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GREEN INDUSTRIALISATION

Advancing Green Industrialisation in Egypt: Roadmap 2030

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Preface

Egypt is a critical test of Africa's green industrial transition because it has major renewable energy assets and industrial capacity, but faces severe financial pressure, subsidy reforms and competing energy priorities. This working paper asks a practical question: where does the leverage for genuine change lie in Egypt's renewable energy-led industrialisation, and how should funders and decision makers use it? It views Egypt as a system rather than a list of projects and tests the African Model Strategic Framework for Green Industrialisation against a real, contested national case.

This working paper is a country companion to 'The African Green Industrial Pivot: Unlocking Resilience and Acceleration to 2050'¹ and a deliberate test of the African Model Strategic Framework for Green Industrialisation² set out in that paper. The continental paper argued that the binding constraint on Africa's transition is not vision but the structure of the system through which that vision must travel. Egypt is where that argument meets a real, advanced, contested national system. If the framework holds anywhere, it must hold here.

The evidence base is a Policy Innovation Lab convened in Cairo on 1–2 July 2025 by the SALLA Futures Programme and the Synergies Center for International and Strategic Studies, which brought Egyptian policymakers, energy experts, financiers and private sector innovators into a structured foresight process. Its methods – systemic mapping, the Multi-Level Perspective, Causal Layered Analysis, Three Horizons and strategic niche management – are not academic ornament. They are tools for seeing a system clearly enough to change it, and for examining where a confident, high-agency coalition is held back not by a deficit of will but by inadequate coordination, bankability and social licence.

Participants worked in four facilitated groups – Green, Blue, Red and Black – identified throughout this paper by the colours they used at the Lab. Each group ran the same sequence of exercises independently: mapping the system, imagining the futures they thought probable and those they feared for 2035, and working back to the present to ask what must be kept, what must be left behind and what must be seeded now. Where a phrase or scenario is attributed to a group, it reproduces that group's own formulation from the workshop record. Where groups arrived at the same conclusion separately, this is noted because independent convergence is one of the strongest signals the method can produce.

¹ Letitia Jentel et al., "The African Green Industrial Pivot: Unlocking Resilience and Acceleration to 2050" (Working Paper, SALLA, 2026).

² Throughout this paper, green industrialisation denotes the broader agenda of building industrial capability on a low-carbon basis, encompassing renewable energy, green hydrogen, critical-minerals beneficiation and the associated manufacturing. Renewable-energy-led industrialisation denotes the specific pathway dominant in the Egyptian case, in which renewable-energy deployment and its supply chains are the leading edge of that broader agenda. The terms are related but not interchangeable: the second is the route through which Egypt is pursuing the first.

Two commitments run through the paper. The first is that Egypt's energy future must be authored in Egypt, financed increasingly by domestic and continental capital and engaged by the AU as a peer and co-producer of intelligence rather than a recipient of guidance. Second, inclusion is a condition of success, not a courtesy. The paper therefore pays explicit attention to the actors who can move or block change, grouping them into state incumbents and coordinators; regulators and zone authorities; private developers and manufacturers; financiers; communities, civil society, youth and labour; and external shapers. The households absorbing subsidy reform, the youth and technical talent and the communities currently kept off the map are among the most credible change agents of the transition, which is why community ownership is treated here as infrastructure.

The paper does not offer a blank-slate blueprint, and it is careful to position itself as complementary to Egypt's own planning and to the AU's continental instruments, not as a competing prescription. It offers a map of a living, contested system, the actors, materials and rules that shape it, together with a sequenced plan for tilting that system toward a just, sovereign and climate-resilient industrial order. The posture the Cairo participants chose organises everything that follows: prepare for the worst, build for the best.

Key findings at a glance

The binding constraint is governance, not ambition or technology. Egypt's strengths are concentrated in science, technology and infrastructure; its fragility is concentrated in finance and social licence. What determines whether the 2030 commitment is met is governance coherence and the bankability of the investment environment.

Four structural tensions organise the system. Scale versus justice, ambition versus implementation, sovereignty versus dependency and normative leadership versus domestic constraint cannot be wished away. Each is a fault line, and each fault line is also a leverage point.

The contested target landscape is itself evidence. Over 42% renewable electricity by 2030 is the standing policy commitment; 53% is Irena's modelled potential, not a government target; an IMF review reports 29.7%; and a petroleum-ministry signal points to 40% by 2040. The volatility is a sign of regime instability.

Narrative is infrastructure. The contest between 'the future is renewable' and 'environmental collapse is inevitable' will shape political will as decisively as any tariff or power-purchase agreement. Managed deliberately, narrative is a load-bearing structure of the transition.

The China tension must be held, not resolved. Chinese photovoltaic (PV) manufacturing, over \$1.5 billion cumulatively, with Sunrev and JA Solar building integrated capacity at Ain Sokhna, is at once the fastest route to localisation and the largest dependency risk. Enforceable local-content and technology-transfer terms decide which it becomes.

The alternatives already exist as niches. Decentralised and community-scale generation, domestic photovoltaic manufacturing, green hydrogen and derivatives, renewable-powered desalination and crowdfunded community finance are functioning prototypes of a different system, awaiting the conditions to consolidate.

The leverage sits where the regime is softest. It lies in the fossil-subsidy and tariff structure now being dismantled, in the single-buyer market design that throttles corporate power purchase agreements (PPAs) and in the centralised generation model that decentralised niches can outflank.

A coordinating authority is the missing keystone. Participants converged independently on a single empowered body to streamline permitting, standardise bankable PPAs, enforce monitoring and evaluation and house a foresight unit – the institutional move that converts the aspiration of private sector leadership into practice.

A clear roadmap exists. Four institutional moves and a 2025–2030 Green Industrialisation Sprint Plan adapt the continental Model Strategic Framework to Egyptian institutional reality, offered as a partnership and an offer, not as a directive or an obligation.

Contents

Preface	2
Key findings at a glance	4
Executive summary	7
The arena: Egypt at the hinge	9
The energy and climate dynamic made visible	9
<i>Strength concentrated in technology and infrastructure</i>	<i>10</i>
<i>Fragility concentrated in finance and social licence</i>	<i>11</i>
<i>Where the system binds</i>	<i>11</i>
The actors: Who moves the system	13
The fault lines: Four structural tensions	14
<i>Scale versus justice</i>	<i>15</i>
<i>Ambition versus implementation</i>	<i>16</i>
<i>Sovereignty versus dependency: Holding the China tension</i>	<i>16</i>
<i>Normative leadership versus domestic constraint</i>	<i>17</i>
The flashpoints: visions, attitudes and the narrative contest	18
<i>The probable future: Confident, exporting and uneven</i>	<i>19</i>
<i>The two dystopias: What anticipatory governance must prevent</i>	<i>20</i>
<i>Narrative as infrastructure</i>	<i>21</i>
The niches: Where the alternative already lives	21
<i>Sequencing the transition</i>	<i>22</i>
The leverage: Applying the Model Strategic Framework to Egypt	24
<i>Purpose and guiding principles, applied to Egypt</i>	<i>24</i>
<i>The seven strategic imperatives, applied to Egypt</i>	<i>25</i>
<i>The four continental instruments, landing in Egypt</i>	<i>25</i>
The Egyptian 2025–2030 Green Industrialisation Sprint Plan	26
<i>Four institutional recommendations</i>	<i>27</i>
A coordinating authority for renewable-energy industrialisation	27
A green localisation and innovation fund	27
An inclusive decentralised-energy and community-ownership framework	27
A dual-track transition with deliberate narrative management	27
<i>The Sprint Plan</i>	<i>28</i>
<i>How the AU should consult and harmonise with Egypt</i>	<i>29</i>

Where the leverage is and how to deploy it	29
Annex A. Methodology and methods	31
<i>The five-phase approach</i>	<i>31</i>
<i>Systemic mapping and the five-dimensional architecture</i>	<i>31</i>
<i>The multi-level perspective</i>	<i>31</i>
<i>Futures literacy, Causal Layered Analysis and Three Horizons</i>	<i>32</i>
<i>Strategic niche management and transformative outcomes</i>	<i>32</i>
<i>Participation and verification</i>	<i>32</i>
Annex B. Regional comparators	33
.....	34

Executive summary

This paper asks a single practical question: in Egypt's renewable-energy-led industrialisation, where does the leverage for genuine change lie, and how should funders and decision makers deploy it? It answers that question by reading Egypt as a system rather than as a project pipeline, and it does so as a deliberate test of the African Model Strategic Framework for Green Industrialisation. The reasoning is straightforward: a framework that cannot be applied to the continent's most advanced and most contested renewable-energy economy is unlikely to hold elsewhere. Egypt has genuine strength, one of the world's largest solar parks, an early green-hydrogen position and a magnet effect on relocating Chinese photovoltaic (PV) manufacturing. Yet it also faces acute macro-financial stress, subsidy reform under an International Monetary Fund (IMF) programme and renewable targets being revised in public. That combination is what makes it the most instructive test available.

The paper draws on a Policy Innovation Lab held in Cairo on 1–2 July 2025 by the SALLA Futures Programme and the Synerjies Center for International and Strategic Studies, alongside a review of verifiable public sources. The Lab brought together Egyptian policymakers, energy experts, financiers and private sector innovators. The analysis uses systems mapping and foresight methods: the Multi-Level Perspective to distinguish wider pressures, established practices and emerging alternatives; Causal Layered Analysis to examine underlying narratives and assumptions; Three Horizons to sequence change; and strategic niche management to identify alternatives that could grow into system-level change. Annex A explains these terms.

