TASK 2 - STAKEHOLDER CONSULTATION WORKSHOP

On

Proposed BCS Framework for India

Session 1: Design Features from International CfD Schemes

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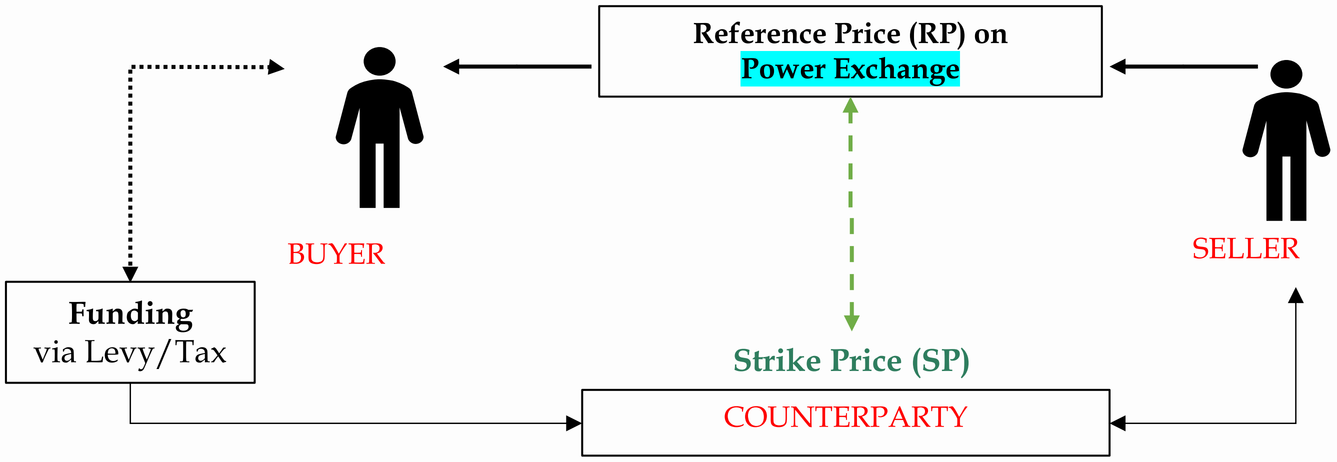
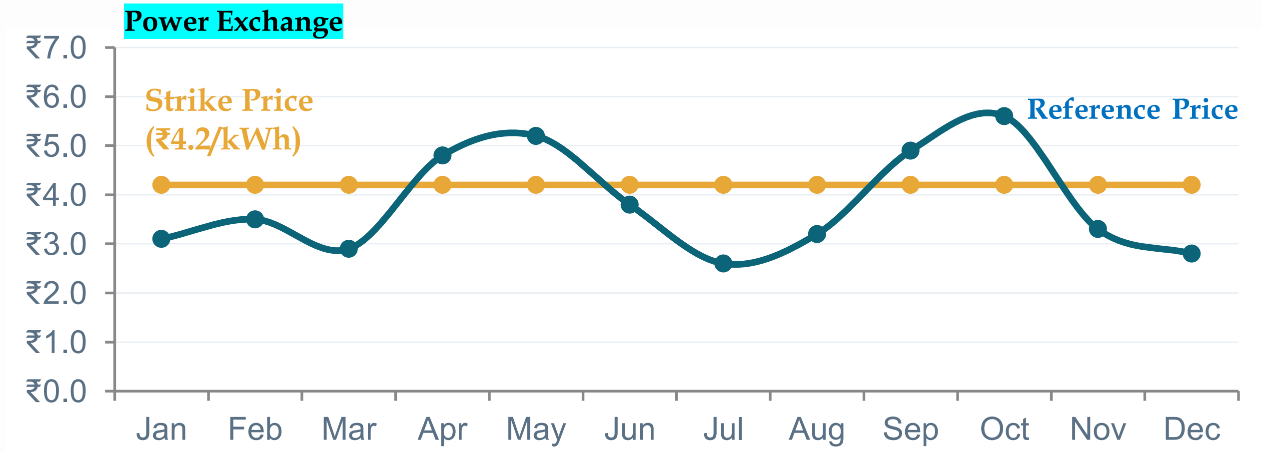
How a CfD-Based Business Model Work



Difference btw RP & SP is settled via counterparty



When RP < SP

COUNTERPARTY pays to SELLER

- Seller has an assured min payment

When RP > SP

SELLER pays to COUNTERPARTY

Technology & Location Specific treatment

Technology Selection Criteria		
Country	**Auction Type**	**Details**
UK	Technology-Specific	Separate Pots = Separate auctions
Australia	Technology-Specific (Category-based)	Generation vs. Dispatchable
Germany	Technology-Specific	Separate tenders per technology
Greece	Technology-Specific	Single hybrid type only

