# CAPACITY BUILDING ON AI FOR ADAPTIVEMANAGEMENT IN THE ENERGY SECTOR: 2026 SIDS NDES

WORKBOOK

DAYS 2-4

# Overview

**Recap of Day 1:** You were updated with UNFCCC Technology Mechanism (TM) related information, including TEC's and CTCN's support status and outlook for 2027-2028.

**Purpose**

- Deepening your understanding of the priorities and solutions offered by climate financing entities for Small Island Developing States (SIDS).
- Learning key concepts including Climate Narrative, Segmentation, and Social Return on Investment (SROI) to apply them in developing scalable projects.
- Explore emerging climate technologies including Artificial Intelligence (AI), energy, and environmentally-sound solutions offered by current and future CTC Network members.

**Structure**

The programme combines plenary presentations, country experiences, facilitated discussions, and interactive exercises.

| Session | Thought provoking | Expected Outputs |
|---|---|---|
| **Opening** | Overview of the programme with a live survey on system transformation | Reflect on what integrated energy systems mean for your country and identify expectations for the programme. |
| | Collaborative Research, Development, and Demonstration for Adaptive management | Learn CTCN's cRD&D related support and procedures and network with selected potential partners. |
| | **Information Sharing and Peer-to-peer learning** | **Expected Outputs** |
| **1** | Understanding Adaptive Systems in SIDS | Understand regional energy transition trends and exchange national energy priorities in the angle of improving country's adaptative systems. |
| **A&B** | GGGI Forum 1 and 2 | Understand the AI-energy nexus: efficiency, infrastructure and accountability and how to |

| | | |
|---|---|---|
| | | align climate policy with energy innovation and technology. |
| **2** | Learning Energy System Transformative Technologies | Explore how technologies interact across energy systems and reflect on opportunities and barriers within national contexts. |
| **3** | The role, application, and potential of AI | Learn international and national examples improve adaptive management systems by applying AI. |
| | **Participatory** | **Expected Outputs** |
| **4** | Phase 1 - Project design: Climate Narrative for a large-scale climate project | Understand the concept of a Climate Narrative and learn how to apply it in developing an appealing concept note and/or TA request form. |
| **5&6** | Voluntary Technology Talk and Network Fair | Explore emerging climate technologies offered by current and future CTC Network members. |
| | **Post-programme: Aligning with 2025 contents** | **Expected Outputs** |
| **6** | Phase 2 - Project implementation: Improving the quality of project outputs | Apply the concepts of Segmentation and Stakeholder Orientation to identify and clarify actions needed to ensure effective stakeholder engagement throughout the implementation phase of a project. |
| **7** | Phase 3 - Project follow-up: Communicating impact stories for longevity | Apply the concept of Social Return on Investment (SROI) and practice communicating a project's impact using SROI as a framework. |

