 5,200–6,400/ton**.

kUSD/ton	Advanced Bio	e-SAF
Strike/Floor	2,7 - 3,2	5,0 - 6,0
Low ASP Scenario	2,6 - 3,1	5,0 - 5,7
High ASP Scenario	2,8 - 3,4	5,2 - 6,4

Cost to Government & Funding

Potential Funding

Swedish SAF Demand



ETS cost basis — method & result

› We estimate Sweden's SAF demand and ETS cost exposure by modelling fuel through the 2030s. Our approach starts from **Transportstyrelsen's traffic forecasts** (international and domestic), converts them to fuel burn using current **jet-fuel volumes**, applies an assumed **annual fuel-efficiency improvement**, and layers on the **RefuelEU Aviation mandate** together with Sweden's **domestic net-zero ambition**. This yields yearly fossil vs SAF splits that drive the ETS calculation.

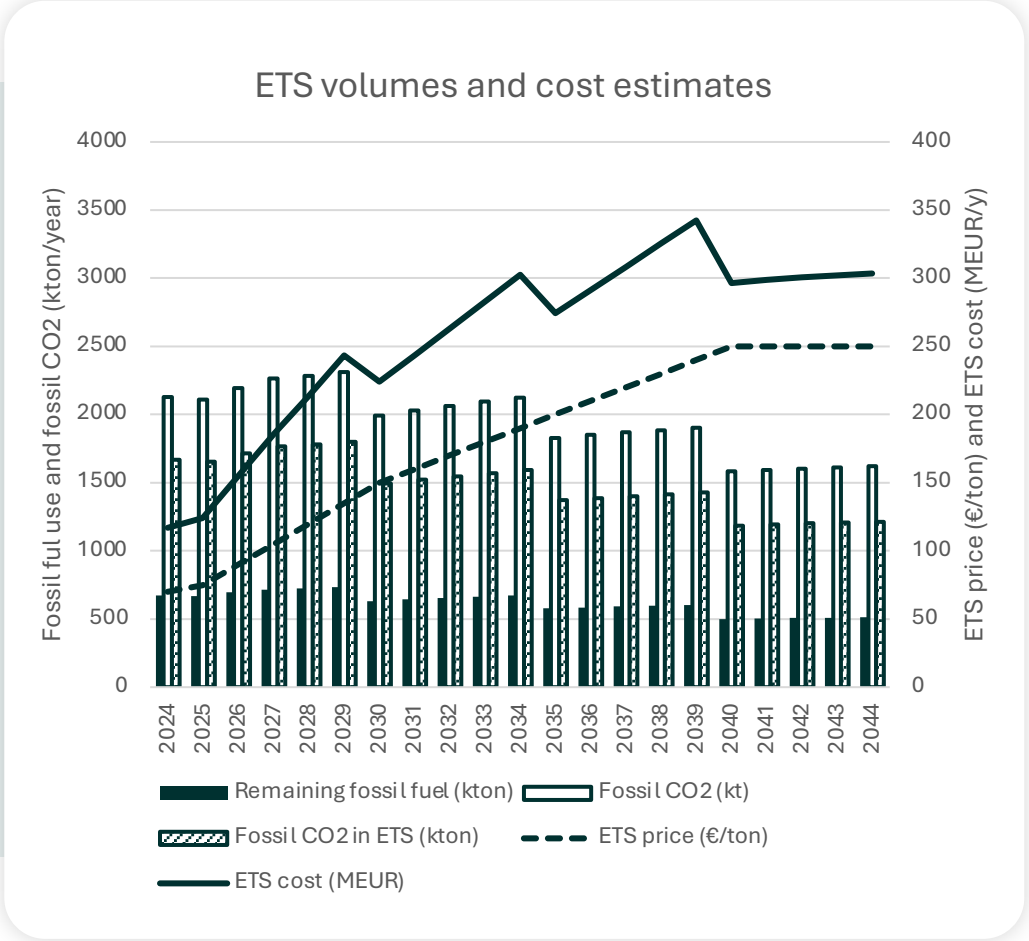
› **Result**
The implied Swedish **SAF demand** rises from roughly **150 kt/year** to about **250 kt/year** during the 2030s, with **eSAF** representing roughly **25–35%** of the total over the period.

