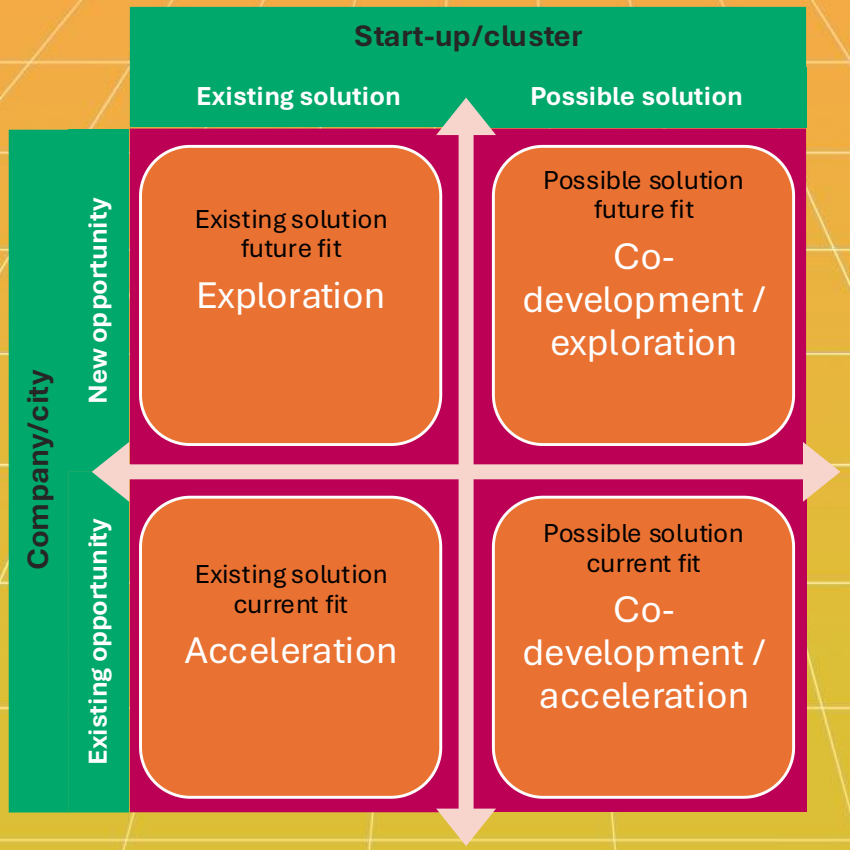
Incubator guide to the Six Energy Innovation Approaches

v. 1.0

Flourishing Lives 4 All (FL4ALL)
RISE Research Institutes of Sweden AB



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Why use the Six Energy Innovation Approaches

Energy innovation for the 21st and 22nd century, published by FL4ALL in 2025, is free to download. It can be used for:

A. Start-ups that define themselves as energy companies to explore if/how they can move up the innovation scale.

B. Energy relevant start-ups that deliver solutions with positive impact on human needs where smart energy is part of the solution.

C. Deep tech companies that can transform different parts of society.

Collaboration Matrix for an Expanded Innovation Agenda

The *Collaboration and Matchmaking Matrix* was co-developed by Ignite Sweden and FL4ALL/RISE in *Win the Future*, as a method for collaboration.