Three findings frame the analysis. First, Egypt's binding constraint is governance coherence and bankability, not a lack of ambition or technology. Its strongest capabilities are in science, technology, infrastructure and technical talent; its greatest vulnerabilities are finance and social licence. Second, four tensions shape the transition: scale versus justice, ambition versus implementation, sovereignty versus dependency and normative leadership versus domestic constraint. Each is both a fault line and a point of leverage. Third, narrative matters because public expectations, investor confidence and political will influence whether reforms can be sustained.

The target landscape itself reflects the implementation challenge. The standing policy commitment is over 42% renewable electricity by 2030, while 53% is the International Renewable Energy Agency's (Irena) modelled potential rather than a government target. An IMF review reported 29.7% by 2030, while a petroleum-ministry signal pointed to 40% by 2040. The paper therefore treats over 42% as the policy commitment and up to 53% as assessed potential, while reading the movement between these figures as evidence of uncertainty over the direction and pace of the transition.

The leverage lies where existing arrangements are most open to change and where alternatives are already emerging: the fossil-subsidy and tariff structure, the single-buyer market design that constrains corporate power-purchase agreements and the centralised generation model that decentralised

approaches can challenge. The paper translates this diagnosis into four institutional moves: an empowered coordinating authority; a green localisation and innovation fund; an inclusive decentralised-energy and community-ownership framework; and a dual-track transition with deliberate narrative management. These are sequenced through a 2025–2030 Green Industrialisation Sprint Plan. For funders, the highest-return interventions are concessional or blended finance for domestic developers, enforceable local-content and technology-transfer requirements, and patient support for community ownership and just-transition measures.

The paper then moves through seven steps in plain terms: it maps the energy system; identifies the actors who can move or block change; examines the four structural tensions; explores the probable and cautionary futures generated by participants; identifies niches where alternatives already exist; applies the African Model Strategic Framework to locate leverage; and concludes with a sequenced 2025–2030 deployment plan. The paper adds to Egypt's own planning and to AU instruments and is not a competing prescription.

The arena: Egypt at the hinge

Confronted by global climate pressure, regional energy volatility and intense domestic socio-economic demand, Egypt must expand equitable energy access while accelerating a low-carbon transition. Guided by Egypt Vision 2030 and the Integrated Sustainable Energy Strategy, the country has positioned renewable-energy-led industrialisation as a route to becoming a continental leader in clean manufacturing, infrastructure and the emerging green-hydrogen economy. As one of Africa's most industrialised economies, its experience holds lessons for AU member states seeking to localise renewable value chains, attract climate finance and build resilient energy systems aligned with Agenda 2063. Egypt is, in the language of the companion continental paper, the AU's most instructive case, precisely because it is not a blank slate.

In July 2025, the Cairo Policy Innovation Lab convened policymakers, energy experts, financiers and private sector innovators to rethink renewable-energy industrialisation. Participants did not begin with a plan but with their own sense of agency, then time-travelled to 2035 to read the futures they thought probable and the futures they feared. They worked back to the present to ask what must be kept, what must be left behind and what must be seeded now. The attitude they adopted, in a phrase that recurred through the two days, was to 'prepare for the worst, build for the best'. That attitude organises this paper.

'Prepare for the worst, build for the best.' Participant, Cairo Policy Innovation Lab

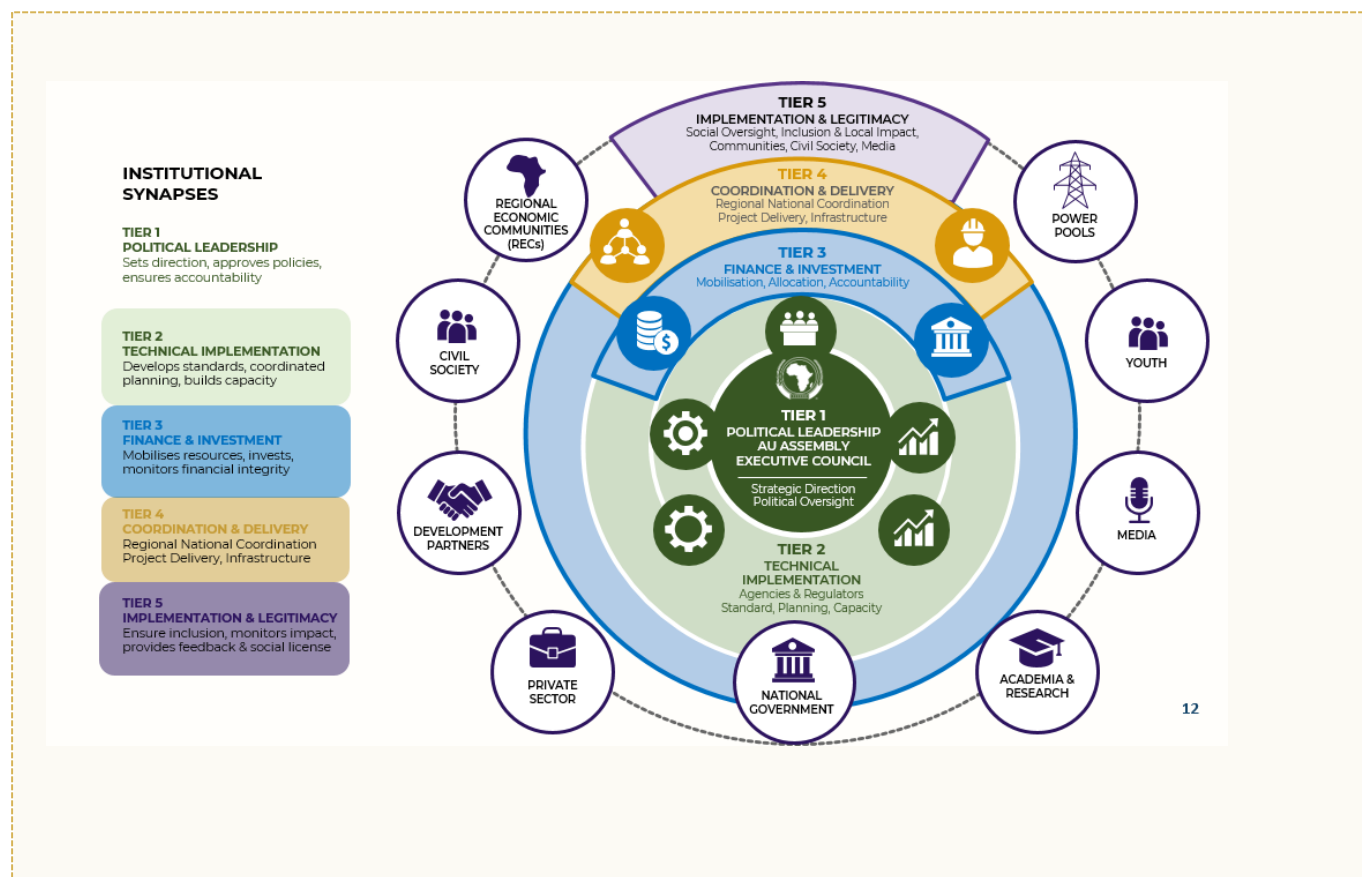
What the Lab made visible was not a list of projects but a system with a shape. Egypt's renewable strengths are real but unevenly distributed: strong in science, technology and infrastructure; advancing in policy and governance; and most vulnerable in investment and finance and in society and culture. The same exercise surfaced a striking asset. Across all four working groups, most participants placed themselves in the 'positive future, strong agency' quadrant, expressing both optimism and a belief in their capacity to shape outcomes. Egypt's transition does not suffer from a deficit of will among those who must deliver it. It lacks coordination, bankability and social licence. This paper is built around the gap between that agency and those constraints.

The energy and climate dynamic made visible

Read as a system, Egypt's renewable-energy-led industrialisation resolves into five interacting dimensions: science, technology and infrastructure; policy and governance; investment and finance; society and

culture; and market dynamics. The value of reading it this way is diagnostic. It locates where the system is strong, where it is binding and therefore where intervention will move it.

Figure 1. Egypt's five-dimensional systemic map of renewable-energy-led industrialisation



Source: Cairo Policy Innovation Lab

Strength concentrated in technology and infrastructure

Egypt's strongest dimension is science, technology and infrastructure. The Benban Solar Park near Aswan aggregates dozens of plants at roughly 1.65GW of nominal capacity and remains one of the largest solar installations in the world.³ Wind assets cluster in the Gulf of Suez and the Red Sea governorate, and the system is now moving decisively into storage: a new Benban-linked 1.2GW solar project pairs with a 720MW-hour battery, and the Nefertiti project will be Egypt's first utility-scale standalone battery deployment when commissioned in 2027, directly addressing the intermittency that has limited the solar grid contribution.⁴ The

³ D. Njenga, "[Benban Solar Park](#)", Construction Frontier, April 20, 2026; Karin Kloosterman, "[Benban Solar in Egypt and the Companies that Make the Energy Shine](#)", Green Prophet, December 1, 2025.

