CTCN PALO 2026 LEARNING VISIT · SEOUL & DAEJEON, REPUBLIC OF KOREA

Nile University
جامعة النيل

Egypt: A Global Platform for GH2 Collaboration

Connecting Governments, Research, Industry and Innovation for the Global Hydrogen Economy

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ABOUT ME

Three Roles, One Mission

Researcher · Policy leader · National GH2 strategy execution

Academic Leadership

- Assistant Professor, Nile University
- Director, STI Policy Hub

International Green Hydrogen Centre (IGHC)

- Director, established by PM Cabinet Decree, May 2026

National Policy Engagement

- PM Legislative Reform Committee
- ASRT Policy Council

PART I

The Global Context

Scale-up demands, globally distributed assets, and why isolated development fails

Distributed Global Ecosystem

No single country can build the hydrogen economy alone. The next phase of the energy transition is collaborative deployment, not isolated development.

Technology

- Electrolyzers
- Fuel cells
- Innovation

Finance

- Capital
- Guarantees
- Blended finance

Infrastructure

- Ports
- Pipelines
- Storage

Policy

- Incentives
- Carbon markets
- Investment protection

The hydrogen transition is no longer a competition between countries. It is a collaboration among complementary ecosystems

THE GLOBAL CONTEXT

Global Hydrogen Demand: The Scale of Opportunity

The demand signal is already here

60% → 400%

Global low-carbon H_2 demand growth

10 Mt

EU RePowerEU H_2 import target by 2030

Egypt's starting point: *~2% of today's ~90 Mt global market, plus Japan's ~20 Mt demand signal.*

THE GLOBAL CONTEXT

Policy as the Great Equalizer

Why Egypt's regulatory framework nullifies the "emerging market penalty"

1. **Enacted, not aspirational, law**

   Law No. 2/2024 is enacted and operational today – tax rebates and Golden License already active.

2. **EU-CBAM hedging via our FTAs**

   Egypt's EU Association Agreement gives a tariff- and carbon-free route into Europe.

3. **Korean NDC compliance via Article 6**

   ITMO carbon credits let Korea count Egypt's emissions cuts toward its own NDC target.

4. **Legal protection via bilateral treaty**

   A Bilateral Investment Treaty backs every project with ICSID/UNCITRAL arbitration.

5. **Bureaucracy bypassed via the NCGH**

   One Prime Ministerial council replaces 20+ ministries with a single approval point.

THE GLOBAL CONTEXT

EU CBAM & Global Carbon Arbitrage

Carbon border tariffs turn Egypt's trade agreements into a pricing edge

The EU's Carbon Border Adjustment Mechanism (CBAM) takes full effect by 2030:

55–90

EUR per tonne CO_2 tariff by 2030

Grey vs. Green: Who Pays the Tariff

Grey H_2/NH_3 imports → full CBAM tariff exposure
Egypt's green molecules → zero-carbon tax liability
EU-Egypt Association Agreement → preferential tariff access

Beyond compliance — a market-access advantage:

Policy Win for Korea

- Korean companies can use Egypt as a policy-shielded export platform, selling green derivatives into Europe while bypassing CBAM tariffs entirely.

Egypt's EU Association Agreement is a policy advantage that Australia or the US cannot match.

THE GLOBAL CONTEXT

Article 6 ITMOs: A Dual-Value Carbon Asset

Every green molecule carries a second, tradable revenue stream

How ITMOs Create Dual Value:

1. **Egypt Project**
   Verified emissions reduction at an Egyptian green hydrogen or ammonia facility

2. **ITMO Certification**
   Reduction is certified and issued as an Internationally Transferable Mitigation Outcome

3. **Sold to Korea**
   Korean importer buys the molecule and claims the carbon attribute toward its NDC

A Dual-Value Policy Asset

Under Article 6.2, a Korean importer of Egyptian green ammonia can claim the avoided emissions toward Korea's 2030/2050 NDC targets.

Korea buys the molecule and the carbon attribute in a single transaction.

HINT: Internationally Transferred Mitigation Outcomes (ITMOs) are the tradable carbon units generated under Article 6.2 of the Paris Agreement

THE GLOBAL CONTEXT

Aligning with Korea's Carbon Neutrality Act

Egypt's export framework maps directly onto Korea's statutory targets

Korea's Framework Act on Carbon Neutrality mandates a 40% emissions reduction by 2030 — met in part by importing green hydrogen via the Clean Hydrogen Portfolio Standard (CHPS).