Location Preference			
Country	**Offshore Wind**	**Onshore Wind/Solar**	**BESS**
UK	Yes, Location Specific	Yes, based at Regional Distribution network	No
Australia	Yes, Location Specific	Yes, at State Level	Yes, at State Level
Germany	Yes, Location Specific	No	No
Greece	No	No	No

High level overview across 4 Countries

Function	United Kingdom	Germany	Greece	Australia
Policy Framework	DESNZ	BMWK	MEEN	DCCEEW
Settlement Pool Funding	Levy	EEG Account	RES Support Account	DCCEEW
Admin. Strike Price Setting	DESNZ	BNetzA	RAAEY	DCCEEW
Auction Admin	NESO	BNetzA	RAAEY	ASL
Settlement Admin	LCCC	TSOs	DAPEEP	ASL
Settlement Mechanisms	2-way CfD	1-way CfD	2-way CfD	2-way CfD (kind)
Market Operations	Wholesale Electricity Market	Wholesale Electricity Market	Wholesale Electricity Market	Wholesale Electricity Market

· BMWK = Federal Ministry for Economic Affairs & Climate Action · MEEN = Ministry of Environment & Energy ·. ASL = AEMO Services Limited (Runs CIS tenders, shortlists, due diligence

Risk Allocation and Systemic Issues

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- Price risk is largely borne by the counterparty through government or consumer-backed funding.
- Volume, balancing, curtailment and basis risks remain with generators across all schemes.
- Low PX liquidity can result in zero or negative market prices during high renewable output.
- Counterparty solvency is supported through levy-backed reserves (GB) or direct government backing (Germany, Greece and Australia).

RISK MAP

Who Bears What

- Price risk → Govt / Counterparty
- Volume & Balancing → Generators
- Curtailment → Generators
- Counterparty solvency → Govt / Counterparty

United Kingdom

United Kingdom

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1. Policy Framework

MATURE

- Enforced by Energy Act 2013 legislation
- DESNZ sets budget & eligibility
- Pay-as-Clear & 2-sided CfD
- Technology wise auction

2. Settlement Mechanism

2-WAY

- 30 min settlement of Diff. btw SP & RP
- RP =Day ahead wholesale market average
- **Monthly invoicing** by LCCC
- LCCC make the difference to generator (or vice versa)

3. Settlement Pool Funding

LEVY

- LCCC* funded by licensed Suppliers (quarterly)
- Suppliers are paid LEVY by customers
- Claw back calibration between Suppliers & LCCC

4. Auction Administration

NESO

- NESO# (Grid Operator) conducts auction & selection
- LCCC executes contract with Generator

5. Contract & Settlement Administration

LCCC

- LCCC sole govt-owned counter party
- EMRS- Technical (Metering, Invoicing)

6. Market Operations

LCCC

- Generator sells into market (no preferential dispatch)
- Generator bear intra-day & balancing cost/risks

* Low Carbon Contracts Company; # National Energy System Operator

Institutional Roles, Funding Flow & Auction Process

INSTITUTIONAL ROLES

- GB Government - sets broad policy & objectives, primary legislation
- DESNZ – Allocation rules, budgets, strike-price caps
- NESO - eligibility & CfD allocation
- Ofgem - appeals & contract policing
- LCCC - contracting, payments, levy
- ELEXON/EMRS - settlement services
- Generators & Suppliers - contract parties

FUNDING FLOW

Consumers (via energy bills)
↓
Suppliers (collect & remit)
↓
Supplier Obligation Levy
↓
LCCC (levy + Total Reservation Amount)
↓
CfD payments to generators

AUCTION PROCESS

1. DESNZ: Parameters & Guidance
2. Pot Allocation & Auction timetable
3. NESO: Eligibility Checks
4. Bidder: Sealed Bid (ingle strike price)
5. NESO: Project Selection / Stacking
6. Pay-as-Clear Award per Pot
7. LCCC: CfD Contract Signature

*ELEXON is a non-profit company owned by the thirteen largest electricity market participants

Germany

Germany

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1 · Policy Framework — IN TRANSITION

- Government's amended EEG* 2017
- BMWE (Ministry of Eco & Energy) sets budget
- Pay-as-Bid and 1-side CfD kind
- Technology wise auction