Cost to Government & Funding

Potential Funding

ETS cost — how the chart feeds the estimate

- Using the Swedish SAF estimates, we combine the traffic and fuel forecasts to get **remaining fossil fuel (kton)**, convert that to **fossil CO_2 (kt)**, subtracting non-EU flights (outside ETS) and multiply by the estimated **ETS price path (€/t)** to obtain the **ETS cost (MEUR) per year**. Summing the 11 years **2031–2041** gives **~€3.2 bn in total**, i.e. **~SEK 34 bn** over the period or **~SEK 3.1 bn per year** on average.
- Against this benchmark, our net-CfD programme's **average annual** draw of **SEK 100-500 million** is only **~3–16%** of ETS revenues.



Conclusion & Next Steps

The ask

The Proposition

Adopt revenue certainty for SAF—via a simple net-CfD—to unlock private capital, speed FID, and build a resilient Swedish base industry at modest public cost.

- We propose Sweden to introduce **revenue certainty** for SAF—via a simple net-CfD—so plants can be financed on bankable, predictable cash flows instead of volatile market prices. This is the missing piece that unlocks private capital and brings projects to **FID much faster**.
- **The public cost is modest:** across our scenarios, the **average annual net outlay is ~SEK 100-500 million**, i.e., roughly **3-16%** of estimated ETS revenues from Swedish aviation (≈ **SEK 3.1 billion/year**). Even under stressed markets the draw stays well below ETS revenues (Low price + P10 ≈ **SEK 2 billion/year**), while in strong markets repayments drive net support towards zero.
- **This is standardising internationally:** the **UK is moving to revenue certainty for SAF**, and several countries are exploring similar models. Sweden has the feedstocks, infrastructure and industrial base to turn this into a **new strategic industry** that strengthens resilience and secures access to renewable aviation fuel.
- **For transparency:** **We are project developers and would seek to participate** on equal, competitive terms. That is normal—and precisely the point: with revenue certainty, our own projects (and others') are far more likely to reach FID and deliver capacity in Sweden. We propose using this framework as a practical starting point and working with government and agencies to set credible, affordable parameters and get the first contracts awarded.

Appendices

A. Reference Price & Verification

Reference price and verification

Define Achieved Sales Price, fallbacks, disclosure and audit; plan the path from ASP to partial platform-based pricing.

- **Concept.**
  The reference price must reflect the commercial value of the product the producer sells. The revenue-assurance contract sits alongside bilateral offtakes until a liquid market for relevant sustainable aviation fuels (SAF) exists, noting that non-HEFA (Advanced Bio) SAF will not price like HEFA over time.
- **Requirements.**
  We need certainty for lenders, value for money for taxpayers, efficiency in administration, and confidentiality balanced with price discovery. Over time, market transparency is vital for scalable projects and sustainable supply.
- **Options.**
  Jet price is liquid but far too low; North-West Europe HEFA quotes are imperfect and too low for non-HEFA today; Achieved Sales Price (ASP) with shared upside is bankable and aligned; ASP plus a platform fraction seeds future liquidity; state buy-and-auction is viable but too interventionist now.
- **Recommendation and transition.**
  Adopt Achieved Sales Price now and evolve toward partial platform-based pricing once credible liquidity and governance exist, using clear triggers. Keep settlements linked to ASP until platform quotes are demonstrably reliable and deliverable for producers.
- **Verification.**
  Use a standard disclosure pack (volume-weighted ASP by contract family), auditor attestation, related-party guardrails, aggregated public ranges, and fallback indices where evidence is thin.

Appendices

A. Reference Price & Verification

Reference price and verification

Define Achieved Sales Price, fallbacks, disclosure and audit; plan the path from ASP to partial platform-based pricing.

Reference price and verification

- Revenue Assurance contract makes up the difference between Reference Price and Strike Price, therefore the Reference Price must accurately reflect the commercial value of the product (which will be through bilateral offtakes until a liquid market is established).
- **Recommendation:** adopt Achieved Sales Price (ASP) now and evolve towards platform-based pricing once sufficient liquidity and governance exist. Keep settlements linked to ASP until platform quotes are demonstrably reliable and deliverable for producers.
- ASP disclosed by producer via standard process, with independent verification and related-party guardrails.