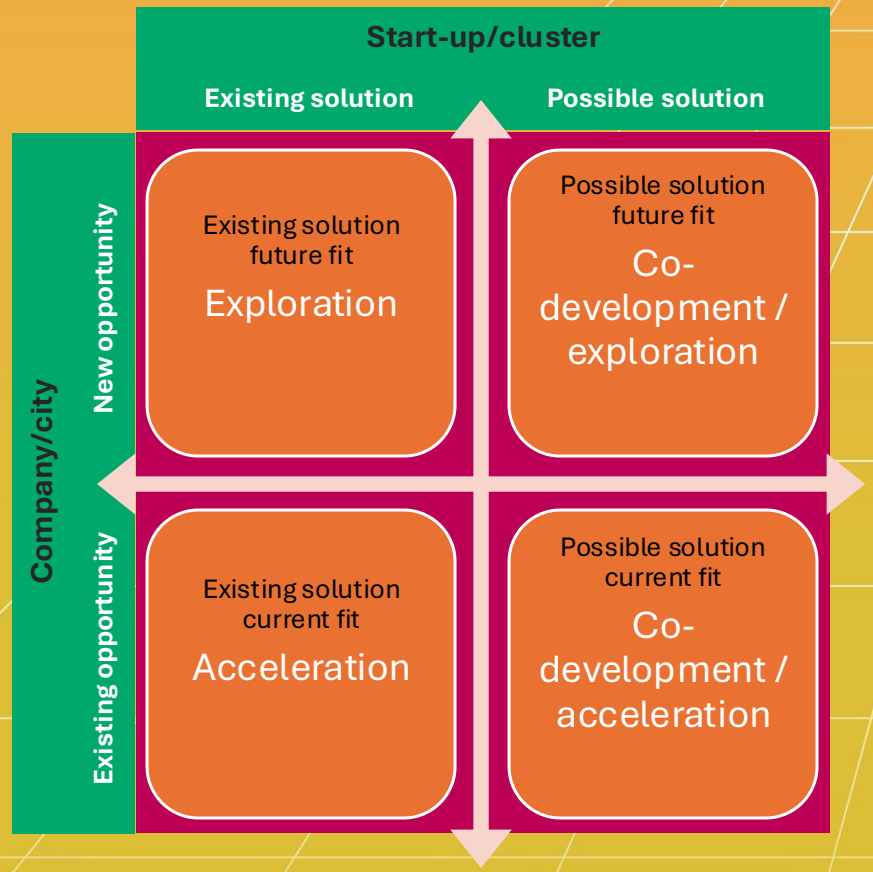

Fig: IGNITE/RISE/FL4ALL
based on Value creation in startup-corporate interactive spaces
Blomquist, Gaim & Nair, 2020

Acceleration (bottom-left)

- The company/city has a specific problem, and the startup has a product ready to fix it.
- Goal: "Current fit." This is standard procurement or rapid pilot programs. The goal is speed—implementing the solution quickly to solve a known issue.

Exploration (top-left)

- The startup has a finished product, but the company/city doesn't have an immediate use case for it yet. They see potential for it to create new value in the future.
- Goal: "Future fit." This is about testing the waters. The partners explore how this existing technology might open up new business models or solve future developments that haven't hit critical mass yet.

Co-development / Acceleration (bottom-right)

- The company/city has a burning problem, but no off-the-shelf solution exists in the market. A startup has the skills to build it.
- Goal: "Current fit" (through creation). The two parties must partner to build the solution together. It addresses an urgent need through collaborative innovation.

Co-development / Exploration (top-right)

- The company/city is looking at long-term future scenarios, and the startup has ideas, competence, or tech capabilities that could address them. Neither the specific need nor the specific solution is fully defined.
- Goal: "Future fit." This represents deep R&D partnerships. They are inventing the future together, developing entirely new solutions for anticipated problems (e.g., infrastructure for technologies that don't fully exist yet).

What is a start-up support guide for an Expanded Innovation Agenda

This guide helps incubators, accelerators and supporters of start-ups

- Determine a start-up's position
  - Map a start-up both on the Energy Innovation Approach scale (1–6) and in the collaboration matrix, to see where they are now and where they could be.
- Design the type of partnership
  - Choose how a start-up could pursue quick Acceleration pilots, low-risk Exploration, or deeper Co-development with companies/cities to move toward the next (or higher) Energy Approach.
- Shape programme activities and cohorts
  - Plan discovery days, sandboxes, joint development projects, and place-based pilots that deliberately populate different collaboration quadrants and support Energy Approach transitions 1→2, 2→3, …, 5→6.
- Track portfolio progress toward Approach 6
  - Monitor how engagements shift over time from fossil-centric Acceleration toward more Co-development and Exploration that build integrated systems, service models, and ultimately human-need-driven energy system clusters.

1.1 – Energy Innovation Approach 1 – Traditional energy providers

- Who you typically are (as a start-up):
  - Technologies and services that support traditional energy providers (oil & gas, coal/gas power, large utilities).
  - Carbon capture, utilisation and storage (CCUS) for fossil assets.
  - Efficiency add-ons and emissions monitoring for fossil plants, refineries and pipelines.

- Core value proposition:
  - Reduce emissions and costs from existing fossil energy infrastructure.
  - Help traditional energy providers stay compliant and extend asset lifetimes.

- Strengths (why this matters):
  - Can deliver fast, measurable emission reductions in the short term.
  - Clear, well-resourced customers (traditional energy providers with large assets).
  - Often backed by strong technical IP and engineering know-how.

- Limitations (why this is not enough):
  - Depends on traditional fossil assets staying in operation.
  - Risk of reinforcing lock-in to high-carbon pathways.
  - Often weak connection to long-term net-zero / deep decarbonisation and systemic transformation.

- Incubator diagnostic prompts
  - If fossil fuel demand drops faster than expected, does your business model survive?
  - Can your core technology work beyond traditional energy providers and outside fossil fuel value chains?

1.2 – From Energy Innovation Approach 1 to Approach 2

From fossil clean-up to serving traditional large energy users

- What Energy Innovation Approach 2 is about:
  - Solutions that serve both traditional energy providers and traditional large energy users (steel, cement, chemicals, data centres, ports, mining, large commercial buildings).
  - Focus on decarbonising and modernising energy-intensive production and consumption in today's traditional systems.

- Key shifts for a start-up moving 1 → 2:
  - From "cleaning up fossil assets for traditional energy providers" → "enabling traditional large energy users to cut demand, emissions and costs".
  - From dependency on oil & gas and fossil utilities → diversified base of traditional large energy users in multiple sectors.
  - From bolt-on compliance tech → core process and product improvements at traditional large energy users.

- Concrete evolution examples (generic):
  - Flue-gas CO_2 capture for coal plants → capture and utilisation or mineralisation integrated into cement or steel plants.
  - Emissions monitoring for refineries → cross-plant industrial cluster emissions and process optimisation platform.