Egypt's Regulatory Alignment

- National Green Hydrogen Council (NCGH) framework design is aligned with Korean import standards
- Certification pathway aligned to qualify Egyptian exports for Korea's CHPS auctions
- "One certification, two markets" — a joint mechanism certifying Egyptian green hydrogen exports for direct entry into Korea's CHPS auctions.

THE GLOBAL CONTEXT

Investment Protection & Dispute Resolution

Policy makes the investment legally bankable, not just commercially viable

Bilateral Investment Treaty & DTAA

- Egypt and Korea are signatories to a Bilateral Investment Treaty (BIT)
- A Double Taxation Avoidance Agreement (DTAA) removes duplicate tax exposure

What Korean Investors Get:

- Fair and Equitable Treatment (FET) under international arbitration
- Full protection and security for capital assets
- Repatriation guarantees for profits and foreign currency

Why It Matters

- **Recourse via ICSID and UNCITRAL arbitration rules**
- Addresses the core investor fear: sovereign risk in an emerging market
- Policy that de-risks the deal before financing is ever discussed

THE GLOBAL CONTEXT

How Egypt De-Risks Policy via Unified Governance

Traditional emerging-market risk, resolved by design

Traditional Model (Risk)	Egypt's NCGH Model (De-Risked)
20+ Ministries needing approvals	One-stop-shop — NCGH chaired by the Prime Minister
Ad-hoc water/land rights	Pre-allocated desalination & Golden Licenses
Retroactive tax changes	Law No. 2/2024 — legally locked for 10+ years
No guarantee of grid access	Dedicated off-grid hybrid corridors policy

The takeaway: *Egypt did not leave emerging-market risk to chance — it legislated it away.*

PART II

Egypt's Competitive Platform

Resource dashboards, legal mandates, cost performance, and infrastructure integration

THE EGYPTIAN CONTEXT

Why Egypt? The Competitive Edge

Resource endowment · Location · Policy environment

World-class Solar & Wind	2,000–3,200 kWh/m²/year irradiation; Gulf of Suez/Sinai wind resources – Gharib Cape is an ideal hybrid hub
Strategic Location	Hub between Africa, Europe, and the Middle East; Suez Canal = shortest export route to Europe
Coastal Water Access	Red Sea & Mediterranean coastlines for desalination – saline electrolysis R&D opportunity directly relevant to KIST
Enabling Policy	Enacted incentives law (not aspirational); NWFE platform with USD 10 Bn pledges mobilised; SCZone special economic zone
Human Capital	Strong engineering base; Nile University MOT program building specialised talent

Egypt co-founder and secretariat holder of the Africa Green Hydrogen Alliance (AGHA) – 11 member nations.

THE EGYPTIAN CONTEXT

Infrastructure: SCZone & CUI

Reducing per-project CAPEX by up to 30%

What is Common User Infrastructure (CUI)? Shared pipelines, desalination plants, transmission corridors, and export terminals within the Suez Canal Economic Zone.

Priority CUI Investments:

- Common desalination – 250,000 m³/day capacity with EBRD support
- Shared pipelines – connecting production hubs to ports
- Dedicated export terminals – Damietta and Ain Sokhna for ammonia/methanol

ESG Integration – Prerequisite for Institutional Capital

- Apply international certification (e.g., Blue Dot Network)
- BDN-aligned projects can access green bonds at 30–70 basis points lower spreads

THE EGYPTIAN CONTEXT

SCZone: A Regulatory Sandbox for Heavy Industry

Not just land — a streamlined legal jurisdiction

Special Economic Zone Law: The Suez Canal Economic Zone operates under its own regulatory framework, distinct from national bureaucracy.

What This Unlocks:

- Off-grid regulatory waivers — bypassing the USD 0.8–1.2/kg national wheeling charges
- Customs-bonded corridors — Korean electrolyzers enter duty-free; exports clear without customs bureaucracy
- Expedited land rights — issued within 60 days, versus 12–18 months outside the zone