**Notes.**

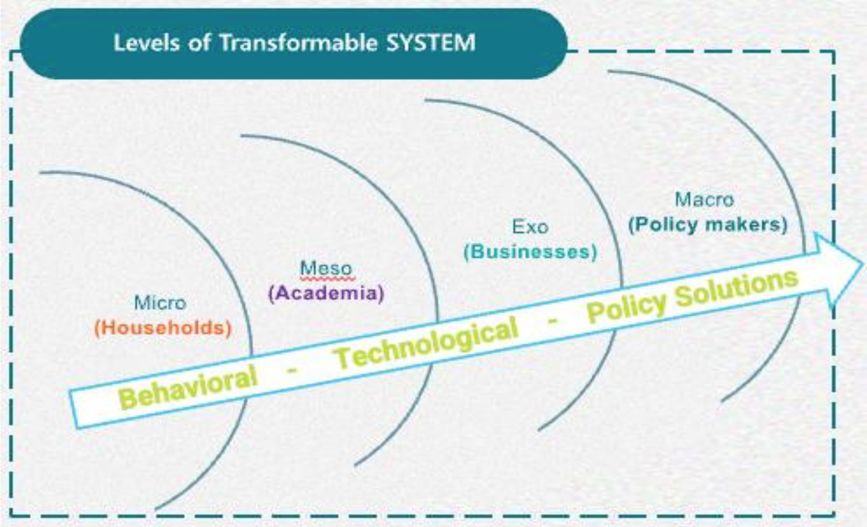
# The UNFCCC Finance Mechanism

The UNFCCC Financial Mechanism (FM) provides financial resources to developing countries to support climate action. It operates under the guidance of the Conference of the Parties (COP) and includes the Green Climate Fund (GCF), Global Environment Facility (GEF), and, since COP28, the Fund for responding to Loss and Damage (FRLD) as entities entrusted with its operation.
For SIDS, understanding how to access and use these financing channels is particularly important for translating national climate and technology priorities into implementation.

Day 2 morning sessions provides updates on the GCF's strategic direction, SIDS portfolio, Readiness Programme and country-level engagement, followed by an introduction to the FRLD and the Santiago Network, including their respective support and access procedures for addressing loss and damage.

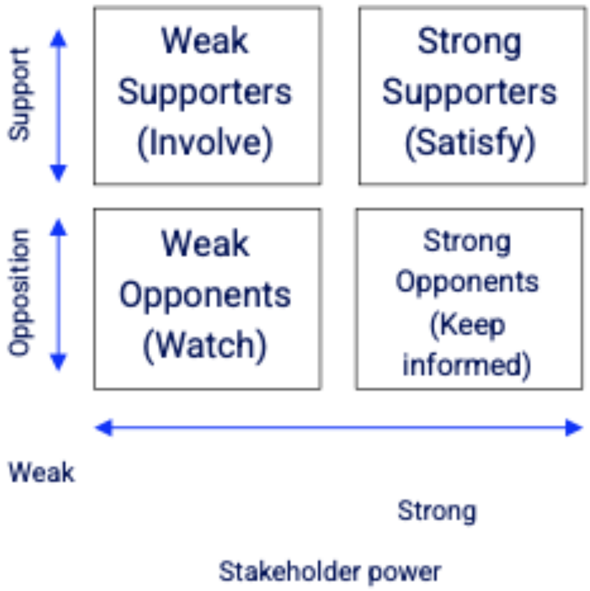
**Notes.**

# Opening: Reflection on the System Transformation




**Impact** is the cumulative effect that can be directly attributed to a project. From a systems value exchange perspective, meaningful impact can only occur when the right stakeholders - those who are most affected by or critical to the project - change what they think (cognition), feel (sensation), and do (behaviour) in response to engaging with the project's activities.

In other words, the overall quality of a project's deliverables depends on **the people we engage with** during its implementation.




People we engage with can be categorized into **segments** - refers to groups of stakeholders who share similar characteristics, roles, interests, levels of influence, or needs related to the project. Instead of treating every stakeholder individually, you cluster them into segments for more efficient analysis and engagement.

Since each stakeholder segment represents different interests and holds varying levels of influence, segments can be categorized not only by type (e.g., government, industry, consumers) but also by their orientation—such as their stance toward the project, level of engagement, or potential to ***support*** or ***oppose*** it.

# Collaborative Research, Development and Demonstration (cRD&D)

cRD&D is an approach to adaptive management that brings countries, researchers, technology providers and other partners together to co-research, co-develop and co-demonstrate solutions in response to evolving country needs. Beyond developing individual technologies, CTCN's cRD&D programme and projects seek to build the skills, partnerships and institutional foundations that enable countries to continuously test, learn and reiterate over the long term - strengthening your capacity for adaptive management.

Depending on your country's cRD&D readiness, you may take different pathways: establishing a collaborative ecosystem where one does not yet exist, strengthening existing systems and partnerships, or revisiting established frameworks to respond to emerging needs and changing conditions. This session introduces the support and procedures available for developing such collaborative initiatives.

As collaboration is at the heart of cRD&D, the session also introduces selected technology and research organizations as potential partners, showcasing practical solutions and areas of expertise that SIDS countries may wish to explore through co-research, co-development and co-demonstration through CTCN Technical Assistance (TA).