⁴ Karin Kloosterman, "[More Investments of 1.2 GW in Benban Solar, Egypt](#)", Green Prophet, December 1, 2025; Njenga, "Benban Solar Park".

principal lever here is technology sovereignty: shifting Egypt from technology importer toward regional manufacturing hub through local-content development and applied research. Renewables (solar, wind and hydropower) accounted for roughly 11.6% of the energy mix in 2023, on an installed renewable base of around 6GW, including Benban, Gulf of Suez and Red Sea wind, and Aswan High Dam hydropower.⁵

Fragility concentrated in finance and social licence

The most fragile dimension, and the one most likely to determine whether the 2030 commitment is met, is investment and finance. Egypt is recovering from the 2022 to 2023 macro-financial crisis under an \$8 billion IMF Extended Fund Facility agreed in March 2024, conditioned on a flexible exchange rate, fuel and electricity subsidy reform and an expanded private sector role.⁶ The pound was floated in March 2024, and authorities have raised fuel prices repeatedly toward cost recovery, with a further increase in early 2026 described as aligning domestic prices with global realities.⁷ Currency risk and dollar-denominated exposure raise the cost of capital for domestic developers, which is precisely why blended and concessional finance is directly relevant to de-risking renewable manufacturing investment.

Society and culture are the second fragile dimension, and the two are linked. Subsidy removal under fiscal conditionality hits low-income households hardest; the late-2024 bread-subsidy change and repeated fuel hikes have already produced a cost-of-living shock. Social licence for renewable industrialisation cannot therefore be assumed. It must be built. The Blue Group at the Cairo Lab named the danger directly in its imagined future: 'Energy for everyday is expensive and removing subsidies is driving people into poverty.' Yet the same dimension holds Egypt's most underrated asset: strong collective agency expressed across every working group and a deep human capital and engineering base.

Where the system binds

Between these poles sit policy and governance and market dynamics. Egypt's regulatory architecture is relatively advanced, anchored by the Integrated Sustainable Energy Strategy and Vision 2030 and, more recently, by Law 2 of 2024, which established an incentives framework for green hydrogen alongside a wave of memoranda of understanding.⁸ However, the architecture is undermined by fragmentation,

⁵ American Chamber of Commerce in Egypt, "[Clean Energy](#)", *Industry Insight*, February 2026; Karim Elgendy, "[Egypt as an Eastern Mediterranean Power in the Age of Energy Transition](#)", Middle East Institute, July 18, 2022.

⁶ US Department of State, "2025 Investment Climate Statements: Egypt", accessed June 2026, <https://www.state.gov/reports/2025-investment-climate-statements/egypt>; International Monetary Fund, "[Frequently Asked Questions on Egypt and the IMF](#)", July 2025.

⁷ Paul Chinedu, "[Egypt Raises Fuel Prices as IMF-Backed Subsidy Reforms Deepen](#)", *Finance in Africa*, March 10, 2026.

⁸ American Chamber of Commerce in Egypt, "Proposed Green Hydrogen and Derivative Projects", accessed June 2026, <https://www.amcham.org.eg/publications/industry-insight/issue/77/proposed-green-hydrogen-and-derivative-projects>. Law

opacity and uneven enforcement, and the national master plan is not yet integrated with continental frameworks such as the African Single Electricity Market. On the market side, the Scatec-led Egypt Green Hydrogen project at Ain Sokhna secured a 20-year green-ammonia offtake with Fertiglobe under the first H2Global auction funded by Germany, and began partial production and exports to European and US markets in January 2026.⁹ Private participation is growing, with 32 power-purchase agreements (PPAs) signed for around 1 465MW as of 2025, yet only a small share of the announced hydrogen pipeline is backed by binding contracts, highlighting the gap between ambition and commercial reality.¹⁰

The diagnostic conclusion is unambiguous. The binding constraint is no longer ambition or technology. It is governance coherence and bankability under macro-financial stress. Table 1 summarises where each dimension is strong and where it faces constraints.

Table 1. Five-dimensional diagnostic summary

Dimension	Principal strength	Binding constraint
Science, technology, infrastructure	Benban scale, wind assets, storage entering the system, unified grid	Intermittency and grid absorption; dependence on imported technology
Policy and governance	Advanced regulatory architecture; hydrogen incentive law	Fragmentation, opacity, weak inter-institutional coordination
Investment and finance	Multilateral and climate-finance access; sovereign vehicles	Currency risk, high cost of capital, subsidy-reform fragility
Society and culture	High collective agency; technical talent base	Distributional risk of subsidy reform; contested social licence
Market dynamics	Hydrogen exports live; proximity to EU demand; 32 PPAs	Thin binding-contract base; export-first bias over domestic value

Source: Compiled by the authors from the Cairo Policy Innovation Lab and cited sources

2 of 2024 established an incentives framework, alongside seven green-hydrogen memoranda of understanding signed in February 2024.

⁹ Scatec, “[Scatec’s Egypt Green Hydrogen Project Signed 20-Year Offtake Agreement with Fertiglobe, Based on H2Global Award](#)”, July 11, 2024; “[Egypt Green Hydrogen Project Begins Exports to European and US Markets](#)”, *Daily News Egypt*, January 13, 2026. The project is implemented through a consortium consisting of Scatec, the Sovereign Fund of Egypt, Orascom Construction, Fertiglobe and the Egyptian Electricity Transmission Company.

¹⁰ US Department of Commerce, International Trade Administration, “[Egypt Country Commercial Guide: Electricity and Renewable Energy](#)”, November 21, 2025.

The actors: Who moves the system

A system is moved by the actors within it, and Egypt's renewable arena is unusually crowded. Mapping the actors across the five dimensions yields not a flat list but a typology: six clusters, each with a distinct role, interests and position on the fault lines, which the next section sets out. Reading actors this way matters because leverage is rarely about adding a new player. It is about shifting the balance of power and incentive among the players already present.

The state incumbents and coordinators set direction and hold the largest single share of the system's authority: the Supreme Council of Energy, the Ministry of Electricity and Renewable Energy, the Ministry of Petroleum and Mineral Resources, the New and Renewable Energy Authority and the holding and transmission companies. They have delivered scale and rapid capacity addition, but their internal silos and the petroleum ministry's gas tilt are themselves a source of the coordination deficit. The regulators and zone authorities – EgyptERA, the Suez Canal Economic Zone authority, the General Authority for Investment and the Financial Regulatory Authority – have rules that can either shield niches or strangle them, from PPA bankability to the regulation of community crowdfunding.

The private developers and manufacturers are the actors the system is counting on to lead, and the Cairo participants were clear-eyed that this leadership is contingent rather than automatic. Over 300 companies are already active in renewable energy implementation, alongside flagship developers and the new Chinese PV manufacturers building integrated capacity at Ain Sokhna. The financiers determine whether anyone can move at all: the IMF; multilateral and development banks; the Sovereign Fund of Egypt; bilateral institutions, including Germany's [KfW and DEG](#); and commercial lenders. The Green Group at the Lab captured a recurring frustration about who should move first, naming it 'the egg and the hen' over whether government or the private sector should lead.

The communities, civil society and labour are the actors most often left out of decision-making and most exposed to its costs. Together, the households absorbing subsidy reform; civil society organisations; universities and technical-vocational institutions; youth entrepreneurs; and labour in fossil-linked sectors hold the social licence that the transition cannot do without. The Cairo participants worried, in their cautionary futures, about a world in which these actors were 'not even on the map'. Finally, the external shapers exert influence that exceeds any domestic actor's: China as manufacturer and investor; the EU as off-taker and regulator through the Carbon Border Adjustment Mechanism (CBAM); the IMF as the author of fiscal conditionality; and the Gulf states as alternative capital. Table 2 sorts the clusters and locates each on the fault lines that follow.