- Why this matters for the bigger climate agenda:
  - Traditional large energy users drive a big share of global emissions; transforming them is critical to avoid high-warming (3–6°C) pathways.
  - Reducing dependence on fossil-only clients improves resilience to rapid energy transitions and policy shocks.

1.3 – Collaboration modes: Energy Innovation Approach 1 → 2

Using collaboration modes to shift from traditional energy providers to traditional large energy users

Using the collaboration matrix incubators can structure how Energy Innovation Approach 1 start-ups work with partners while moving towards Energy Innovation Approach 2:

- Acceleration:
  - Example: a traditional energy provider has a clear emissions problem at a fossil asset; the start-up has a ready CCUS or monitoring solution.
  - Goal: "Current fit" for today's systems – fast pilots, standard procurement.
  - Risk: keeps the start-up locked into traditional fossil clients and assets at Approach 1.

- Exploration:
  - Example: a traditional large energy user (e.g. cement, data centre) is exploring future decarbonisation options; the start-up's existing solution might be repurposed.
  - Goal: "Future fit" – test how an existing Approach 1 solution can open new markets with traditional large energy users (Approach 2).

- Co-development / Acceleration:
  - Example: a steel plant has a specific emissions problem, but no off-the-shelf CCUS/process solution exists; the start-up has the capability to build or adapt one.
  - Goal: "Current fit by creation" – jointly develop a tailored solution that directly moves the start-up into serving traditional large energy users.

- Co-development / Exploration:
  - Example: a city or industrial cluster wants to explore new industrial processes or carbon-negative materials for 2030–2040; the start-up has ideas or technology components but no defined product yet.
  - Goal: "Future fit" – long-term partnerships that imagine new roles for traditional large energy users in a low-carbon, high-risk climate context.

Matchmaking implication for incubators:

- Encourage Approach 1 start-ups to keep some Acceleration work with traditional energy providers for revenue, but deliberately seek Exploration and Co-development opportunities with traditional large energy users to build an Approach 2 position.

1.4 – Collaboration modes: Incubator playbook

Incubator tools to shift from fossil-centric Acceleration to diversified collaboration with traditional large energy users

1. Use the matrix in 1:1 coaching:
   - Ask each start-up to place its main corporate or city relationships in one quadrant (Acceleration, Exploration, Co-development / Acceleration, Co-development / Exploration).
   - Highlight if all current work is in bottom-left Acceleration with traditional energy providers only.

2. Strengthen “Acceleration” while widening the customer base:
   - Support structured sales to fossil clients where needed, but require at least one Acceleration or Co-development pilot with a traditional large energy user.
   - Use existing references with traditional energy providers to open doors with industrial plants, ports and large buildings.

3. Grow “Exploration” and “Co-development / Exploration” with future-oriented partners:
   - Organise discovery days where start-ups present existing solutions and capabilities to cities and traditional large energy users looking at 2030+ targets.
   - Encourage small exploration pilots around future regulatory risks, material changes and high-warming climate scenarios.

4. Focus Co-development / Acceleration on process change:
   - When existing opportunities are urgent (e.g. specific emission caps), guide start-ups and industrial partners to co-develop process-level changes, not just add-ons.
   - Bring in mentors from industrial operations and process engineering to support these joint projects.

5. Track progress across quadrants:
   - Monitor the share of engagements in each quadrant and aim for a shift over time from Acceleration with fossil clients towards:
     - Acceleration + Co-development with traditional large energy users, and
     - At least some Exploration / Co-development projects preparing for deeper transitions and potential leapfrogs beyond Approach 2.

2.1 – Energy Innovation Approach 2 – Serving traditional energy providers and traditional large energy users

- Who you typically are (as a start-up):
  - Solutions that decarbonise or improve efficiency for traditional energy providers and traditional large energy users.
  - Electrification of heat and processes, low-carbon fuels and feedstocks, industrial and large-building retrofits.

- Core value proposition:
  - Cut emissions and energy use in your plant, site, or energy system.
  - Reduce energy costs, CO_2 intensity and regulatory risk for traditional players.

- Strengths (why this matters):
  - Direct, measurable impact on emissions in big, visible sectors.
  - Tangible assets and clear CapEx/OpEx business cases.
  - Strong alignment with corporate net-zero targets of traditional large energy users.

- Limitations (why this is not enough):
  - Often project-based, one-off sales with limited recurring revenue.
  - Underuse of data, software and automation for continuous optimisation.
  - Solutions often site-specific, not easily scalable across fleets or networks.

- Incubator diagnostic prompts
  - Do you have ongoing visibility into how your solutions perform after installation?
  - Could your solution become smarter and more valuable if it connected multiple sites or customers?

2.2 – From Energy Innovation Approach 2 to Approach 3

From traditional projects to smart, data-driven solutions for traditional energy providers

- What Energy Innovation Approach 3 is about:
  - Smart traditional energy providers using data, software, AI and automation to optimise how energy is produced, transported and used.
  - Turning traditional energy systems into digitally optimised, flexible and data-rich systems.