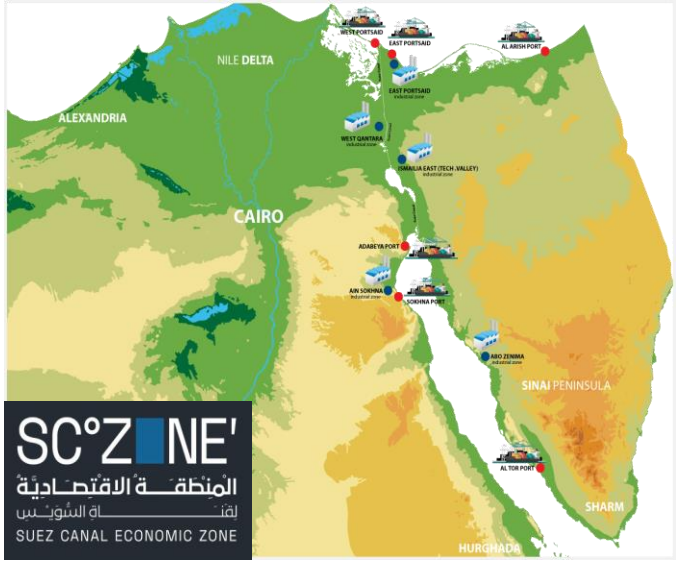
We Are Not Just Offering Land

- We are offering a streamlined legal jurisdiction purpose-built for heavy industry.

Egypt is an Energy Gateway

[Suez Canal]

[Ain Sokhna Port Enters Guinness Records as World's Deepest Man-Made Basin]



[The 455km zone is governed by the General Authority for the Suez Canal Economic Zone SCZONE]

THE EGYPTIAN CONTEXT

Egypt's World-Scale Energy Assets

The Benban Solar Power Plant in Egypt has a total combined capacity of 1.8GW. It is the largest in Africa and the 4th largest in the world

500 MW Gulf of Suez Wind II Project Achieves a Major Milestone in Egypt

THE EGYPTIAN CONTEXT

Export Corridors & Target Markets

Europe, East Asia, and Africa

Product	Cost	Target Market	Route
Green Ammonia	USD 844/t NH_3	European fertilizer market	Port of Rotterdam MoU in place
Green Iron (DRI)	USD 733/t DRI	EU steel decarbonization	Gulf of Suez steel cluster
Liquid H_2	Long-term	Japan & South Korea	Cryogenic chain development
LOHC	Medium-term	Korea & Europe	KRICT research directly applicable

Priority Corridors:

Europe: Germany, Netherlands, Belgium – EU Hydrogen Bank priority buyer

East Asia: Japan and South Korea – high willingness to pay for certified green H_2

Africa & MENA: Regional pipeline opportunities under AGHA

THE EGYPTIAN CONTEXT

Hydrogen Value Chain: Production Pathways

Grey, blue, green and bio – where Egypt's resources and experience concentrate

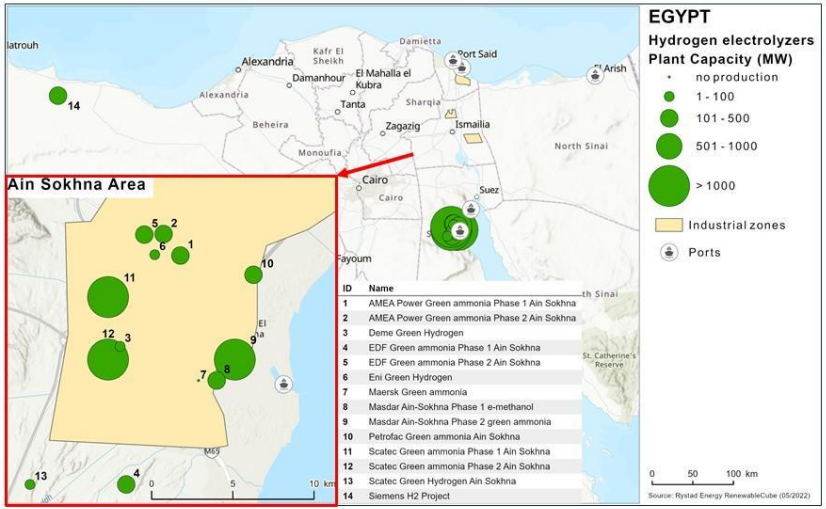
Pathway	Carbon Intensity	Applicability to Egypt
Grey	8.5–10 $kgCO_2/kgH_2$	Well known and used extensively in Egypt today (~95% of current global H_2 demand)
Blue	0.8–4.4 $kgCO_2/kgH_2$	Retrofittable to existing grey plants; needs dedicated CO_2 storage – realistic from 2030 (5–10 yr to develop)
Green	~0 (renewable electrolysis)	Strategy's primary focus; strong renewables and desalination base, though water and land constraints apply
Bio	Low (feedstock-dependent)	Early-stage commercialization; feedstock availability could limit Egypt to ~1.3 MTPA

Egypt's edge: KIMA Fertilizers (Aswan) ran the world's largest green H_2 plant, 1960–1977.