Reference price options

	Method	Assessment
1	Jet fuel market price	Existing, liquid commercial market. Simple and bankable, but far too low – poor value for money. Not recommended.
2	NW Europe SAF “market price” (Argus)	Existing (although not fully reflecting real trades). Higher than jet fuel but still too low for non-HEFA SAF. Not recommended, at least not until a non-HEFA version evolves.
3	**Achieved Sale Price (with producer incentive provided by retained upside of net CfD)**	**Bankable – ensures producer achieves strike price, and the retained upside provides the incentive to prevent gaming by offtakers and deliver value for money. Recommended.**
4	**ASP (as 3) plus requirement to sell a fraction through a transparent third-party platform**	**Natural development of (3). Creates liquidity and a market price for all future SAF (not just Revenue Assurance volume). Suitable platform providers exist – platform could be set up for Sweden or may evolve in Europe. Recommended.**
5	Government entity buys SAF from producers and auctions it	Alternative approach – creates liquidity, but requires much government intervention, so not recommended.

Appendices

B. Eligibility & Award Matrices

Eligibility and award matrices (page 1 of 2)

Provide must-have checklists and weighted scorecard templates to make selection transparent and repeatable.

› Project maturity thresholds. We suggest technology readiness level (TRL) 7–8; Class 3–4 estimate with Pre-Front-End Engineering Design (Pre-FEED) or Front-End Loading 2 (FEL-2) for eligibility; and Front-End Engineering Design (FEED) with a Class 2 estimate and Independent Engineer review for selection.

› Commercial readiness. Engineering, procurement, and construction (EPC) engaged with Heads of Terms for eligibility; binding terms ready to sign for selection; permitting pathway evidenced versus consent in place; offtake is not required for eligibility but is desirable for selection.

› Finance readiness. Advanced interactions for eligibility; term sheets from debt and equity (subject to revenue assurance and conditions precedent) for selection; a credible team and a clear line of sight to the final investment decision.

Parameter	Minimum for eligibility to bid	Targeted for successful bid
Location	Sweden	-
Pathway	Non-HEFA, ASTM approved	-
Sustainability	>=65% GHG savings	-
Value for money 40%	-	Credible competitive cost per tonne of GHG saved
Deliverability 40%		
Technology Readiness Level	7-8	-

Appendices

B. Eligibility & Award Matrices

Eligibility and award matrices (page 2 of 2)

Provide must-have checklists and weighted scorecard templates to make selection transparent and repeatable.

Parameter	Minimum for eligibility to bid	Targeted for successful bid
Engineering Definition and cost estimate	Class 3 or Class 4; Pre-FEED / FEL-2 complete	FEED complete; probably Class 2 estimate – to be considered in conjunction with financing
EPC contract	Engaged EPC contractor with Heads of Terms	Full EPC contract ready for signature
Independent Engineer's report	Available	Scrutinised by independent assessor, who will carry out own review
Planning / permitting	-	Consent from local authority in place
Offtake	No requirement, since the RA is critical for this	Offtake contracts with RA as a CP are desirable (discretion on this depending on market situation)
Feedstock	Heads of Terms in place for 50%	Definitive contracts in place, subject to FID, for at least 50% - more preferred
Finance	Evidence of advanced stage interactions with providers. Solvent entity.	Term sheets from debt and equity (subject to RA contract and other CPs)
General	-	Line of sight to FID, ability to commence construction with [6] months. Credible team; no red flags in KYC; credible schedule; site control.
System value (20%)	-	Meaningful diversity across portfolio, resilience in feedstocks and infrastructure, contribution to regional economic development, Swedish IP generation

Footnotes: FEED: Front End Engineering Design FEL: Front End Loading

Appendices

C. Reasoning behind a falling strike price and ASP

Three Phases – Price scenario

- We set the floor (strike) equal to each plant's levelised cost—including O&M and scheduled debt service. As debt is amortised in the first ten years, unit cost falls, so the floor declines gently. In parallel, as the market scales—learning effects, larger plants, and new entrants—competition increases and ASP trends lower.
- In the **first** phase (the red period), the market is still forming. Volumes are modest, logistics are immature, and buyers are cautious. In this environment there is a real risk that realised ASP sits below the floor. The floor protects projects through this early trough so plants can reach stable operations and lenders are repaid as planned.
- In the **second** phase (green), Sweden's competitive position starts to show. As demand grows and capacity ramps, our plants benefit from efficient feedstock chains, reliable power and industrial integration, and operating experience. ASP moves above the floor for Swedish producers, allowing healthy margins and resilience against normal price swings.
- In the **third** phase (the yellow period), supply and demand are broadly aligned and competition is intense. Costs and selling prices across the market converge. Because we expect Sweden to remain among the lower-cost producers, our plants should stay cost-aligned with market prices and continue operating profitably without reliance on support.