Table 2. Actor typology and position on the fault lines

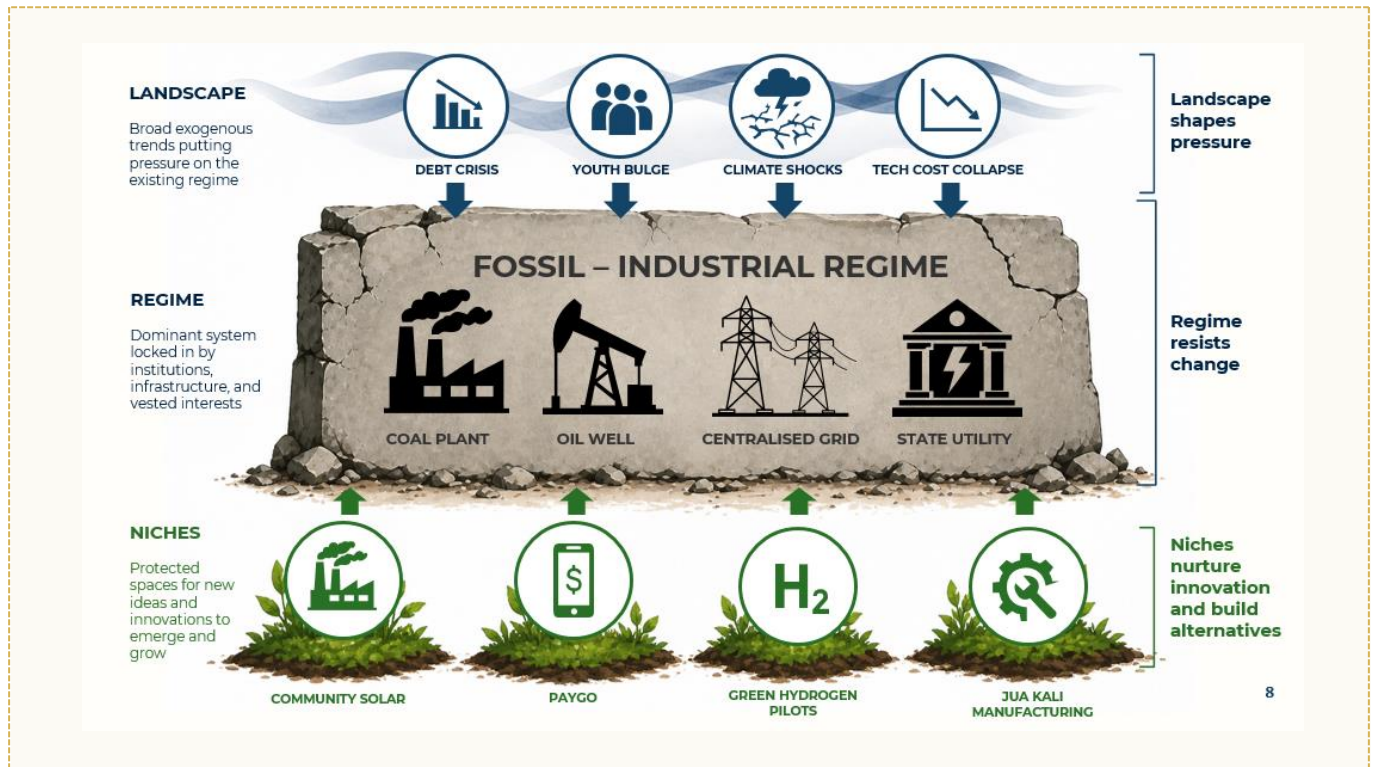
Actor cluster	Role in the system	Where they sit on the fault lines
State incumbents and coordinators	Set direction, hold authority, deliver mega-projects	Source of both ambition and the coordination deficit; internally split on gas versus renewables
Regulators and zone authorities	Hold the rules that shield or strangle niches	Decide whether bankable PPAs and community generation are possible; gatekeepers of implementation
Private developers and manufacturers	Expected to lead deployment and localisation	Leadership is contingent on de-risking; carry the sovereignty-versus-dependency tension most directly
Financiers (multilateral, sovereign, commercial, development finance institutions)	Determine cost of capital and bankability	Hold the lever between scale and justice through how reform and de-risking are sequenced
Communities, civil society, youth and labour	Hold the social licence; bear the distributional cost	Most exposed to the justice side of every tension; high agency, low formal power
External shapers (China, EU, IMF, Gulf, Germany)	Set terms Egypt cannot set alone	Embody the sovereignty-versus-dependency and leadership-versus-constraint tensions

Source: Compiled by authors from the systemic mapping and the Cairo Policy Innovation Lab

The fault lines: Four structural tensions

Beneath the actors run the fault lines. A transition can be read as the interaction between three levels: a landscape of pressures that no single actor can steer, a regime of stabilised practices that delivers the present, and niches where alternatives incubate. For Egypt, the most consequential landscape pressures are macro-financial conditionality and currency stress, geopolitical and trade realignment. These include the relocation of Chinese PV manufacturing and the EU CBAM, fossil-price and gas-supply volatility, climate and water stress (including the dispute over the Grand Ethiopian Renaissance Dam) and a generational shift in values. Where these pressures meet the regime, they expose four structural tensions. None can be wished away. Each is also a leverage point.

Figure 2. The Multi-Level Perspective applied to Egypt's renewable-energy-led industrialisation



Source: Cairo Policy Innovation Lab; authors

Scale versus justice

Egypt's transition has been built at scale: utility-grade solar parks, gigawatt wind corridors, export-first hydrogen and Chinese manufacturing complexes. Scale has delivered capacity quickly. But the same model concentrates benefits and externalises costs, and subsidy reform under IMF conditionality sharpens the edge. The Cairo participants reframed this tension into two cautionary futures. In the first, energy access becomes 'a matter of survival, available only to elites'; the government is 'not doing much, keeps us out of the zone' and the poorest are 'not even on the map'. In the second, Egypt succeeds as an exporter and is branded 'the new Europe', yet liberalisation without safeguards drives up costs, spreads electricity theft and exposes 'the naked truth' of inequality beneath a successful surface. The metaphor that crystallised the danger was blunt: 'Energy is the new currency.'

'Energy is the new currency.' Participant during the Cairo Policy Innovation Lab, on the scale-versus-justice tension

The leverage implication is that justice is not a constraint on scale but a condition of its durability. The most vulnerable regime feature here is the fossil-subsidy and tariff structure, already being dismantled, which makes subsidy reform the most powerful and the most socially hazardous lever in the entire system. Reform that proceeds without robust, targeted social protection does not merely risk hardship; it risks the legitimacy on which the whole transition depends. A just-transition design is therefore non-negotiable, and the community-ownership instruments set out later in this paper are the mechanism for it.

Ambition versus implementation

Egypt does not lack plans. It has Vision 2030, the Integrated Sustainable Energy Strategy, a hydrogen strategy, bilateral agreements and reaffirmed targets. What it lacks is the coherence to ensure delivery. The Blue Group identified the gap: 'A disconnect between the abundance of strategic plans and the limited degree of implementation and coordination.' The contested target landscape is the most visible symptom. The same government that promises over 42% by 2030 also appears in an IMF review at 29.7% and in a petroleum-ministry signal at 40% by 2040. This volatility is not a rounding error. It shows the regime is internally unsettled about its own direction.

The participants located the cause in structure, not effort. They pointed to 'bureaucratic procedures that slow down progress', 'siloe operations and competitive rather than collaborative environments', 'government projects lacking monitoring and impact evaluation' and a 'lack of clarity and implementation regarding power-purchase agreements'. Their probable future for 2035 still flagged 'uneven implementation and uncoordinated projects' even amid success. The diagnostic insight is that the implementation gap is a governance problem with a governance solution: a single empowered body to streamline permitting, standardise bankable PPAs and enforce monitoring and evaluation. The participants reached the same conclusion independently, agreeing that Egypt 'needed a central coordinating body to integrate its renewable energy ecosystem'.

Sovereignty versus dependency: Holding the China tension

Across the imagined futures, one actor appeared in two contradictory guises. In the Green Group's probable future, 'joint ventures with China are relocating production to Egypt, accelerating localisation and industrial capacity'. In the combined Red and Blue dystopia, 'international actors have huge influence, especially China, shaping the sector based on their interests rather than national or local needs'. Rather than resolve this contradiction in favour of one reading, the evidence supports holding it. Both are true at once, and the policy task is to capture the upside while bounding the risk.

The upside is concrete and already materialising. Chinese PV manufacturers are building integrated capacity in Egypt's Ain Sokhna zone within the Suez Canal Economic Zone. Sunrev Solar has begun a roughly \$200 million, two-phase complex with 2GW each of cell and module capacity in its first phase,

expected to create over 1 800 direct jobs and to localise silicon ingots and wafers in phase two.¹¹ JA Solar broke ground in December 2025 on a roughly \$210 million base with 2GW each of cells and modules and 1GWh of storage, and cumulative Chinese investment in Egypt's PV chain had surpassed \$1.5 billion by the end of 2025.¹² Much of this sits in the China–Egypt TEDA zone, a joint industrial venture operating since 2008. For a country seeking to raise local content, this is the fastest available route to genuine manufacturing capability and export earnings.

The risk is equally concrete. The same investment is driven substantially by Chinese domestic overcapacity, a near two-year price downturn and the search for low-tariff export platforms, with Egypt attractive partly because it faces only a 10% US tariff.¹³ Investment motivated by tariff arbitrage and overcapacity can be footloose, and concentration of the supply chain under foreign control reproduces, at a different layer, the import dependency Egypt is trying to escape. The phrase Sunrev's managing director used to describe the venture, combining 'Chinese speed and Egyptian wisdom', captures both the opportunity and the asymmetry.¹⁴

The leverage implication is that the resolution is not to choose between welcome and refusal but to set the terms. Three conditions convert Chinese investment from dependency into capability:

- enforceable local-content and technology-transfer requirements with phased deepening, so that phase-two localisation of ingots, wafers and intellectual property occurs rather than assembly alone;
- joint-venture and local equity structures that keep value and decision rights partly domestic; and
- diversification of partners, including Gulf and European manufacturers, so that no single external actor becomes structurally indispensable.

Held this way, the contradiction becomes a managed bet rather than an unmanaged exposure.

Normative leadership versus domestic constraint

Egypt presents itself, with justification, as a continental and regional leader: a renewable hub, a hydrogen pioneer, an interconnector to Europe and the Gulf and a co-architect of African energy strategy. The Black Group's confidence myth expressed the self-image directly: 'If Egyptians built the pyramids, they can achieve a renewable energy future.' Yet the same country is bound by domestic constraints, IMF

¹¹ Patrick Jowett, "[China's Sunrev Solar to Build 2 GW Solar Cell, Module Factory in Egypt](#)", *pV magazine*, June 23, 2025; The Electricity Hub, "[Chinese Sunrev to Build \\$200 Million Solar Energy Complex in Egypt's SCZone](#)", *Africa Energy Portal*, June 20, 2025.

¹² Shanshan Liu, "[JA Solar's Manufacturing Base in Egypt Commences Construction; Chinese Investments in Egypt's PV Industry Chain Exceed \\$1.5 Billion](#)", *Solarbe Global*, December 30, 2025.