KIMA ASWAN

Announced green hydrogen projects in Egypt

RYSTAD ENERGY

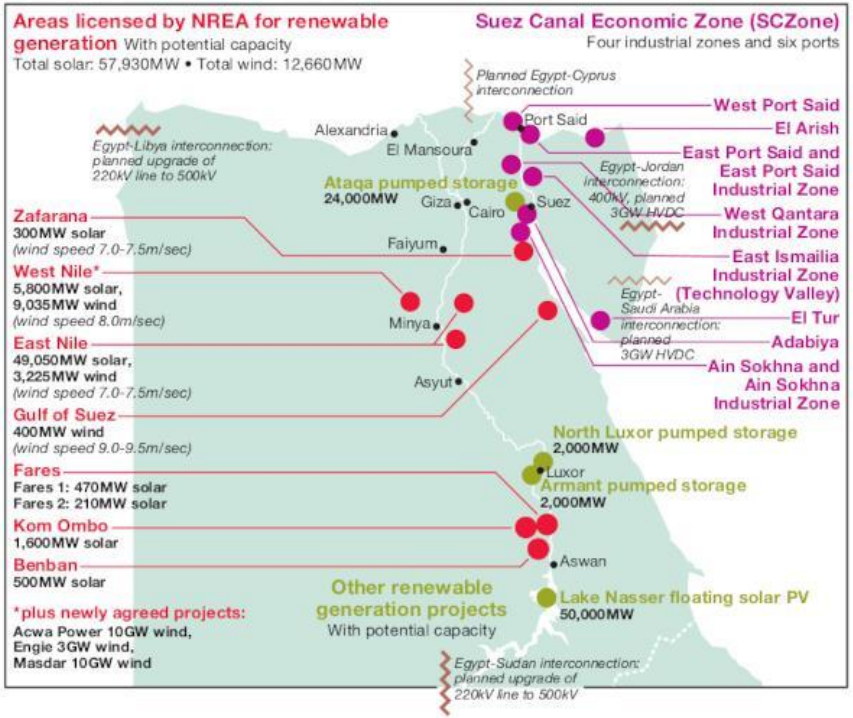


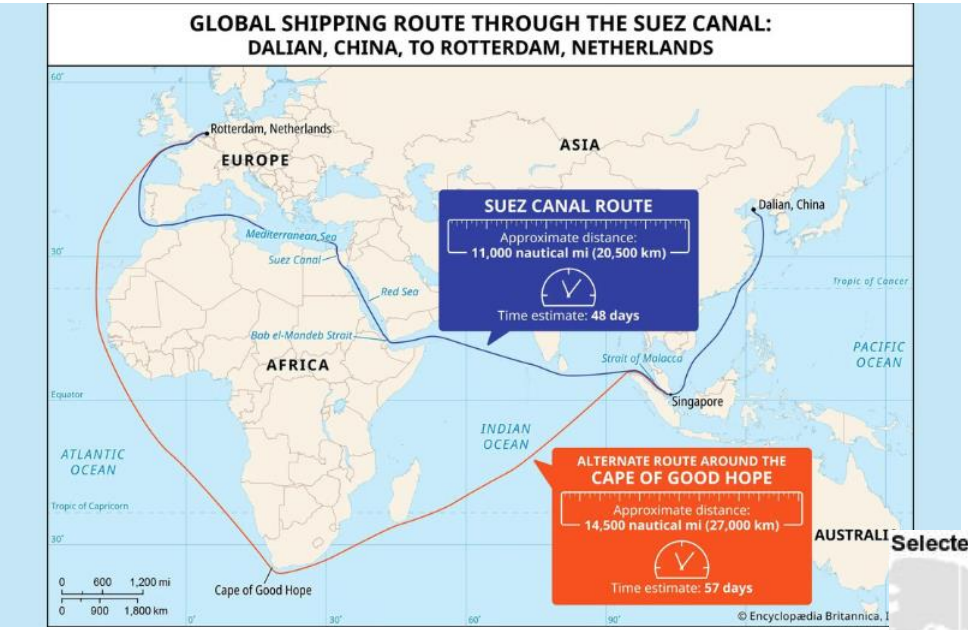
ID	Name
1	AMEA Power Green ammonia Phase 1 Ain Sokhna
2	AMEA Power Green ammonia Phase 2 Ain Sokhna
3	Deme Green Hydrogen
4	EDF Green ammonia Phase 1 Ain Sokhna
5	EDF Green ammonia Phase 2 Ain Sokhna
6	Eni Green Hydrogen
7	Maersk Green ammonia
8	Masdar Ain-Sokhna Phase 1 e-methanol
9	Masdar Ain-Sokhna Phase 2 green ammonia
10	Petrofac Green ammonia Ain Sokhna
11	Scatec Green ammonia Phase 1 Ain Sokhna
12	Scatec Green ammonia Phase 2 Ain Sokhna
13	Scatec Green Hydrogen Ain Sokhna
14	Siemens H2 Project