- Key shifts for a start-up moving 2 → 3:
  - From one-off hardware or retrofit projects → platforms and services that provide continuous optimisation to traditional energy providers and their customers.
  - From “reduce kWh per product or plant” → “shape load, flexibility and system-level performance”.
  - From purely engineering-centric → combined engineering + digital + analytics capabilities.

- Concrete evolution examples (generic):
  - Efficient industrial furnace retrofit → furnace + digital control and analytics platform across multiple plants of a traditional large energy user.
  - Retrofit for large buildings → smart building operating system that integrates with traditional utilities and flexibility markets.

- Why this matters for the bigger climate agenda:
  - Smart optimisation at traditional energy providers can accelerate renewables integration and flexibility.
  - Digital demand-side solutions reduce the need for new capacity, supporting lower emissions and higher resilience in stress scenarios.

2.3 – Collaboration modes: Energy Innovation Approach 2 → 3

Using collaboration modes to shift from traditional projects to smart solutions for traditional energy providers

For start-ups in Energy Innovation Approach 2, the collaboration matrix guides how they add a smart, digital layer and move towards Energy Innovation Approach 3:

- Acceleration:
  - Example: a traditional large energy user needs to cut energy use in a specific plant; the start-up provides a proven electrification or retrofit package.
  - Goal: “Current fit” – implement physical decarbonisation projects efficiently.
  - Risk: remains a one-off, hardware-centric project with limited digital learning.

- Exploration:
  - Example: a traditional energy provider is curious how existing retrofit technology could enable new services (e.g. flexibility markets, new tariffs).
  - Goal: “Future fit” – test whether today’s physical solutions can enable new business models and digital services.

- Co-development / Acceleration:
  - Example: a utility or industrial group has a known performance problem and lots of data, but no digital optimisation tool; the start-up has the capability to build one on top of its hardware.
  - Goal: “Current fit by creation” – co-create a combined hardware + software solution that delivers immediate results and establishes an Approach 3 offering.

- Co-development / Exploration:
  - Example: city or company partners want to explore future data-driven platforms (e.g. cross-site optimisation, predictive maintenance across a whole portfolio); the start-up brings technology and domain know-how but no defined platform yet.
  - Goal: “Future fit” – collaborative R&D around smart traditional energy providers, aligned with longer-term decarbonisation and resilience strategies.

Matchmaking implication for incubators:

- Help Approach 2 start-ups pair each physical project with at least one Exploration or Co-development relationship focused on building smart, data-driven capabilities.

2.4 Collaboration modes: Incubator playbook

Incubator tools to add smart collaboration modes on top of physical decarbonisation projects

1. Map current deals across the matrix:
   - For each start-up, list current and planned projects with cities and companies and classify them into the four quadrants.
   - Highlight hardware-only Acceleration projects where no data or digital services are planned.

2. Turn Acceleration projects into digital footholds:
   - Build into pilots that the start-up will also collect data and propose a follow-on smart optimisation layer.
   - Coach founders to negotiate basic data access and learning rights as part of Acceleration contracts.

3. Create structured “Exploration” for new digital value:
   - Run short innovation sprints with traditional energy providers and large users to explore new tariffs, flexibility products and performance services based on existing solutions.
   - Use the Exploration quadrant to test early SaaS or optimisation-as-a-service concepts without full product commitments.

4. Use Co-development / Acceleration to launch first smart platforms:
   - Support 1–2 joint development projects where an urgent operational problem justifies co-building an analytics or control platform.
   - Provide legal and governance templates for IP sharing, data use and future revenue models.

5. Reserve capacity for Co-development / Exploration bets:
   - Encourage at least one long-term R&D style partnership per cohort that explores cross-site optimisation or demand-side platforms aligned with climate resilience and high-renewables scenarios.

6. Track the smart transition
   - KPIs: share of collaborations that involve data access; number of contracts including ongoing optimisation; growth of revenue from digital services relative to purely physical Acceleration deals.

3.1 – Energy Innovation Approach 3 – Smart traditional energy providers

- Who you typically are (as a start-up):
  - Smart grid / smart meter analytics for traditional utilities.
  - Forecasting, grid optimisation, digital twins.
  - Demand-response / flexibility tools for traditional energy providers or big users.

- Core value proposition:
  - Make existing energy infrastructure more efficient, reliable and profitable.
  - Reduce outages, losses and operational costs; improve asset utilisation for traditional providers.

- Strengths (why this matters):
  - Essential for integrating renewables into existing energy systems.
  - Creates data visibility and control across traditional networks.
  - Often fast payback and clear ROI for traditional energy providers.

- Limitations (why this is not enough):
  - Mostly optimises centralised, fossil-heavy systems.
  - Risk of “locking in” high-carbon assets by making them more efficient.
  - Focused on the needs of traditional energy providers, not on broader local resilience or human needs.

- Incubator diagnostic prompts
  - Who benefits most from your solution today: fossil-heavy incumbents, or future distributed systems?
  - If coal and gas plants closed 10–15 years earlier than expected, would your product still be relevant?

3.2 – From Energy Innovation Approach 3 to Approach 4

From smart traditional providers to integrated energy system providers with distributed renewables

- What Energy Innovation Approach 4 is about:
  - Integrated energy system providers with distributed renewable energy: combining local renewables, storage, flexible loads and digital controls.
  - Microgrids, community energy, virtual power plants, peer-to-peer trading and sector coupling (power, heat, mobility, industry).