¹³ OPIS, "[China's Sunrev to Start 2GW Solar Cell, Module Lines in Egypt by H1 2026](#)", June 25, 2025.

¹⁴ Quoted in Jowett, "China's Sunrev Solar".

conditionality, currency fragility and gas-supply shortfalls that have caused power cuts, as well as a cost-of-living shock that limits the political room for reform. The tension is between the role Egypt aspires to play abroad and the conditions it must manage at home.

'If Egyptians built the pyramids, they can achieve a renewable energy future.' Participant during the Cairo Policy Innovation Lab, on the confidence myth

This fault line is where external positioning and internal capacity pull against each other, and it is easily mismanaged in either direction. Overreach abroad without domestic delivery produces announcements unbacked by binding contracts, the very gap analysts note in the hydrogen pipeline. Retreat into domestic constraint forfeits the continental influence that brings foresight data, concessional finance and minerals-and-localisation upside. The leverage implication is that Egypt's continental leadership is most credible when it is built on demonstrated domestic delivery, and that the AU's most useful posture is to engage Egypt as a peer and co-producer of continental intelligence, not as a recipient of guidance. Table 3 summarises the four tensions and the leverage each implies.

Table 3. The four structural tensions and their leverage implications

Tension	What pulls each way	Where the leverage lies
Scale versus justice	Rapid utility-scale and export-first deployment against distributional cost and contested social licence	Sequence subsidy reform with targeted social protection; embed community ownership
Ambition versus implementation	Abundant plans and reaffirmed targets against fragmentation, silos and target volatility	A single empowered coordinating authority; bankable, standardised PPAs; enforced monitoring
Sovereignty versus dependency	Chinese manufacturing as localisation driver against supply-chain capture and tariff-arbitrage volatility	Enforceable local-content and technology-transfer terms; local equity; partner diversification
Normative leadership versus domestic constraint	Continental hub ambition against IMF conditionality, currency stress and gas shortfalls	Anchor leadership in demonstrated domestic delivery; engage the AU as peer and co-producer

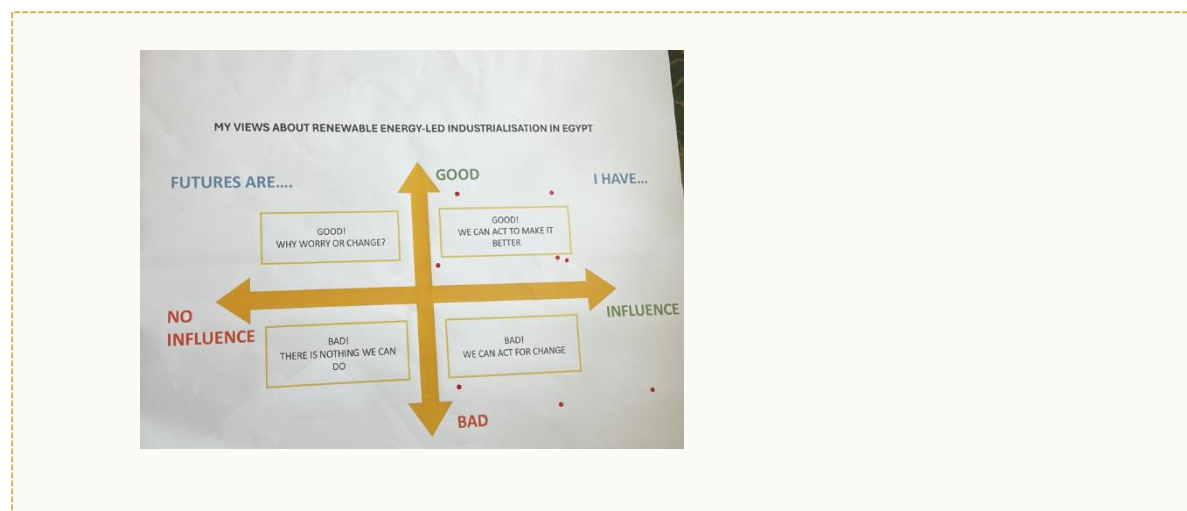
Source: Authors, from the Cairo Policy Innovation Lab and the multi-level analysis

The flashpoints: Visions, attitudes and the narrative contest

Fault lines show where a system is stressed. Flashpoints show what is at stake when the stress resolves one way or another. At the Cairo Lab, participants 'travelled' to 2035 and read both the future they thought probable and the futures they feared. What they produced is less a forecast than a map of the visions, attitudes and narratives that will shape Egyptian behaviour long before any target is met. Three things

stand out: a confident probable future, two instructive dystopias and a narrative contest that functions as infrastructure.

Figure 3. Participant self-mapping (agency and optimism) in the Polak Game



Source: Cairo Policy Innovation Lab

The probable future: Confident, exporting and uneven

The probable future the groups imagined is genuinely optimistic. Renewables supply a large and rising share of electricity, prices have fallen, public adoption is widespread and Egypt exports renewable electricity and green hydrogen. The Green Group, working from a landscape shock in which oil reaches '\$220 per barrel', imagined Egypt pivoting hard into renewables, integrating them into half its energy mix and localising a quarter of its renewable components. At the level of worldview, sustainability is 'embedded in decision-making at all levels', energy is increasingly seen 'as a basic right' rather than a commodity and a just transition is a guiding principle. At the deepest level, the societal narrative is simply 'the future is renewable'.

But the probable future is not uniform, and the groups did not pretend otherwise. Even amid success, the headlines flagged 'uneven implementation and uncoordinated projects'. The Green Group held two cautionary metaphors alongside its optimism: 'slow pace but surely', signalling a steady but unhurried commitment, and 'the egg and the hen', denoting the unresolved question of whether government or the private sector should lead. The Blue Group's version was more anxious still, with 'the fear of electricity cuts' at the heart of its motivation and the worry that 'energy subsidies are blocking investments'. The probable future, in other words, already contains the fault lines.

The two dystopias: What anticipatory governance¹⁵ must prevent

Reframing from the deepest layer upward, participants produced two distinct cautionary futures, both instructive. The first is exclusionary collapse. Blackouts are routine, energy access is 'a matter of survival', media is politicised, monopolies and big-tech actors control the sector and decentralised models fail to scale. The worldview is fatalistic and atomised: corruption is normalised, solidarity eroded and technology 'idolised' as a substitute for policy and ethics. The metaphors are bleak, from 'rich get richer' and 'there are no more alternatives' to 'big tech owns everything', 'we are the new slaves', 'we are all machines' and the flat resignation of 'no one cares anymore'. The lesson is that technological progress without ethical governance and redistribution produces an advanced but socially fractured future.

The second dystopia is more seductive because it looks like success. Egypt becomes a net renewable exporter, achieves self-sufficiency and is branded 'the new Europe', yet hyper-capitalist commodification, liberalisation and misused subsidies drive up costs, deepen affordability problems and spread electricity theft. The provocation that crystallised it was 'privatising the sun'. The lesson is that market liberalisation without regulatory oversight and social safeguards widens internal disparity even as aggregate indicators improve. Both reframes converge on a single imperative: design policy with dual integrity, advancing competitiveness while protecting equity and cohesion. Table 4 sets the probable future against the cautionary one across the layers participants used.

'Privatising the sun.' Participant during the Cairo Policy Innovation Lab, on the seductive dystopia

Table 4. Probable and cautionary futures across the layers of analysis

Layer	Probable future (2035)	Cautionary reframe (2035)
Visible headlines	Renewables dominant and cheaper, widespread adoption, electricity and hydrogen exports, falling prices	Blackouts routine, access by privilege, electricity theft, news fragmented or suppressed
System and actors	Regional partnerships, private sector leadership, decentralised rural systems, skilled-worker pipelines	Monopolies and big tech dominant, decentralised models fail to scale, external actors reshape the sector
Worldview	Sustainability embedded, energy as a right, just transition as principle	Corruption normalised, solidarity eroded, technology idolised over policy and ethics
Deep narrative	'The future is renewable'; 'if Egyptians built the pyramids, they can build a renewable future'	'Energy is the new currency'; 'environmental collapse is inevitable'; 'the new Europe'

Source: Cairo Policy Innovation Lab, synthesised by the authors

¹⁵ Anticipatory governance is the systematic integration of future-oriented thinking into the routines of public governance. It treats the future as a working variable in present-day decisions rather than as an abstract backdrop, which is why the cautionary futures in this section are treated as governance inputs rather than as speculation.

Narrative as infrastructure

The most consequential insight from the futures work is that narrative is not a policy decoration. It is infrastructure. The contest between 'the future is renewable' and 'environmental collapse is inevitable' will shape political will as much as any tariff, because narratives govern what publics will tolerate, what investors will back and what officials will champion. A confident narrative, paired with honest acknowledgement of distributional risk, is a mobilising asset that attracts participation. A fatalistic narrative, left uncontested, makes the dystopias self-fulfilling by draining the will to act.

The behavioural evidence from the Lab supports treating narrative as a lever. Participants left with a sharpened sense that 'nothing is guaranteed' and 'everything comes at a price', a sober recognition of trade-offs rather than a retreat into pessimism. They found it 'hard to think about a dark, no-energy future', which is precisely why the absence of reliable energy is the foundational condition that any desirable future must secure first. And they moved, in their own description, from passive support toward active advocacy, with one participant capturing the shift in outlook: 'The future feels brighter.' Managing this narrative deliberately, in education, media and policy, is therefore not soft accompaniment to the transition but one of its load-bearing structures.