Egypt Green Energy Corridor

Aims to faciltate integration of large-scale renewables into the grid to supply national development, green hydrogen, water desalination and interconnection projects

EGYPT: GREEN ENERGY AMBITIONS




GLOBAL SHIPPING ROUTE THROUGH THE SUEZ CANAL:
DALIAN, CHINA, TO ROTTERDAM, NETHERLANDS
Rotterdam, Netherlands
EUROPE
ASIA
Dalian, China
SUEZ CANAL ROUTE
Approximate distance:
11,000 nautical mi (20,500 km)
Time estimate: 48 days
Mediterranean Sea
Suez Canal
Red Sea
Bab el-Mandeb Strait
AFRICA
Strait of Malacca
Singapore
PACIFIC OCEAN
Tropic of Cancer
Equator
INDIAN OCEAN
ATLANTIC OCEAN
Tropic of Capricorn
ALTERNATE ROUTE AROUND THE
CAPE OF GOOD HOPE
Approximate distance:
14,500 nautical mi (27,000 km)
Time estimate: 57 days
AUSTRALI
Cape of Good Hope
0 600 1,200 mi
0 900 1,800 km
© Encyclopædia Britannica,


Selected commercial shipping routes, as of January 2024
Suez Canal
Red Sea
Arabian Sea
Bab el-Mandeb
Rotterdam
19 days
U.S. Gulf Coast
44 days
Suez Canal
Arabian Sea
Chiba
Panama Canal
27 days
Bab el-Mandeb
34 days
Cape of Good Hope
48 days
eia

THE EGYPTIAN CONTEXT

Policy Enablers: Law No. 2/2024 & NCGH

Investor certainty through unified governance

Green Hydrogen Incentives Law (No. 2/2024)

- Up to 55% income tax rebate for GH2 projects
- Golden License for streamlined regulatory approvals

Qualifying Criteria:

- 70% foreign currency financing
- 20% local content
- Knowledge transfer & workforce training
- Social responsibility

National Council for Green Hydrogen (NCGH)

- **Chaired by the Prime Minister**
- Coordinates across 20+ government entities
- One entry point for all approvals – eliminating administrative burdens
- Direct obstacle removal authority (land allocation, grid connection)

THE EGYPTIAN CONTEXT

Cost Competitiveness: OECD 2026 Validation

Independent techno-economic assessment

USD 3.7/kg H_2

Gharib Cape (best case) LCOH – among the most cost-competitive globally

USD 3.7–4.8/kg H_2

National average LCOH range

Green Derivatives – Export-Ready Costs

Derivative	Cost (USD/tonne)
Green Ammonia (NH_3)	USD 844
Green Iron (DRI)	USD 733
E-Methanol	USD 714

THE EGYPTIAN CONTEXT

Egypt's Production Trajectory to 2040

EBRD–Advisian modelling: Central vs. Green Scenarios

Metric	Central Scenario	Green Scenario
2040 hydrogen production	5.8 Mt (3.8 Mt export)	9.2 Mt (5.6 Mt export)
Share of tradable global market (2040)	5%	8%
Electrolyzer capacity (2040)	48 GW	76 GW
Additional renewables required	72 GW	114 GW
Electrolyser investment required	USD 24 Bn	USD 34 Bn

Economic upside: USD 10–18 Bn GDP boost and 100,000+ jobs by 2040 (~750 jobs per 1,000 MW).