2 · Settlement Mechanism — MONTHLY

- 15 mins settlement Diff btw SP & RP
- RP is "Tech-specific Monthly Market Value" (weighted avg)
- **Monthly invoicing** by TSOs
- TSO $ pays Generator the EEG market premium

3 · Settlement Pool Funding — BUDGET

- Federal Climate & Transformation Fund make payment to TSO
- Revenues by carbon pricing funds Federal Climate & Transformation Fund
- No clawback (bcz its one-sided CfD kind)

4 · Auction Administration — BNETZA

- Bundesnetzagentur (BNetzA) conducts & awards
- 4 TSOs manage the Generator's account

5 · Contract & Settlement Admin — TSOs

- Counter Party Guarantee: 4 TSOs (50Hertz, Amprion, TenneT & TransnetBW)
- TSOs – settlement, metering and payment administration

6 · Market Operations — TSOs

- Generator sells into market (no preferential dispatch)
- Generator bears market participation and balancing risks

* Renewable Energy Sources Act; $ Transmission System Operator

Institutional Roles, Funding Flow & Auction Process

INSTITUTIONAL ROLES

- BMWE - Policy & Legislation
- BNetzA - Auctions, Caps, Enforcement
- TSOs - Administer EEG-Konto centrally
- VNB (distributors) - Pay Market Premium
- EPEX SPOT - Benchmark Reference Price
- Developers - Sign CfD via TSO Route

FUNDING FLOW

Federal Government Budget

↓

EEG fund (EEG-Konto, run by TSOs)

↓

TSO Compensates VNB

↓

VNB Pays Market Premium

↓

Subsidized Generator

AUCTION PROCESS

1 BSH: Zone Designation (Offshore Wind)

2 BNetzA: Eligibility Rules & Price Caps

3 Technology-Specific Auction Announced

4 Sealed Pay-as-Bid Submission

5 BNetzA: Evaluation against Lowest Bid

6 Award to Lowest-Cost Bids

7 TSO/VNB-linked Contract Arrangement

Greece

Greece

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1 · Policy Framework — EU COMPLIANT

- Law 4414/2016 by Ministry of Environment & Energy
- MEEN sets MW target & parameters based on RAAEY's feedback
- Pay-as-Bid and 2-side CfD kind
- Technology wise auction

2 · Settlement Mechanism — 2-WAY

- 15 mins settlement of diff. btw RP & SP
- Tech-specific RP based on Day-Ahead Market
- **Monthly invoicing** by DAPEEP
- DAPEEP S.A from the Special RES Account (ELAPE) pays generator

3 · Settlement Pool Funding — HYBRID

- Hybrid market-fund based on electricity levy + carbon trading + lignite Levy
- DAPEEP manages settlement payments to renewable generators
- Two-way CfD settlement with surplus revenue recovery

4 · Auction Administration — RAAEY / DAPEEP

- Regulatory Authority for Waste, Energy and Water (RAAEY)
- DAPEEP # executes RES support contracts with generators

5 · Contract & Settlement Admin — DAPEEP

- Counter Party is DAPEEP S.A. (RE Source & Gaurantees of origin operator)
- DAPEEP with HEnEx (Energy Exchange)

6 · Market Operations — DAPEEP

- Generator sells into wholesale market (no preferential dispatch)
- Generator bears market and balancing risks

* Regulatory Authority for Energy, Waste and Water; # Renewable Energy Sources Operator and Guarantees of Origin

Institutional Roles, Funding Flow & Auction Process

INSTITUTIONAL ROLES

- MEEN - Policy & Legislation
- RAAEY - Auction design & oversight
- DAPEEP - Counterparty & settlement
- HEnEx - Reference price & clearing
- Licensed suppliers - Collect RES levy

FUNDING FLOW

Consumers (electricity bills)
↓
RES levy + lignite levy + CO_2 revenue share
↓
Licensed suppliers collect & remit
↓
DAPEEP special account
↓
Monthly premium to generators

AUCTION PROCESS

1. Minister: technology categories & price limits
2. Minister: capacity per technology & frequency
3. RAAEY: announces procedure
4. Sealed bid submission
5. RAAEY: runs & awards (pay-as-bid)
6. RAAEY: publishes results / issues licences
7. DAPEEP: CfD contract signature

Australia

Australia

1 · Policy Framework — NASCENT

- CIS% Agreement under the Australian Gov
- DCCEEW & sets targets
- Pay-as-Bid and two-way, asymmetric Revenue Underwriting Mechanism
- Technology-specific & category-based