**Notes.**

# Session 1: Understanding Adaptive Systems in SIDS

For NDEs, strengthening adaptive systems will mean more than identifying the right climate technology. It is strengthening the country's ability to **continuously identify changing needs, mobilize relevant expertise and technologies, learn from implementation, and adjust priorities and responses over time**.

This session looks at adaptive systems at two interconnected levels:

- **Institutional level:** how NDEs can strengthen the connections among government institutions, research organizations, technology providers, communities and financing partners so that emerging needs and new knowledge can be translated into updated technology priorities and action.
- **Project level:** how technical assistance projects can be designed as processes of **implementation, learning and adjustment**, generating evidence that informs subsequent decisions, replication and scale-up.

Using the energy transition as a practical entry point, participants will examine regional trends and exchange national energy priorities, reflecting on **where their current systems are already able to adapt and where stronger institutions, partnerships, technologies or learning mechanisms may be needed**.

The broader objective is to consider how you can move beyond facilitating individual technology interventions towards building the national capacity to keep adapting as technologies, risks and country needs evolve.

## Peer Exchange: How Adaptive Is Our System?

### Step 1. Individual country reflection (10 minutes)

Think about your country's current climate technology system. For each area below, select the description that most closely reflects the current situation.

**1 = Emerging   2 = Developing   3 = Functioning   4 = Adaptive**

| Area | Reflection question | 1 to 4 | Evidence / example |
|---|---|---|---|
| **Sensing changing needs** | Can we identify emerging climate, energy and technology needs before they become urgent problems? | | |
| **Adjusting priorities** | Can national technology priorities be revised when risks, technologies or circumstances change? | | |
| **Institutional coordination** | Can relevant ministries and institutions coordinate effectively when a challenge crosses sectors or mandates? | | |
| **Partnerships** | Can we quickly identify and mobilize the research, private-sector, community or international partners needed to respond? | | |
| **Technology options** | Can we identify, assess and access alternative technologies when existing solutions are no longer sufficient? | | |
| **Learning from projects** | Do completed and ongoing projects generate lessons that influence subsequent projects, policies or technology decisions? | | |
| **Adjusting implementation** | Can projects change their approach when implementation evidence shows that assumptions or conditions have changed? | | |
| **From project to system** | Can successful project-level learning be replicated, scaled or incorporated into wider institutional practice? | | |

## Step 2. Identify your adaptive strengths and gaps (5 minutes)

Where is your system already able to adapt?

Identify **two areas that currently work relatively well**.

**Strength 1:**

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What enables this?
☐ Institutions ☐ Partnerships ☐ Technology ☐ Data/knowledge ☐ Financing ☐ Other: ________

**Strength 2:**

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What enables this?
☐ Institutions ☐ Partnerships ☐ Technology ☐ Data/knowledge ☐ Financing ☐ Other: ________

Where would stronger adaptive capacity be most useful?

## Step 3. Peer exchange

Peer insight

Listening to other's current policies and projects, what is **one practice, mechanism or approach** that might be useful for your country?

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*Take-away*

An adaptive system does not need to have every solution in place. It needs the capacity to recognize change, mobilize the right actors and knowledge, learn from experience, and adjust its response over time.

# Sessions A&B: GGGI Forums 1,2

Do you recall 2024 #AI4ClimateAction capacity-building programme[1]? We introduced you to AI concepts and climate applications, ethics and governance, national AI policies, barriers to adoption and the enabling environments required for responsible use. The programme highlighted AI's potential as a tool for climate action, while also drawing attention to emerging risks including energy consumption, data infrastructure, data security and the digital divide.

Two years later, the rapid evolution of AI makes its relationship with the energy system increasingly important. Data centres consumed around 415 TWh of electricity in 2024, approximately 1.5% of global electricity consumption. In 2025, their electricity demand increased by 17%, compared with 3% growth in global electricity demand, and the International Energy Agency (IEA) projects data-centre electricity use to double by 2030, with electricity consumption from AI-focused data centres potentially tripling. AI is therefore not only a technology that can support climate action; its expansion can also influence electricity demand, grid investment, energy affordability, generation choices and ultimately climate and energy policy.