- Key shifts for a start-up moving 3 → 4:
  - From “optimise one traditional network” → “orchestrate many distributed assets and local systems”.
  - From serving a single traditional utility or system operator → enabling ecosystems (cities, communities, fleets, property owners, cooperatives).
  - From focusing on efficiency and reliability indicators → adding resilience, decarbonisation and local value creation.

- Concrete evolution examples (generic):
  - Grid analytics for a traditional DSO → platform that coordinates rooftop PV, batteries, EVs, flexible loads in a city district.
  - Demand-response for a utility → local flexibility market where SMEs, households and EV fleets participate.

- Why this matters for the bigger climate agenda:
  - Integrated systems with distributed renewable energy can reduce systemic risk in a 3–6°C world (blackouts, shocks, supply disruptions).
  - They are steppingstones towards Approach 5 and Approach 6, where services and human needs become central.

3.3 – Collaboration modes: Energy Innovation Approach 3 → 4

Using collaboration modes to shift from smart traditional energy providers to integrated energy system providers with distributed renewable energy

For start-ups in Energy Innovation Approach 3, the matrix clarifies how to expand from optimising existing systems to orchestrating distributed, integrated energy systems (Approach 4):

- Acceleration:
  - Example: a DSO wants to reduce losses or manage congestion; the start-up provides a ready analytics or demand-response product.
  - Goal: "Current fit" for smart traditional energy providers.
  - Risk: keeps the focus on centralised networks and incumbent KPIs only.

- Exploration:
  - Example: a city or developer wants to explore how the same analytics platform could support EV integration, building flexibility or local markets.
  - Goal: "Future fit" – test existing smart tools in emerging distributed energy contexts without heavy customisation.

- Co-development / Acceleration:
  - Example: an industrial park or campus needs a concrete solution for reliability and decarbonisation; the start-up adapts its platform into a microgrid/VPP control solution.
  - Goal: "Current fit by creation" – jointly build an integrated system solution that anchors the move to Approach 4.

- Co-development / Exploration:
  - Example: a municipality wants to design a future climate-resilient district with distributed renewables, EVs, storage and critical services; needs and solutions are not fully defined.
  - Goal: "Future fit" – co-design new integrated energy system models that can later be replicated as full Approach 4 offerings and linked to Approach 6 human-need clusters.

Matchmaking implication for incubators:

- Encourage Approach 3 start-ups to keep some Acceleration with utilities but prioritise Co-development with place-based partners (districts, campuses, industrial parks) where integrated systems make sense.

3.4 – Collaboration modes: Incubator playbook

Incubator tools to shift from “smart grid add-on” to integrated energy system provider collaborations

1. Use the matrix to broaden partner types:
   - Identify which quadrants are dominated by utilities and which could involve cities, campuses, industrial parks or communities.
   - Encourage founders to intentionally seek Co-development opportunities with these place-based actors.

2. Deepen Acceleration with an eye on Approach 4:
   - For Acceleration projects with DSOs/TSOs, always ask: “How could this grow into a local system solution (e.g. adding distributed renewables, EVs, storage)?”
   - Design pilots to leave a path open for later Co-development of microgrids or VPPs.

3. Shape Exploration as low-risk learning with cities and developers:
   - Help set up sandboxes where existing smart solutions are tested in neighbourhoods or campuses for EV charging, building flexibility and local markets.
   - Use these Exploration pilots to gather requirements for future integrated energy system products.

4. Support Co-development / Acceleration for concrete integrated projects:
   - Prioritise 1–2 flagship projects per cohort where a start-up co-designs and operates an integrated system for a real site (industrial park, port, campus, rural microgrid).
   - Provide technical, legal and financing support so they can take on more to become true integrated energy system providers.

5. Nurture Co-development / Exploration tied to longer-term resilience:
   - Encourage visioning sessions with municipalities about climate-resilient districts and FL4ALL-style neighbourhoods.
   - Position 3–4 start-ups together in these projects so they start to act as a system cluster, not single vendors.

6. Monitor system-level progress
   - KPIs: number of multi-actor pilots; share of revenue from distributed / local systems; count of projects where the start-up participates in overall system design and operation, not only analytics.

4.1 – Energy Innovation Approach 4 – Integrated energy system providers with distributed renewable energy

- Who you typically are (as a start-up):
  - Developers and operators of microgrids, local energy systems, community energy projects.
  - Providers of integrated solutions combining PV, storage, EV charging, flexible loads and control systems.

- Core value proposition:
  - Provide reliable, clean, local energy through integrated systems based on distributed renewable energy.
  - Combine multiple assets to enhance local resilience and decarbonisation.

- Strengths (why this matters):
  - Strong local impact on emissions and resilience.
  - Deep knowledge of integrating distributed renewable energy into systems.
  - Often close relationships with municipalities, utilities and communities.