The niches: Where the alternative already lives

If the fault lines show where the regime is stressed, the niches show what could replace it. Niches are alternative practices involving new actors, materials and rules that can consolidate into regime-challenging configurations if nurtured. Egypt's most significant niches are decentralised and community-scale generation through microgrids, mini-grids and rooftop solar; domestic PV and component manufacturing; green hydrogen and its derivatives; renewable-powered desalination and seawater electrolysis; and crowdfunded community-energy finance. None is a pilot in the dismissive sense. Each is a functioning prototype of a different system.

The decisive question is not whether the niches exist but whether they can consolidate. Today, a patchwork protects them: special-zone incentives and Law 2 of 2024 shield hydrogen and manufacturing; the feed-in-tariff legacy and the build-own-operate model shielded early solar; multilateral and development finance de-risks flagship projects; and the Financial Regulatory Authority (FRA) can regulate crowdfunding to protect community finance. The weakness is diffuse responsibility. No single body holds the mandate to shield, sequence and scale niches coherently, which is itself an argument for the coordinating authority recommended later. The Cairo participants proposed the same logic from the other direction, calling for crowdfunding platforms 'regulated by the Financial Regulatory Authority' and for 'virtual power plants that integrate decentralised energy sources through smart systems'.

For these niches to strengthen, four conditions matter:

- bankable and transparent PPAs, and the lifting of restrictions on community-level generation, so niches can transact;
- local-content and manufacturing incentives that convert assembly into genuine value capture;
- storage and grid investment that lets variable renewables displace rather than merely supplement gas; and
- a protected window in which experiments can fail safely, concentrated in the Suez Canal Economic Zone, in upper Egypt, where solar resource and industrial demand can be co-located, and in underserved rural and desert communities where decentralised models face least incumbent resistance.

Table 5 sets out each niche, its current protection and what its consolidation requires.

Table 5. Niche analysis: Protection today and conditions for consolidation

Niche	How it is protected today	What consolidation requires
Decentralised and community-scale generation	Limited; constrained by community-generation restrictions	Lift restrictions; regulate community finance; expand micro, mini and smart grids in underserved areas
Domestic PV and component manufacturing	SCZONE incentives; Chinese investment; TEDA zone	Enforceable local-content and technology-transfer terms; a localisation fund; partner diversification
Green hydrogen and derivatives	Law 2 of 2024; SCZONE; H2Global offtake	A domestic-use-first share; binding offtake beyond announcements; integration with industrial demand
Renewable-powered desalination and electrolysis	Nascent; tied to water-stress and GERD pressures	Co-location with solar resource; applied research; demonstration at scale
Crowdfunded community-energy finance	Potential FRA regulation; not yet institutionalised	A regulated crowdfunding framework; a community-ownership and energy-equity structure

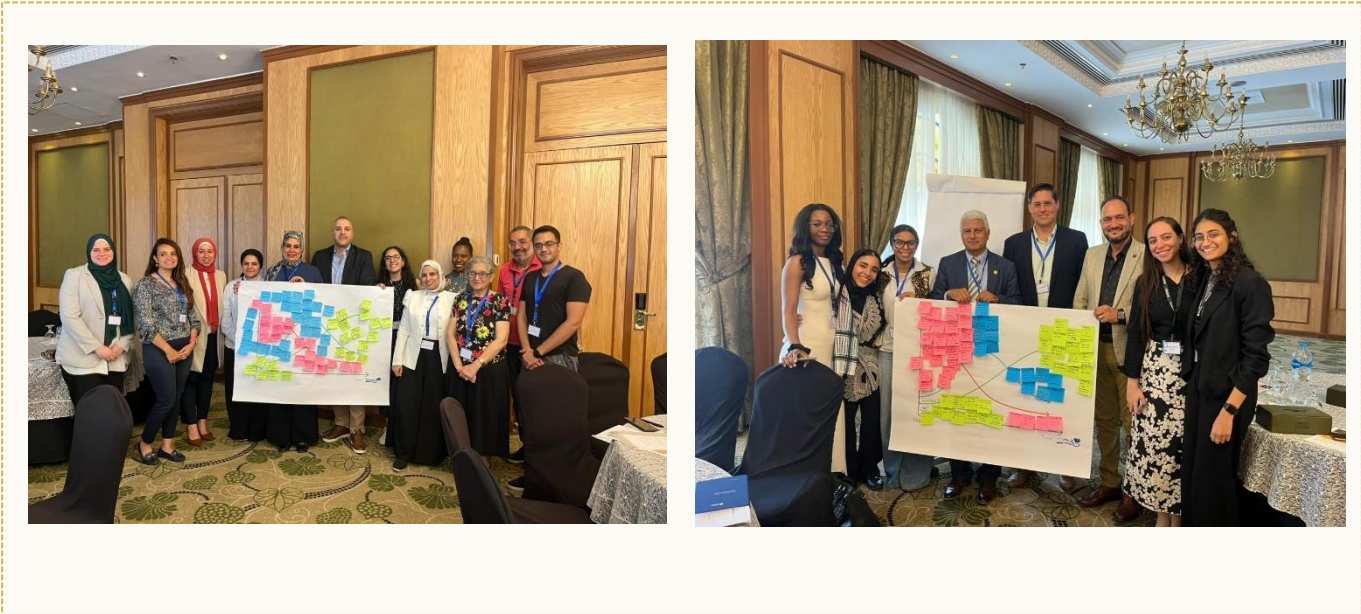
Source: Authors, from the Cairo Policy Innovation Lab and the systemic mapping

Sequencing the transition

Participants sequenced the move from the present system to the desired future across three horizons, and the sequencing follows a clear strategic logic. The present system holds elements worth keeping: the unified grid, tax exemptions and land-allocation processes, technical expertise, growing private interest, battery-storage integration and the expansion of technical and vocational training. Then there are the elements to leave behind: fossil-sourced electricity subsidies, bureaucratic delay, siloed operation, projects without monitoring, import dependence, community-generation restrictions, weak research commercialisation and unclear PPAs. The transition zone splits into sustained innovations that resolve

present constraints and transformative innovations that seed systemic change. The desired future, in the participants' own framing, is a localised renewable sector with at least 30% domestic value, widespread green hydrogen, full achievement of national targets and 'a coherent and resilient national renewable-energy ecosystem'. Table 6 captures the sequencing.

Figure 4. Three Horizons sequencing of Egypt's renewable-energy-led industrialisation



Source: Cairo Policy Innovation Lab

Table 6. Sequencing the transition across three horizons

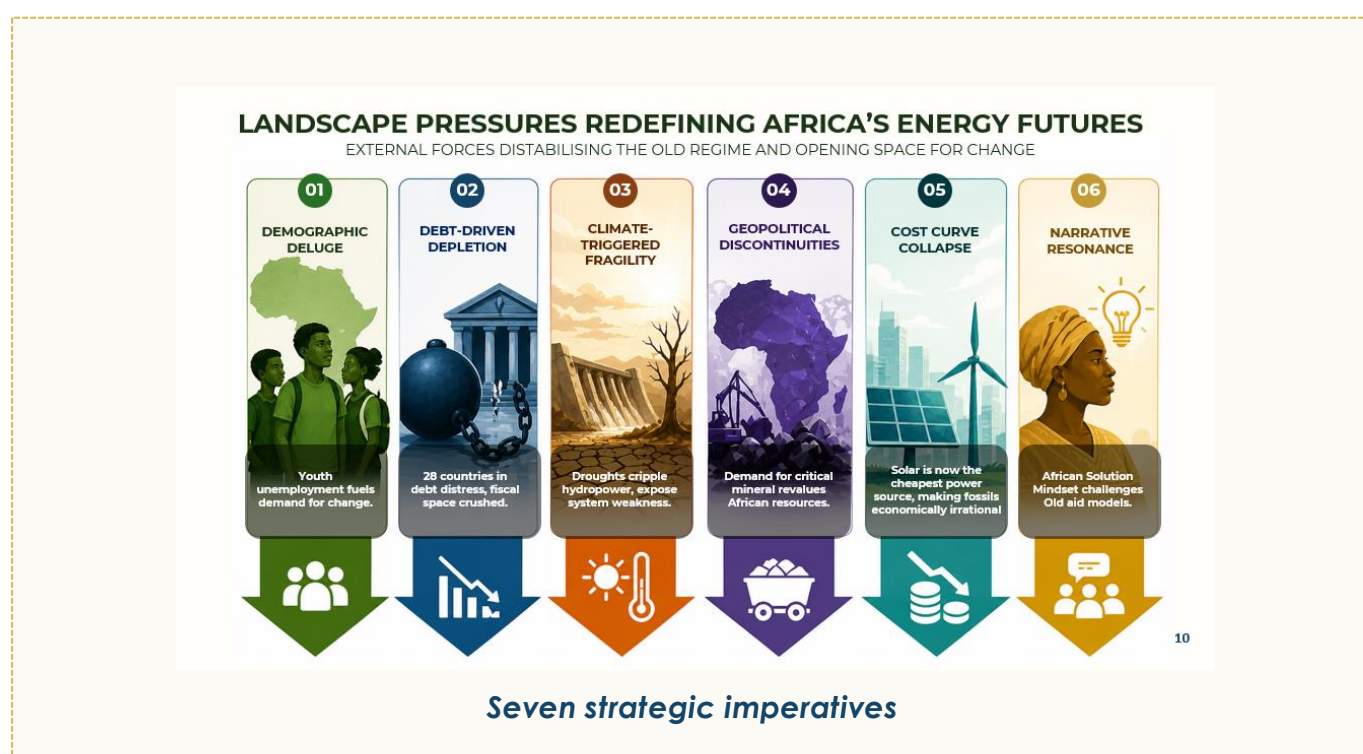
Horizon	Content for Egypt's renewable-energy-led industrialisation
Present system: keep and leave behind	Keep unified grid, tax exemptions, land allocation, technical expertise, private interest, storage integration, TVET expansion. Leave behind fossil-sourced electricity subsidies, bureaucratic delay, silos, unmonitored projects, import dependence, community-generation restrictions, unclear PPAs
Transition: sustained innovation	Replace fossil subsidies with clean-energy investment, streamline regulation, break silos, reform community-solar restrictions, incentivise local manufacturing, bridge academia and industry, establish bankable, transparent PPAs, deploy monitoring and evaluation, strengthen local value chains, enforce governance and compliance
Transition: transformative innovation	Expand decentralised micro-, mini- and smart grids, deploy renewable-powered desalination and explore seawater electrolysis, embed sustainability in early education, integrate Indigenous knowledge, build circular-economy and recycling infrastructure, advance virtual power plants and centres of excellence, regulate crowdfunding, scale green building codes, introduce a national energy-efficiency strategy
Desired future (2035)	A localised renewable sector with at least 30% domestic value, widespread green hydrogen, full achievement of national targets, renewable integration across public infrastructure, evidence-based national planning, thriving clean-tech entrepreneurship, special economic zones as green industrial hubs, a coherent, resilient national ecosystem