For NDEs, this creates a new adaptive-management challenge at two levels. At the **institutional level,** countries need the capacity to anticipate how rapidly evolving technologies such as AI may affect energy demand and infrastructure, and to adjust policies, standards, investment priorities and coordination between climate, energy, digital and other relevant institutions accordingly. At the **project level**, AI-related climate projects need to consider not only what AI can achieve, but also the energy, data and infrastructure they require, their environmental and social implications, and how these assumptions should be monitored and adjusted during implementation.

Through the two GGGI Forum sessions, you will explore both sides of the AI-energy nexus: how AI can improve energy-system efficiency and management, and how the growth of AI itself creates new pressures and responsibilities for energy systems. Sessions A&B will provide you a time to consider what types of future interventions may be needed - from AI-enabled energy management and renewable-energy integration to energy-efficient digital infrastructure, grid readiness, governance frameworks and accountable AI deployment.

We anticipate technological change rather than your respond to it only after it occurs, and to translate emerging AI-energy challenges into climate policies,

[1] https://www.ctc-n.org/sites/default/files/Concept%20note%20on%20Joint%20Pacific%20NDE%20Forum%20and%20CB%20on%20AI_24June24.pdf

partnerships and projects that can be continuously reviewed and adapted as technologies and national conditions evolve.

## Notes.

# Session 2: Understanding Adaptive Systems in SIDS

Achieving a net-zero energy transition requires more than selecting the “right” technology. For SIDS, where energy systems are often highly interconnected and exposed to changing economic, climatic and technological conditions, adaptive management requires the ability to compare options, understand trade-offs, combine technologies, and revisit decisions as conditions evolve.

Drawing on the Technology Executive Committee (TEC) brief *Technologies for Climate Change Mitigation in Developing Countries: Renewable Energy*[2], this session introduces key renewable energy and storage technologies including solar, wind, hydropower, biomass, geothermal, marine energy, battery storage, green hydrogen and pumped hydro.

Rather than assessing technologies in isolation, participants will explore **how different technologies interact within an energy system**, where dependencies or bottlenecks may emerge, and why a technology that is appropriate under one set of conditions may need to be complemented, adapted or reconsidered as circumstances change.

By the end of the session, you will have a stronger understanding of the trade-offs associated with different renewable energy technologies and be better positioned to identify potential CTCN TA project opportunities that address both immediate implementation and the country's longer-term capacity to learn, adjust and manage its energy transition.

[2] https://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/energysupplysector/2e9fbc9d6ea144aabfb089c7728d9dcc/a5171ba2bceb448085cd72b6c849bfb3.pdf

## Energy Supply Technologies

- **Solar Photovoltaic (PV):**

Solar PV converts sunlight directly into electricity using semiconducting materials, typically stacked layers of silicon that release electrons when hit by sunlight.

| Advantage | Costs | Weakness |
| --- | --- | --- |
| It is highly modular, making it suitable for both massive utility-scale farms and isolated off-grid mini-grids. It generates the most jobs out of all renewable energy technologies, related to the engineering, procurement and construction (EPC) as well as to its operation and maintenance. | Utility-scale projects have experienced a dramatic 90% cost decline since 2010, saving billions in fossil fuel costs. It is predicted to become the most affordable energy source in all countries by 2030. However, developing countries often face higher upfront financing costs compared to developed nations due to relatively high capital cost. | Its intermittent nature requires robust grid flexibility and energy storage. Large-scale solar requires vast amounts of land and significant water for cleaning, and its supply chain is highly geographically concentrated. It often faces regulatory and financial barriers, highlighting the need for supportive financing and policy measures |

- **Wind Energy:**

Wind turns large blades on a rotor, which is connected to a generator via internal gears or a direct-drive system to produce electricity. Wind farms can be installed onshore or offshore

| Advantage | Costs | Weakness |
| --- | --- | --- |
| Wind power provides extremely low lifecycle carbon emissions and perfectly complements solar energy seasonally, especially offshore wind which blows stronger at night. Wind turbines have carbon payback periods of only a few months to a couple of years, much shorter than their 25-year lifespan and those of solar panels. | Onshore wind is currently the cheapest mature source of renewable energy, following a 70% cost reduction since 2010, while offshore wind costs dropped by 63 %. Geopolitical tensions may increase wind turbine costs by disrupting rare earth mineral supply chains. | Like solar, wind is intermittent. Onshore turbines require large amounts of space and pose collision risks to birds and bats, while offshore turbines suffer from high maintenance costs due to saltwater corrosion and harsh marine environments. |