- Limitations (why this is not enough):
  - Business models often still sell energy, assets or projects (kWh, capacity, EPC contracts).
  - Revenue can be lumpy, with long, complex sales and project cycles.
  - Value proposition framed around infrastructure and energy, not yet fully around user outcomes and services.

- Incubator diagnostic prompts
  - Do you mainly talk about kW, kWh and CAPEX or about comfort, uptime, resilience, cost certainty, productivity?
  - How much of your revenue is recurring vs. project-based?

4.2 – From Energy Innovation Approach 4 to Approach 5

From integrated systems to granular energy solutions with a focus on service

- What Energy Innovation Approach 5 is about:
  - Granular energy solutions with focus on service rather than products: energy-as-a-service, comfort-as-a-service, resilience-as-a-service, mobility-as-a-service, etc.
  - Circular and modular service models where assets are reused, upgraded and shared.

- Key shifts for a start-up moving 4 → 5:
  - From selling infrastructure or projects → selling services and outcomes (comfort, uptime, decarbonisation, resilience).
  - From one-off project revenue → subscriptions, pay-per-use and performance-based contracts.
  - From "bigger systems" → right-sized, modular and circular solutions tailored to specific needs.

- Concrete evolution examples (generic):
  - Microgrid integrator → resilience-as-a-service provider guaranteeing uptime and power quality for a campus or industrial park.
  - Community solar developer → local energy service platform offering tailored tariffs, EV charging, heat, and value-added services.

- Why this matters for the bigger climate agenda:
  - Service-focused solutions can promote sufficiency and right-sizing, not just more consumption.
  - Circular, modular services reduce material use and vulnerability in high-warming futures with supply shocks.

4.3 – Collaboration modes: Energy Innovation Approach 4 → 5

Using collaboration modes to shift from integrated systems to granular energy solutions with focus on service

For start-ups in Energy Innovation Approach 4, the matrix helps move from selling integrated infrastructure to selling granular services and outcomes:

- Acceleration:
  - Example: a campus needs a microgrid to deal with reliability issues; the start-up provides a proven integrated system design and build.
  - Goal: "Current fit" – deliver infrastructure projects based on distributed renewables.
  - Risk: revenue remains lumpy and asset-focused, with limited service innovation.

- Exploration:
  - Example: a city explores how an existing microgrid platform could underpin new tariffs, community sharing schemes or resilience services.
  - Goal: "Future fit" – test service-oriented use of current systems.

- Co-development / Acceleration:
  - Example: an industrial park wants guaranteed uptime and power quality, not just a microgrid; the start-up has the capability to create a resilience-as-a-service offering but has not yet defined it.
  - Goal: "Current fit by creation" – co-develop outcome-based service contracts built on existing systems.

- Co-development / Exploration:
  - Example: municipality and communities want to explore future neighbourhood services (comfort, mobility, resilience hubs) where energy is invisible; needs and service models are still open.
  - Goal: "Future fit" – invent granular, service-based models that go beyond kWh and prepare the ground for Approach 6 clusters.

Matchmaking implication for incubators:

- Help Approach 4 start-ups treat current projects as platforms for future service models and deliberately cultivate Co-development with partners interested in outcome-based contracts.

4.4 – Collaboration modes: Incubator playbook

Incubator tools to move from infrastructure-centred deals to service-centred collaboration modes

1. Re-label existing projects through the matrix:
   - Classify each microgrid/local system project by quadrant and identify where services are already implicit (e.g. reliability, comfort, resilience).
   - Highlight Co-development opportunities where partners care about outcomes more than assets.

2. Turn Acceleration projects into service platforms:
   - In new Acceleration deals, include options for operations, optimisation and performance guarantees.
   - Coach start-ups to pitch “microgrid + service” rather than “microgrid only”.

3. Use Exploration with cities and communities for new services:
   - Support pilots where existing systems are used to test energy-as-a-service, comfort-as-a-service, resilience-as-a-service.
   - Collect data on user preferences, willingness to pay and impact to inform scalable service designs.

4. Focus Co-development / Acceleration on outcome-based contracts:
   - Help start-ups and partners design contracts pegged to uptime, cost predictability, emissions intensity or resilience metrics, not just asset delivery.
   - Provide legal templates and financial modelling support for shared-savings and performance-based schemes.

5. Use Co-development / Exploration as a bridge to Approach 6:
   - Encourage experiments where integrated systems support shared spaces, mobility services or resilience hubs, testing how energy can be bundled into broader well-being services.
   - Involve social actors (housing providers, NGOs, community groups) early in these projects.

6. Track service-shift progress
   - KPIs: share of revenue from recurring services; number of outcome-based contracts; degree of circularity and modularity in service offerings.

5.1 – Energy Innovation Approach 5 – Granular energy solutions with focus on service rather than products

- Who you typically are (as a start-up):
  - Providers of energy-as-a-service, comfort-as-a-service, mobility-as-a-service, resilience-as-a-service.
  - Circular equipment and asset models: leasing, refurbishing, sharing, pooling.
  - Platforms monetising flexibility, efficiency and performance for customers.

- Core value proposition:
  - Save money, reduce emissions and manage risk through smart energy services.
  - Make it easy for customers to adopt cleaner, more efficient and flexible solutions.