Source: Cairo Policy Innovation Lab, synthesised by the authors

The leverage: Applying the Model Strategic Framework to Egypt

The companion continental paper sets out a Model Strategic Framework for Green Industrialisation: a purpose, guiding principles and seven strategic imperatives, designed to be adapted by member states rather than imposed on them. Egypt is the framework's most instructive test, and applying it here locates the leverage that the fault lines and niches imply. The framework is useful to Egypt precisely because it offers a shared analytical language and a structured process, not a compliance checklist. It will work only if presented as an offer, leading with the data value of continental foresight, the financing offer of a blended-finance vehicle and the commercial upside of mineral and localisation value, rather than the language of obligation.

Figure 5. The African Model Strategic Framework for Green Industrialisation



Source: SAIIA Futures Programme

Purpose and guiding principles, applied to Egypt

The framework's purpose, to advance renewable-energy-led industrialisation through transformative policy and anticipatory governance, maps directly onto Egypt's own diagnosis. Its guiding principles read, in the Egyptian context, as a corrective to the specific fragilities this paper has identified. Systemic understanding and anticipatory governance answer the implementation gap by making assumptions explicit and policy adaptive. Energy democracy and access answer the scale-versus-justice tension by

treating energy as a basic need and shifting from extraction toward community-owned generation, the reframe participants demanded when they warned against energy becoming 'the new currency'. Self-reliance and sustainability answer the sovereignty-versus-dependency tension by prioritising local production and contextually tailored technology. Collaboration and inclusivity answer the silos that participants named as the core obstacle. Learning and adaptation, and respect for people and planet, answer the narrative and just-transition imperatives. The principles are not abstract; each is a response to a named Egyptian constraint.

The seven strategic imperatives, applied to Egypt

The framework's seven imperatives translate into concrete applications for Egypt. Table 7 maps each to the Egyptian context, drawing the short-term emphasis appropriate to the 2025–2030 window.

Table 7. The seven strategic imperatives, applied to Egypt

Strategic imperative	Egyptian application (2025–2030 emphasis)
Systems-aware, biophysical grounding	Map Egypt's solar, wind and critical-mineral geographies and supply chains; pilot circular-economy and recycling for renewable components; assess life-cycle impacts of imported technology
Resource-constrained transition planning	Develop region-specific deployment scenarios for upper Egypt and desert communities; promote energy efficiency and decentralised low-tech renewables; launch demand-side management
Local innovation and technology sovereignty	Convert Chinese and other manufacturing investment into capability through local content and technology transfer; establish R&D hubs and centres of excellence; invest in skills and TVET pipelines
Energy democracy and social equity	Pilot community-owned projects; reform community-generation restrictions; integrate gender equity; build a community-ownership and energy-equity framework against subsidy-reform risk
Economic paradigm shift	Redirect subsidy savings into clean-energy investment and a localisation fund; pilot circular-economy policy; build local finance capacity, including regulated crowdfunding
Resilience and anticipatory governance	Stand up a foresight unit within the coordinating authority; align the national master plan with continental scenario modelling; build early-warning and adaptive policy cycles
Cultural and behavioural transformation	Embed 'the future is renewable' in education, media and policy; counter fatalistic narratives; use storytelling and experiential learning to sustain political will

Source: Authors, adapting the Model Strategic Framework to Egypt

The four continental instruments, landing in Egypt

Each of the framework's four policy recommendations has a direct Egyptian application. A blended-finance Renewable Energy Industrialisation Fund is relevant because concessional capital that de-risks renewable manufacturing would reduce dollar-denominated exposure for domestic developers, the

single most binding financial constraint identified in Section 2. A Minerals Sovereignty and Capital Markets Initiative is pertinent because Egypt's phosphate and rare-earth resources are undervalued offshore, and continental certification standards would strengthen its position in green-mineral diplomacy. An Energy Foresight Hub is the natural home for aligning Egypt's national master plan with continental scenario modelling, making the country a data contributor and co-producer of intelligence rather than a recipient of guidance. And a Community Energy Ownership Initiative, with a local-equity mandate applied to Egypt's large-scale solar pipeline, would redistribute transition benefits and build the social licence that rapid deployment has sometimes sacrificed.

The continental connection is tangible, not rhetorical. The African Single Electricity Market, launched in 2021 and advancing through a high-level oversight committee, aims to interconnect all member states and underpin industrialisation under the African Continental Free Trade Area (AfCFTA).¹⁶ Egypt's interconnection assets make the connection real: a 3GW high-voltage direct-current link with Saudi Arabia¹⁷ and planned high-capacity links to Europe through the GREGY and EuroAfrica interconnectors.¹⁸ Positioned this way, Egypt acts as a co-architect of continental strategy, and the case offers a foundational framing for future studies on Nigeria, Morocco, Ethiopia and Kenya.

The Egyptian 2025–2030 Green Industrialisation Sprint Plan

The framework spans to 2063, but for Egypt the next five years are decisive. This section translates the leverage into a sequenced, costed-in-principle programme of work, an Egyptian Green Industrialisation Sprint Plan that adapts the continental Sprint Plan to Egyptian institutional reality. It is offered as complementary to Egypt's own planning cycle, not as a substitute for it. Four institutional recommendations anchor the plan, each directly addressing a fault line.

¹⁶ AU, "[African Union Launches World's Largest Single Electricity Market \(AfSEM\)](#)", Press Release, June 4, 2021; AU, "[AU and ECOWAS Advance Regulatory Readiness for Continental Electricity Trading under AfSEM](#)", Press Release, November 5, 2025.

¹⁷ International Energy Agency, "[Egypt-Saudi Electricity Interconnection Project](#)", April 4, 2022.

¹⁸ European Commission, International Partnerships, "GREGY: High-Voltage Electrical Interconnection in the Eastern Mediterranean," accessed June 2026, https://international-partnerships.ec.europa.eu/policies/global-gateway/gregy-high-voltage-electrical-interconnection-eastern-mediterranean_en; Atlantic Council, "Great Sea Connections: Financing the Eastern Mediterranean's Energy Transition", June 17, 2025.

Four institutional recommendations

A coordinating authority for renewable-energy industrialisation

Fragmentation and weak coordination are the binding governance constraint, and the participants converged on the same answer. Egypt should establish an empowered Renewable Energy Industrialisation Coordination Authority to act as the single point of contact for major projects, with a mandate to streamline permitting, develop and enforce bankable, transparent power-purchase agreements, operate governance and compliance frameworks, oversee data-sharing protocols and ensure monitoring and evaluation of state-led projects. A dedicated foresight unit should sit within it. By de-risking investment and building credibility, the authority converts the aspiration of private sector leadership into practice.

A green localisation and innovation fund

Import dependence limits domestic value capture and exposes Egypt to external control of the supply chain. A National Green Localisation and Innovation Fund should provide targeted incentives, grants and concessional loans for local manufacturing, including a circular-economy stream; bridge research and industry by financing commercialisation; and attach local-content and technology-transfer terms that bound the China tension, so investment deepens into genuine capability rather than assembly. It can be funded in part by redirected subsidy savings phased over the reform window.

An inclusive decentralised-energy and community-ownership framework

Restrictions on community generation and weak participation incentives risk the exclusionary future participants feared. Egypt should reform laws restricting community-level solar, expand micro-, mini- and smart grids in underserved areas and establish a community-ownership and energy-equity framework, including crowdfunding regulated by the Financial Regulatory Authority and the integration of local and Indigenous knowledge. This should be supported by a national energy-equity index tracking access, affordability and environmental disparities. This is the principal safeguard against energy commodification and elite capture.