## Energy Supply Technologies (Cont.)

- **Hydropower**

This mature technology generates electricity by passing flowing water through a turbine, using either large dams with artificial basins or "run-of-river" systems.

| Advantage | Costs | Weakness |
|---|---|---|
| It is excellent for balancing the grid and regulating power frequency, stepping in quickly when variable solar and wind sources fluctuate. It provides important ancillary services, such as working as a source for irrigation and other industrial activity requiring water in its production phases. Small-scale hydro can significantly boost local employment. | Unlike wind and solar, hydropower costs have risen, with levelized costs being 33% higher in 2023 than in 2010. Projects require immense upfront capital and lead times of up to 10 years, vulnerable to supply chain price fluctuations. | Large dams disrupt local ecosystems and can displace communities. Additionally, changing rainfall patterns and droughts due to climate change increasingly threaten its reliability. Its systems are complex engineering projects that often require large infrastructure and may be difficult to build and finance. |

- **Biomass**

Biomass involves burning organic materials—like wood pellets, agricultural residues, or municipal waste—to heat a boiler and spin a steam turbine. It can also be decomposed in pressurized chambers to create biogases.

| Advantage | Costs | Weakness |
|---|---|---|
| It provides stable baseload power and can be co-fired in existing fossil fuel plants to smooth the transition. When paired with Carbon Capture and Storage (BECCS), it can deliver negative emissions. | Feedstock makes up 20% to 50% of total costs, making the price highly variable depending on local resource availability. Because of the high variability of feedstock that can be used in a bioenergy electrical plant, costs can vary substantially and are very site-specific. | Poorly managed biomass can drive deforestation and create "carbon debt." It competes with agricultural land and threatens "food security." Transporting feedstock over long distances also adds indirect carbon emissions, complicating its "carbon-neutral" status. |

## Energy Supply Technologies (Cont.)

- **Geothermal**

Geothermal harnesses heat from beneath the Earth's crust by forcing pressurized steam or hot water to the surface to spin a turbine.

| Advantage | Costs | Weakness |
|---|---|---|
| It provides reliable, continuous 24/7 power suitable for baseload electricity. It can also be co-located with critical mineral extraction operations like lithium. It is highly suitable for producing green hydrogen. | While its overall levelized costs are comparable to offshore wind (USD 0.071/kWh), predicting exploration and drilling costs is notoriously difficult and risky. | Traditionally limited to areas with high tectonic activity, expanding its reach requires technologies like fracking, which can induce earthquakes. It is also difficult to quickly ramp up or down to balance the grid. Its operations can release harmful gases. |

- **Marine Energy (Tidal and Wave)**

This nascent technology harnesses the gravitational rise and falls of tides, or the kinetic motion of ocean waves, to generate power.

| Advantage | Costs | Weakness |
|---|---|---|
| Tidal energy is highly predictable, making it a valuable resource for grid stability and wave energy pairs exceptionally well with offshore wind farms, sharing infrastructure and maintenance costs. | It is currently highly expensive compared to other mature renewables and uncompetitive, though costs are expected to drop with further development, mirroring the cost reduction in solar and wind technologies. | The technology, especially wave energy, is still in the prototype phase. The harsh marine environment causes rapid wear and tear from storms, saltwater corrosion, and biofouling, leading to high maintenance costs. |

## Energy Storage Technologies

- **Battery Storage (Lithium-ion)**

Mostly utilizing lithium-ion technology, these batteries can be deployed at utility scale or for individual mini-grids

| Advantage | Costs | Weakness |
|---|---|---|
| Batteries offer split-second responsiveness, making them perfect for frequency regulation and replacing fossil fuel peaking plants. It is geographically flexible and scalable and can be co-located with power plants. | Costs plummeted 89% since 2010 driven by technological advance. Despite the dramatic price drops, the initial capital required for utility-scale battery storage remains prohibitive in many settings. | Upfront costs can still be a barrier, and the technology faces critical mineral supply chain constraints, degradation over time, and fire hazard risks. |