- Strengths (why this matters):
  - Scalable, recurring business models with strong alignment to customer cost and risk drivers.
  - Often inherently more resource-efficient and flexible than product sales.
  - Good steppingstone towards deeper systemic change.

- Limitations (why this is not enough):
  - Human needs and quality of life often treated as side-effects, not primary design focus.
  - Can still reinforce high-energy lifestyles (cheaper or more convenient energy use).
  - Limited explicit focus on resilience under 4–6°C climate risk or on sufficiency and demand reduction.

- Incubator diagnostic prompts
  - What human need are you really serving (health, safety, connection, autonomy, meaning, dignity)?
  - Does your model reduce total energy demand and vulnerability, or just optimise and repackage it?

5.2 – From Energy Innovation Approach 5 to Approach 6

From advanced energy services to human-need-driven energy system clusters

- What Energy Innovation Approach 6 is about:
  - Human-need-driven energy system clusters: local or regional systems designed around human needs and planetary boundaries, not around energy consumption.
  - Enabling low-energy, high-well-being lifestyles that remain viable under severe climate stress.

- Key shifts for a start-up moving 5 → 6:
  - From “more efficient services” → “different ways of meeting needs with less energy overall”.
  - From narrow individual customer utility (price, convenience) → broader value: community, equity, health, cohesion, resilience.
  - From isolated services → clusters of solutions, spaces and practices that change how people live, move, produce and share.

- Concrete evolution examples (generic):
  - Mobility-as-a-service provider → working with municipalities to create walkable, mixed-use neighbourhoods that reduce the need for travel, supported by shared mobility when needed.
  - Building comfort service provider → developing co-housing or shared-space models that reduce per-capita floor area and energy use while improving social connection and support.

- Why this matters for the bigger climate agenda:
  - Under high warming and systemic risk scenarios, demand reduction, social cohesion and resilience become existential priorities.
  - Human-need-driven energy system clusters can sustain well-being and stability even under constrained energy and climate stress.

5.3 – Collaboration modes: Energy Innovation Approach 5 → 6

Using collaboration modes to shift from granular energy services to human-need-driven energy system clusters

For start-ups in Energy Innovation Approach 5, the matrix supports the move towards human-need-driven energy system clusters (Approach 6):

- Acceleration:
  - Example: a housing company wants a predictable energy bill; the start-up offers an established energy-as-a-service contract.
  - Goal: "Current fit" – scale existing service models.
  - Risk: may lock in high-energy patterns and overlook deeper human needs or resilience.

- Exploration:
  - Example: a city wants to explore new living or mobility patterns using existing "as-a-service" offerings (e.g. shared mobility, comfort services) in specific districts.
  - Goal: "Future fit" – test how current services might support lower-energy lifestyles and better well-being.

- Co-development / Acceleration:
  - Example: a municipality needs to improve heatwave resilience in social housing now; the start-up has capabilities to design a combined comfort + resilience service, but no off-the-shelf product.
  - Goal: "Current fit by creation" – co-develop offerings that directly enhance human safety and well-being under climate stress.

- Co-development / Exploration:
  - Example: a coalition (city, community organisations, health services) wants to design a human-need-driven neighbourhood cluster for 2040; needs and solutions are not fully defined.
  - Goal: "Future fit" – deep co-creation of low-energy, high-well-being ways of living, fully aligned with Energy Innovation Approach 6.

Matchmaking implication for incubators:

- Encourage Approach 5 start-ups to use their granular service models as building blocks for place-based, human-need-driven clusters, especially in the Co-development quadrants.

5.4 Collaboration modes: Incubator playbook

Incubator tools to reorient service models towards human-need-driven clusters through collaboration modes

1. Map services against needs and quadrants:
   - For each start-up, list main services and partner relationships and classify them into the matrix.
   - Layer on a human-needs map (health, protection, nutrition, social development) to see which needs each relationship addresses or ignores.

2. Use Acceleration to build trust and data in key places:
   - Encourage scaling of existing services in places (districts, campuses, villages) where Approach 6 clusters are plausible.
   - Ensure contracts include data and user-insight rights that can later inform human-need-oriented redesigns.

3. Design Exploration pilots around new lifestyles:
   - With cities and communities, run pilots using current services to test alternative living patterns (e.g. reduced car ownership, shared spaces, flexible work locations).
   - Measure impacts on energy demand, well-being and social cohesion.

4. Prioritise Co-development / Acceleration for urgent resilience needs:
   - Identify partners with clear short-term risks (heatwaves, floods, energy poverty) and co-develop combined service offerings (cooling + welfare checks, mobility + access to essentials).
   - Support pricing and governance models that protect vulnerable groups.

5. Use Co-development / Exploration to build full clusters:
   - Convene multi-stakeholder groups (cities, housing providers, NGOs, health systems, local businesses) to co-imagine human-need-driven clusters where several start-ups operate together.
   - Encourage start-ups to design shared governance, interoperable services and common metrics for flourishing in high-risk climate futures.

6. Track movement towards Approach 6:
   - KPIs: number of place-based collaborations involving multiple services; evidence of reduced absolute demand with equal or higher well-being; degree of community co-design and shared governance across collaborations.