THE EGYPTIAN CONTEXT

Active Green Hydrogen Projects

Key announced low-carbon projects currently in the SCZone (Ain Sokhna) development pipeline:

No.	Project Developer	Product	Industrial Hub Location	Status (MoU to FID)
1	Scatec (Phase 1 & 2)	Green Ammonia (fertilizers)	Ain Sokhna Economic Zone	Advanced Pilot / Operational First Stage
2	AMEA POWER (Phase 1 & 2)	Green Ammonia	Suez Canal Economic Zone	Engineering Design & MoU Active
3	DEME	Liquid Hydrogen & Carriers	Ain Sokhna Terminal	Feasibility Assessment Underway
4	EDF (Phase 1 & 2)	Industrial Green Ammonia	Ain Sokhna Port Area	Strategic Agreement Signed
5	MASDAR	E-Methanol (bunkering fuel)	SCA Bunkering Terminal	Pre-FEED Stage / Port MoU

PART III

Bridging the FID Capital Gap

Analyzing MoU conversions, blended finance instruments, and addressing global value bottlenecks

BRIDGING THE FID CAPITAL GAP

The Scale: From MoUs to FIDs

The FID Gap:

~USD 175 Bn

MoUs signed (~30 agreements)

<USD 10 Bn

Concrete commitments reaching FID

BRIDGING THE FID CAPITAL GAP

The Cost Gap: Understanding the Barrier

Current LCOH vs. 2040 Target

USD 3.7–4.8/kg H_2

Current LCOH range

→

USD 1.8/kg H_2

2040 Target

GAP

USD 2.34/kg H_2

Root Causes:

- **Grid tariffs & wheeling charges –** add USD 0.8–1.2/kg to LCOH
- **Electrolyser CAPEX –** scale-up and Korean technology transfer can reduce this
- **Financing cost –** emerging market discount rates (10–14%) vs. 2–4% in OECD add ~USD 0.9/kg

OECD Financial Instrument Effectiveness

Closing the gap – what works

Instrument	Effectiveness	How It Works
CAPEX Grants	70–90% gap reduction	Grant covering ~70% of CAPEX closes gap entirely. Fiscally viable: tax revenues exceed grant costs
Concessional Loans	74% gap reduction	Reducing discount rate 10% → 2% narrows gap to USD 0.6/kg. Available via IFIs (World Bank, EIB, AfDB)
Contracts for Difference (CfDs)	High (qualitative)	H2Global dual-auction model – fiscally neutral, well-suited to Egypt
FX Guarantees	Medium	Addresses currency mismatch; enables local bank participation
Carbon Price alone	Low	Would require unrealistic USD 230/tCO_2

Conclusion: A blended approach – CAPEX grants + concessional loans + targeted CfDs – is the pragmatic path.

International Concessional Finance Landscape

Donor and IFI channels already engaged with Egypt

Source	Type	What It Offers Egypt
EU NDICI / Economic Investment Plan	Grants – loan guarantees	Blended finance channelled via EIB, EBRD, IMF and the World Bank for 2021–2027
EBRD Energy Sector Financing	Loans – TA grants	Infrastructure modernisation, renewables and hydrogen project financing
Dedicated Climate Funds	Concessional finance	Green Climate Fund, Climate Investment Funds, GEF and Green Growth Fund
Germany's H2Global Instrument	Auction-backed offtake	16 German firms buy green H_2 abroad and resell via auction, backed by the Federal Ministry
GCC & Bilateral Donors	Bilateral assistance	Gulf Cooperation Council Fund, plus Germany, Italy, UAE and US bilateral support

Egypt's approach: Layer concessional finance with CAPEX grants and CfDs to close the USD 2.34/kg gap.

BRIDGING THE FID CAPITAL GAP

The H2Global Dual-Auction Model for Egypt

Fiscally neutral de-risking for early investment

How It Works:

1. **Supply Auction**
   Egyptian developers bid lowest acceptable price for (10–15) year contract

2. **Intermediary (HintCo-style)**
   Government-backed body buys at supply price, sells at demand price

3. **Demand Auction**
   European/Asian offtakers bid highest price they will pay

4. **Spread Coverage**
   Gap is covered, but project tax revenues exceed the spread – fiscally neutral

Why It Fits Egypt

- Requires no direct subsidy from national budget
- Leverages concessional IFI loans for CAPEX
- Provides bankable, long-term revenue certainty – exactly what developers need to reach FID

OECD Simulation (50/50 domestic/export split)

- USD 4.2 Bn domestic sales | USD 3.9 Bn export revenues
- USD 1.6 Bn total investment mobilised
- ~USD 390 M NPV of funding instrument (covered by tax revenues)

BRIDGING THE FID CAPITAL GAP

De-Risking Export Credit for Korea's ECAs

Turning KEXIM and K-SURE coverage into bankable Egyptian exports

What Korean ECAs Require

- Korea's EDCF requires host-country sovereign guarantees
- K-SURE requires stable regulatory environments to underwrite financing

What Egypt Provides:

- NCGH cabinet-level mandate provides governmental policy backing
- CTCN Technical Assistance framework adds institutional support

The Result

- **KEXIM/K-SURE financing coverage of 85–90%**
- Neutralizing the "emerging-market discount rate" entirely

PART IV

Strategic RD&D Proposals

Honoring the host, water-scarcity tech translation, joint KIST/KIER/KRICT pilots, and CTCN integration

TECHNICAL CHALLENGES & KOREAN SYNERGIES

Egypt's Water-Energy Nexus

Sustainable production within scarcity constraints

Scarcity context: UN projects Egypt will face water scarcity as early as 2025. Green hydrogen production must never compete with domestic freshwater needs.