A dual-track transition with deliberate narrative management

Track one optimises the transition pragmatically, using gas as a transitional fuel with efficiency gains while renewables scale, without diluting the renewable target. Track two cultivates a national narrative of green opportunity and equity, embedding 'the future is renewable' in education, media and policy; communicating tangible benefits transparently; and reinforcing just-transition commitments to counter fatalistic narratives. Narrative is treated here as the soft infrastructure that enables or constrains political will.

The Sprint Plan

The recommendations are sequenced across three windows. The logic is deliberate: sustained actions that stabilise and de-risk the system are front-loaded, while transformative actions are seeded early and scaled later. Each action names an indicative lead and a measurable sign of progress.

Table 8. Egyptian 2025–2030 Green Industrialisation Sprint Plan

Window	Priority actions	Indicative lead	Signal of progress
2026–2027: foundational and de-risking	Stand up the coordination authority with a foresight unit; issue bankable, standardised PPAs; lift restrictions on community-level solar; sequence subsidy reform with targeted social protection; deploy monitoring and evaluation for state-led projects	Ministry of Electricity and Renewable Energy; Ministry of Finance; EgyptERA; FRA	Authority operational; first standardised PPAs signed; community-generation rules amended; cash-transfer protection in place
2028–2029: localisation and scaling	Operationalise the localisation and innovation fund; enforce phased local-content and technology-transfer terms on manufacturing investment; commission first utility-scale standalone storage; expand decentralised grids in upper Egypt and underserved areas; commercialise applied research through centres of excellence	Ministries of Trade and Industry and of Electricity; SCZONE; NREA; universities and TVET bodies	Fund disbursing; local-content thresholds met; storage online; decentralised connections rising; research-to-market deals closed
2030: consolidation and positioning	Mature green-hydrogen offtake with a domestic-use-first share; integrate the national master plan with the African Single Electricity Market; embed a national energy-efficiency strategy; institutionalise the community-ownership and energy-equity framework; diversify manufacturing partners	SCZONE; EETC; AFREC and AfSEM interface; Ministry of Electricity	Domestic-use-first clause active; master plan aligned with AfSEM; efficiency strategy adopted; equity framework operating

Source: Authors, derived from the Three Horizons sequencing and the Section 2 diagnosis

How the AU should consult and harmonise with Egypt

The Sprint Plan is most effective when it dovetails with a structured, non-directive continental process. Three stages are recommended. In a diagnostic-alignment stage in 2025, AFREC and Egypt's Ministry of Electricity and Renewable Energy conduct a joint diagnostic using the five-dimensional architecture and produce a bilateral alignment note. This note identifies which Egyptian policies already align with the framework, where regulatory adjustments are needed, and where the AU can provide direct technical or financial support. In a framework-adaptation stage in 2026, Egypt co-designs a national implementation annex that adapts the four continental instruments to its institutional realities and presents it to the AU Assembly as a model for other member states. In a peer-learning stage from 2027–2030, Egypt hosts the first regional Green Industrialisation Peer Learning Exchange, bringing North African energy ministries together to share the Egyptian experience. This positions the country as a continental champion of the framework rather than a subject of it, a reputational incentive the AU should deploy deliberately. The qualification is important: the framework will not work with Egypt if presented as an obligation rather than an offer.

Where the leverage is and how to deploy it

This paper set out to answer a single question: given this arena, these actors, these fault lines and these flashpoints, where is the leverage for systemic change, and how should funders and decision makers deploy it to advance green industrialisation in Egypt? The Egyptian green industrialisation ecosystem is constrained by governance coherence and bankability, not ambition or technology. The actors include a high-agency coalition of deliverers held back by silos, conditionality and contested social licence. The fault lines are four structural tensions: scale against justice, ambition against implementation, sovereignty against dependency, and normative leadership against domestic constraint, each of which is also a leverage point. The flashpoints are imagined futures in which a confident 'the future is renewable' narrative contends with a fatalistic one, and in which technological success without governance and equity produces an advanced but fractured society.

The leverage lies where the business-as-usual systems (energy regime) are softest and the alternatives already alive: in the fossil-subsidy and tariff structure now being dismantled, in the single-buyer market design that throttles corporate PPAs and in the centralised model that decentralised niches can outflank. It is deployed through four institutional moves, sequenced in the Egyptian Sprint Plan, and through a continental framework offered as a partnership rather than a directive.

For funders and decision makers, three deployments offer the highest return. Concessional and blended capital that lowers the cost of capital for domestic developers attacks the single most binding constraint in the system. Enforceable local content and technology-transfer terms convert footloose manufacturing investment into durable capability and bound the sovereignty risk. And patient support for community-ownership and just-transition design builds the social licence that protects the whole transition from the

dystopias participants feared. Egypt has the tools, the talent and the agency to lead. The decisive variable is the political will to coordinate, de-risk, localise on enforceable terms and protect equity while building competitiveness. Held to an imagined 2035 and acted on through the 2030 Sprint Plan, the case offers both a route for Egypt and a foundation for an AU knowledge community on renewable-energy-led industrialisation. The posture participants chose remains the right one: prepare for the worst, build for the best.

Annex A. Methodology and methods

This paper synthesises the Cairo Policy Innovation Lab of 1 to 2 July 2025, convened by the SALLA Futures Programme and the Synergies Center for International and Strategic Studies, with a desk review of verifiable public sources. The paper foregrounds the new thinking the methods produced; this annex documents the methods so the analysis is transparent and replicable.

The five-phase approach

The analysis follows the five-phase approach used across the AU research focus: understanding the system, developing a vision for change, anticipating a different future, creating a transformative theory of change and building the knowledge community. The foresight horizon for the imagined futures is set at 2035, consistent with what Cairo participants explored, while the action roadmap is anchored to 2030 for near-term decision-making. Foresight scenarios are participant-generated and are not predictions.

Systemic mapping and the five-dimensional architecture

The systemic understanding is structured through a five-dimensional architecture, examining for each dimension the actors who act, the rules that govern action and the material resources in play. The dimensions are science, technology and infrastructure; policy and governance; investment and finance; society and culture; and market dynamics. The intent is diagnostic, to locate leverage points and binding constraints.

The multi-level perspective

The vision for change is read through the multi-level perspective, which interprets transitions as the interaction of a landscape of exogenous pressures, a regime of stabilised practices, and niches where alternatives incubate.¹⁹ Landscape pressure on the regime opens windows through which niches can break in and reconfigure the system.

¹⁹ Frank W. Geels, "Technological Transitions as Evolutionary Reconfiguration Processes: A Multi-Level Perspective", *Research Policy* 31, no. 8–9 (2002): 1257–1274.

Futures literacy, Causal Layered Analysis and Three Horizons

The anticipatory phase used three complementary foresight methods. The Polak Game introduced futures literacy and surfaced participants' sense of agency by mapping responses across four quadrants of optimism and influence. Causal Layered Analysis, and its reverse, read the present and reframed it across four layers: the litany of visible events, the systemic causes, the worldview and the underlying myths and metaphors, to surface inherited assumptions and imagine both probable and cautionary 2035 futures.²⁰ The Three Horizons framework sequenced the transition, distinguishing the incumbent system, the visionary future and the transition zone of sustained and transformative innovation.²¹

Strategic niche management and transformative outcomes

The niche analysis draws on strategic niche management and the transformative-outcomes lens, which assess how experimentation builds and nurtures niches, expands and mainstreams them, and opens up and unlocks the incumbent regime.²²

Participation and verification

The workshop was conducted over two days through plenary sessions and four facilitated working groups, with participants drawn from Egyptian ministries and agencies, energy experts, financiers and research and civil society organisations. A draft Model Strategic Framework served as a live reference tool. Participant statements quoted in this paper are reproduced verbatim from the workshop report. Confidence in factual claims was graded during drafting (verified, evidence suggests, could not verify); these indicators are retained in the internal working version and omitted from this external-facing paper, where cited public sources support factual claims.

²⁰ Sohail Inayatullah, "Causal Layered Analysis: Poststructuralism as Method", *Futures* 30, no. 8 (1998): 815–829.

²¹ Bill Sharpe et al., "Three Horizons: A Pathways Practice for Transformation", *Ecology and Society* 21, no. 2 (2016): art. 47; Bill Sharpe, *Three Horizons: The Patterning of Hope* (Triarchy Press, 2013).

²² Bipashyee Ghosh et al., "Transformative Outcomes: Assessing and Reorienting Experimentation with Transformative Innovation Policy", *Science and Public Policy* 48, no. 5 (2021): 739–756; building on Johan Schot and Frank W. Geels, "Strategic Niche Management and Sustainable Innovation Journeys", *Technology Analysis and Strategic Management* 20, no. 5 (2008): 537–554.

Annex B. Regional comparators

South Africa is a regional anchor with substantial operational and under-construction renewable capacity and announced green-hydrogen projects, yet grid instability has redirected some investment to neighbours, illustrating a dual role as anchor and cautionary example, as well as the value of the National Transmission Company and Southern African Power Pool integration.

Kenya and Rwanda demonstrate decentralised innovation: Kenyan geothermal at scale and pay-as-you-go solar, and Rwandan community-solar models, showing how decentralised systems can bypass regime resistance and accelerate access in ways traditional grid extension cannot.

The Southern, East and West African Power Pools show varying integration maturity. Deeper integration depends on harmonised regulation, transparent governance and sustained infrastructure investment, the continental complement to Egypt's national roadmap.

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