2 · Settlement Mechanism — ANNUAL

- 30 mins settlement of diff. btw RP & SP
- RP is linked to market revenues (wholesale market prices)
- **Annual invoicing** by CIS contract administrator
- DCCEEW makes payment to Generators

3 · Settlement Pool Funding — TAXPAYERS

- DCCEEW guarantees net funding of CIS Agreements
- Taxpayers give the net funds
- Revenue sharing mechanism through upside revenue return

4 · Auction Administration — AEMO / ASL

- AEMO# Services Limited (ASL) conducts tender & selection
- DCCEEW executes CISAs with project proponents

5 · Contract & Settlement Admin — DCCEEW

- DCCEEW is counterparty to CIS contracts
- CIS administrator

6 · Market Operations — CIS

- Generator sells into wholesale market (no preferential dispatch)
- Generator retains operational and market participation risks

*National Electricity Market; # Australian Energy Market Operator % Capacity Investment Scheme & Department of Climate Change, Energy, the Environment and Water

Institutional Roles, Funding Flow & Auction Process

INSTITUTIONAL ROLES

- DCCEEW - policy, counterparty, funding
- Clean Energy Regulator - compliance
- ASL - tender administration
- AEMO - grid operations & dispatch
- Developers - contract directly with DCCEEW

FUNDING FLOW

Commonwealth taxpayer

↓

DCCEEW (counterparty guarantee)

↓

Below floor: DCCEEW pays 90% of shortfall

↓

Above ceiling: developer repays 50% of excess

↓

Net CIS Agreement payment

AUCTION PROCESS

1. DCCEEW/ASL: tender design & eligibility criteria
2. ASL: administers tender process
3. Bidder: sealed bid (floor & ceiling, or MW availability)
4. Eligibility screening (EC1-EC3)
5. Merit assessment of bids
6. ASL recommends bids to Government
7. DCCEEW: CIS Agreement signature

Cross Country Comparison

Cross-Country Policy Objectives and Rationale

	Great Britain	Germany	Greece	Australia
Headline goal	Net Zero Nuclear + RE	Swift decarbonization 80% RE by 2030	RE expansion 19 GW by 2030 (NECP*)	82% RE by 2030 +40 GW capacity
Core rationale	Bankable Financing + Cost control	Lower Cost of capital	Investor stability while limiting state cost	Price discovery via bidding & Reliability
Budget signal	Administrative strike-price cap, Pot budgets	Targets drive auction volumes Not budget cap	EUR 2.27bn / ~4.2 GW (2022 round)	Price Floor/Ceiling

*National Energy and Climate Plan (NECP)

Cross-Country Institutional and Counterparty Design

	Great Britain	Germany	Greece	Australia
Policy ministry	DESNZ	BMWE	MEEN	DCCEEW
Auction regulator	NESO	BNetzA	RAAEY	ASL
CfD counterparty	LCCC	TSOs	DAPEEP	DCCEEW
Settlement body	LCCC	TSOs	DAPEEP	ASL

DESNZ – Department for Energy Security and Net Zero **NESO** – National Energy System Operator **LCCC** – Low Carbon Contracts Company **EMRS** – EMR Settlement Limited **BMWE** – Federal Ministry for Economic Affairs and Energy **BNetzA** – Federal Network Agency **TSO** – Transmission System Operator **VNB** – Distribution Network Operator *(Verteilnetzbetreiber)* **EEG** – Renewable Energy Sources Act *(Erneuerbare-Energien-Gesetz)* **MEEN** – Ministry of Environment and Energy **RAAEY** – Regulatory Authority for Waste, Energy and Water **DAPEEP** – Renewable Energy Sources Guarantees of Origin and Certificates Operator S.A. **DCCEEW** – Department of Climate Change, Energy, the Environment and Water **ASL** – AEMO Services Limited **AEMO** – Australian Energy Market Operator

Cross-Country Funding and CfD Design Features

	Great Britain	Germany	Greece	Australia
Funding source	Statutory Supplier Obligation Levy	Supplier Levy (Federal budget)	RES levy + Lignite levy + CO_2 revenue share	Taxpayer (Govt guarantee)
Contract type	Two-way CfD	One-sided CfD (two-sided from 2027)	Two-sided CfD	Two-way CfD (kind)
Reference price	Day-ahead market	Day-ahead market	Day-ahead market	AEMO Spot Market
Settlement frequency	Monthly	Monthly	Monthly	Annual
Curtailment treatment	Not Compensated	Not compensated	Not compensated	Not compensated

Thank You