L1 – Why aim for Energy Innovation Approach 6 – Human-need-driven energy system clusters?

- Energy Innovation Approach 6 = energy systems designed around human needs + planetary limits, not around maximising energy supply.

- It focuses on low-energy, high-well-being ways of living: resilient neighbourhoods, local services, shared spaces, walkable communities, regenerative food and water systems.

- Under 3–6°C climate risk, simply optimising traditional energy systems (Approaches 1–4) will not be enough:
  - Physical risks: heatwaves, floods, blackouts, supply shocks.
  - Social risks: inequality, instability, loss of social cohesion.

- Leapfrogging gives start-ups a north star:
  - “How could our innovation become part of a human-need-driven energy system cluster in 5–10 years?”
  - Then work backwards to shape today’s product, partners and pilots.

L2 – Design principles for leapfrogging to human-need-driven energy system clusters

1. Start from needs, not from technology or kWh:
   - Frame everything around human needs: health, nutrition, protection, access, social development.
   - Re-describe the start-up: “We help people to ___ (need) in ___ (place/context) with much less energy.”

2. Reduce energy demand structurally, not just per unit:
   - Look for ways to avoid, shift or share demand (e.g. shared spaces, local services, walkable access) – not just make each unit more efficient.

3. Build clusters, not isolated solutions:
   - Think in terms of neighbourhoods, campuses, villages, industrial parks where multiple solutions reinforce each other.
   - Combine energy, mobility, buildings, food, water, digital access into coherent local systems.

4. Prioritise resilience and equity under high-warming scenarios:
   - Stress-test the solution against extreme events and long disruptions.
   - Ask: who benefits first, and who is left out? Can the model reduce vulnerability for at-risk groups?

5. Design for governance and participation:
   - Consider community ownership, co-ops, participation in decisions, not only B2B or top-down models.
   - Human-need-driven clusters are as much about institutions and culture as technology.

L3 – From any Energy Innovation Approach to Approach 6

From Energy Innovation Approach 1 – Traditional energy providers → Approach 6:

- Can your CCUS / efficiency / monitoring capabilities support restorative local systems (e.g. carbon-removing landscapes, regenerative materials)?
- Could you pivot from extending fossil assets to protecting and enhancing human safety, food and water security in vulnerable regions?

From Energy Innovation Approach 2 – Traditional energy providers and traditional large energy users → Approach 6:

- Instead of just decarbonising existing production, could you help rethink what is produced, where and for whom?
- Can your solutions enable local, low-energy supply chains (shorter supply routes, repair, reuse, local manufacturing) tied to human needs?

From Energy Innovation Approach 3 – Smart traditional energy providers → Approach 6:

- Could your digital tools shift from optimising utility KPIs to supporting households, communities and essential services during crises?
- Can you use data to change behaviours and social practices (e.g. sharing, coordination) that cut demand and build solidarity?

From Energy Innovation Approach 4 – Integrated energy system providers with distributed renewable energy → Approach 6:

- Can your microgrids or local systems become anchors of human-need clusters: cooling centres, health hubs, food storage, communication nodes?
- How might you co-design systems with residents, municipalities and social services around well-being and safety, not just clean power?

From Energy Innovation Approach 5 – Granular energy solutions with focus on service rather than products → Approach 6:

- Can your “as-a-service” model be reoriented to “well-being-as-a-service” – explicitly targeting healthier, more connected, lower-energy lifestyles?
- Could you bundle services into place-based clusters (e.g. a neighbourhood offering shared mobility, shared spaces, resilience hubs) that change how people live, not just how they pay for energy?

L4 – Incubator tools to help start-ups leapfrog to Approach 6

1. Approach mapping + 6-anchored backcasting workshop:
   - Step 1: teams map their current main approach (1–5).
   - Step 2: you present one or two vivid Approach 6 scenarios (e.g. a resilient, low-energy neighbourhood in 2050).
   - Step 3: each team backcasts: “What would our start-up look like in this scenario? What must we change now?”

2. Portfolio-level requirement: at least one Approach 6 pathway per start-up:
   - Ask every team to define one “Approach 6 option”: a partnership, pilot or product variant aligned with human-need-driven clusters.
   - Track it as a separate innovation stream, even if their main business remains at Approaches 2–5 for now.

3. Place-based pilots and coalitions:
   - Encourage pilots in specific places (districts, villages, campuses) where multiple start-ups’ solutions can interact.
   - Create “cluster challenges”: “How could this district maintain health, food, water, mobility and communication through a 2-week blackout?”

4. Bring in new types of mentors and partners:
   - Outside the usual energy/VC circle: urban planners, social enterprises, public health, food systems, humanitarian actors, community organisers.
   - Their role: keep human needs, equity and resilience at the centre.

5. Metrics for leapfrog progress:
   - Number of start-ups with a credible Approach 6 pathway (concept, partners, early pilot).
   - Number of place-based clusters where multiple start-ups are involved in a joint human-need-driven experiment.
   - Evidence that at least some start-ups reduce absolute energy demand and climate vulnerability, not just emissions per unit.