Strategic Constraints

- Coastal-only production – restricted to Red Sea & Mediterranean
- Desalination required – SCZone plans 250,000 m³/day common facility (EBRD-supported)
- Brine discharge management – IFC-standard practices required

The Technical Opportunity for KIST

- Egypt's coastal resources require saline water electrolysis
- Standard electrolyzers degrade under high-salinity conditions
- KIST's advanced catalysts and low-temperature electrolysis research directly address this constraint
- **First activity: joint pilot testing under Egyptian salt-water conditions in SCZone**

Egyptian Technical Challenges → Korean Solutions

Where your expertise meets our constraints

Egyptian Challenge	Korean Technology Partner	Proposed First Activity
Saline water degrades standard electrolyzers – Red Sea & Mediterranean feedwater requires specialised catalysts	KIST – Low-temperature electrolysis & advanced catalysts	Joint pilot: electrolyzer testing under Egyptian salt-water conditions in SCZone laboratory
Transporting H_2 to inland industrial zones – pipeline from SCZone to Cairo is not viable; ammonia conversion adds cost	KRICT – Liquid Organic Hydrogen Carrier (LOHC) & PEM fuel cells	LOHC feasibility study: SCZone-to-Cairo corridor economics & materials compatibility
Desert heat reduces electrolyzer efficiency – Gharib Cape & Sinai have high ambient temperatures	KIER – Solid Oxide Electrolysis Cells (SOEC)	Feasibility study: SOEC + Concentrated Solar Power (CSP) hybrid at Gharib Cape pilot design
Regulatory & financial de-risking for all technology pilots across SCZone	NU–IGHC – STI policy, bankability & de-risking frameworks	Triangular RD&D framework; Joint CTCN TA request submission

All activities proposed under CTCN facilitation.

THE EXECUTION VEHICLE

The Execution Vehicle: IGHC

How Egypt operationalizes strategy into projects

International Green Hydrogen Centre (IGHC)

Established by PM Cabinet Decree, May 2026 · National technical hub supporting strategy execution

Four Strategic Workstreams (2026–2027):

Local Economic Development

Green ammonia for fertilizers; DRI for steel; fuel-switching for cement

Domestic Utilization

Fiscal instruments; industrial hydrogen hub mapping; demand aggregation

Regional Coordination

AGHA Secretariat (11 countries); standards harmonization; investor matchmaking

Capacity Building

Training SMEs & researchers; researcher exchange with regional and international partners

COLLABORATION PROPOSAL

RD&D Collaboration Opportunities: At a Glance

Nile University × KIST × KRICT × KIER

Institute	Technology Focus	Egyptian Application	Proposed First Activity
KIST	Low-temperature electrolysis & advanced catalysts	Saline water electrolysis using Red Sea/Mediterranean resources	Joint pilot: electrolyzer testing under Egyptian salt-water conditions
KRICT	LOHC & PEM fuel cells	Hydrogen storage & transport for inland industrial zones (SCZone → Cairo)	LOHC feasibility study: SCZone-to-Cairo corridor economics
KIER	Solid Oxide Electrolysis Cells (SOEC)	High-temp solar-thermal driven electrolysis for desert zones (Gharib Cape & Sinai)	Feasibility study: SOEC + CSP hybrid at Gharib Cape
NU–IGHC	STI policy, bankability & de-risking frameworks	Regulatory & financial de-risking for all technology pilots	Triangular RD&D framework; Joint CTCN TA request submission

COLLABORATION PROPOSAL

Researcher Exchange Programme

Nile University ↔ KIST, KRICT, and KIER

What Nile University & IGHC Offer

Field access
SCZone sites, Gharib Cape, Red Sea coastal sites

Policy expertise
Regulatory navigation, Ministries access

Graduate researchers
MOT PhD students for joint supervision

Network access
AGHA connections, CTCN facilitation, industrial partners

What We Seek from Korean Partners

Technical training
Electrolyzer operation (PEM, SOEC, alkaline), LOHC carrier chemistry, fuel cell characterisation

Lab access
Short-term researcher placement (2–6 months) at KIST/KRICT/KIER

Joint publications
Co-authored papers on technology performance under Egyptian conditions

Technology transfer
Adaptation protocols to saline water and high-temperature conditions

Proposed output from this visit: *Draft Letter of Intent toward a formal Researcher Exchange MoU.*

COLLABORATION PROPOSAL

Collaboration Timeline

From this visit to joint publication and pilot projects

July 2026

Phase 0 – This Visit

Exchange technical presentations; identify matching research interests; draft intent-to-collaborate letter

Aug–Dec 2026

Phase 1 – Foundation

Finalize researcher exchange MoU; submit joint CTCN Technical Assistance request; identify co-funding

2027

Phase 2 – Pilot Design

Site visit to SCZone and Gharib Cape; co-design pilot protocol (electrolyzer/LOHC/SOEC); joint research and policy papers

2028–2029

Phase 3 – Demonstration

Execute pilot at SCZone; train Egyptian researchers at Korean labs; present results at global forum

COLLABORATION PROPOSAL

CTCN Technical Assistance Request

Formalizing support through CTCN TA mechanisms (formal mechanism for developing countries to request support)

Step	Action
1. TA Request Design	Egypt NDE (Eng. Lydia Elewa) submits formal request with IGHC as technical focal point; Korean institutes named as implementation partners
2. Scope Definition	Jointly agree scope during this visit or within 3 months – options: SOEC pilot, LOHC feasibility study, capacity building programme
3. CTCN Approval	CTCN Secretariat reviews and approves; CTCN network institutions (KIST, KIER) listed as available for deployment
4. Implementation	(6–18) month TA project with field missions to Egypt; co-funded by CTCN + potential co-financing

Contact: CTCN PALO (TBD) · NaAnsary@nu.edu.eg (IGHC, Egypt)

CONCLUSION

What Success Looks Like

Roadmap to delivery

Within 12 Months (by mid-2027)

- Joint CTCN TA request submitted and approved
- Researcher exchange MoU signed between NU and Korean institutes
- Pilot project site identified at SCZone
- Co-designed pilot protocol for at least one technology (electrolyzer/LOHC/SOEC)

Within 36 Months (by mid-2029)

- Electrolyzer/LOHC/SOEC pilot operational at SCZone or Gharib Cape
- Joint publications
- Minimum 2 Egyptian researchers trained at KIST/KRICT/KIER labs
- Pilot results presented at global forum

CONCLUSION

Key Messages

What to take away

1. **Egypt has a serious, enacted national strategy**

   The OECD independently validated our cost competitiveness at USD 3.7/kg H_2 LCOH.

2. **The bankability gap is solvable**

   CAPEX grants and CfDs (H2Global model) are the most effective instruments. The gap is USD 2.34/kg – large but finite.

3. **Korean technology fits Egypt's conditions perfectly**

   KIST electrolyzers (saline water), KRICT LOHC (inland transport), KIER SOEC (desert solar-thermal) all have direct Egyptian application.

4. **The IGHC is ready to partner today**

   Government-mandated, Cabinet-approved, operationally active. Not a future plan.

5. **This visit is the start of something concrete**

   Not just a study tour. A collaboration-building visit.

Call to Action

Egypt is Ready. Let's Build Together.

Action	Commitment
1. Letter of Intent	Sign a Letter of Intent between your institute and Nile University/IGHC to explore joint RD&D within 3 months
2. Pilot Project Co-Design	Agree to co-design one pilot activity (electrolyser, LOHC, or SOEC) for execution at SCZone in 2027
3. Researcher Exchange	Identify one graduate researcher from each side for a (3–6) month placement in 2027 under joint supervision
4. CTCN TA Request	Support Egypt's formal CTCN Technical Assistance request naming your institute as implementation partner

Thank You

Questions & Discussion

Acknowledgements

- CTCN Partnership and Liaison Office (PALO) – (*Dr. Suil Kang & Mr. Sebin Lee*)
- Korea Institute of Science and Technology (KIST)
- Korea Research Institute of Chemical Technology (KRICT)
- Korea Institute of Energy Research (KIER)
- PM Cabinet – National Green Hydrogen Council – (*Dr. Karim Shahin, Advisor, National Projects*)
- Egyptian Environmental Affairs Agency (EEAA) – (*Eng. Lydia Elewa, Egypt NDE*)

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