## Energy Storage Technologies (Cont.)

- **Thermal, geothermal Storage (Concentrated Solar Power)**

CSP uses mirrors to focus sunlight onto a central tower filled with molten salt, which retains heat to boil water and spin a steam turbine long after sunset.

| Advantage | Costs | Weakness |
|---|---|---|
| It offers a longer lifespan than batteries, lower degradation, and the potential for seasonal storage. Decommissioned coal power plants can be repurposed into thermal storage facilities | Levelized costs for Concentrated Solar Power (Thermal energy storage (systems) fell 70% since 2010 (down to USD 0.117/kWh). | The molten salts are corrosive and require backup energy to prevent them from freezing. The technology generally suffers from a lack of commercial maturity |

- **Green Hydrogen**

Using a process called electrolysis, renewable electricity splits water into hydrogen and oxygen. The hydrogen is stored and later burned in fuel cells to generate power.

| Advantage | Costs | Weakness |
|---|---|---|
| It can store renewable electricity for weeks or months, bridging seasonal energy gaps and decarbonizing heavy industry. When used in fuel cells to produce electricity, it produces only water vapor, making it a completely clean fuel during its operation. | It remains highly expensive to produce (USD 4.5 to 12/kg) due to the high cost of electrolyzers and the massive amounts of renewable electricity required. It also has high supply chain costs. | The process suffers from significant energy losses, with electrolyzers operating at only about 66% efficiency. Hydrogen molecules are extremely small and highly flammable and difficult to store. |

- **Pumped Hydro**

This system connects two water basins at different altitudes, using excess power to pump water uphill and releasing it downhill to spin a turbine when electricity is needed.

| Advantage | Costs | Weakness |
|---|---|---|
| It provides long-duration storage and is highly nimble at covering gaps in the grid. Floating solar panels can be installed on the reservoirs, which reduces water evaporation, improves solar panel efficiency through water cooling, and optimally uses the same space. It can provide freshwater storage for irrigation and agriculture. | It is currently the most cost-effective and affordable large-scale energy storage option available. (USD 148/kWh) but the initial installation is highly expensive due to massive infrastructure requirements like dams, tunnels, turbines, and land acquisition. | It is geographically constrained to specific topographies, and it often has a long project lead time. Building reservoirs often involves submerging large tracts of land, displacing local communities. It is also vulnerable to climate-induced droughts. |

## Energy Transmission and Distribution

**Transmission:** Several key technologies improve the efficiency and capacity of electricity transmission networks, however challenges include high costs, data accuracy issues and increased system complexity.

- **Dynamic line ratings (DLR)**

DLR usually consists of a set of sensors, a communication system to relay information back to the control room, and a DLR analytics engine to analyse weather and temperature data.

| Advantages | Challenges |
|---|---|
| Optimise grid capacity by adjusting transmission line ampacity in real time based on weather conditions, increasing efficiency by 10-25%. | Installation costs, data accuracy as well as installation and operation may be potential bottle neck. |

- **Topology optimisation Distribution**

Topology optimisation uses digital twin simulations and AI-driven analytics to manage grid congestion dynamically

| Advantages | Challenges |
|---|---|
| Reduces infrastructure costs and improves reliability | Relies on real-time simulations and adjustments, and its implementation is not straightforward, requiring advanced software tools.<br>Requires an in-depth understanding of the constraints affecting the grid system and will require high levels of coordination. |

## Energy Transmission and Distribution (Cont.)

- **Power flow controllers (PFC)**

| Advantages | Challenges |
|---|---|
| Optimise the distribution of electricity across the network, improving stability and efficiency. | Generally more capital intensive than sensor and software solutions |

- **Advanced Distribution Management Systems (ADMS)**

ADMS use smart equipment like sensors, automated switches and controllers that can detect problems at the distribution level and automatically reroute electricity in order to reduce the amount of people losing power.

| Advantages | Challenges |
|---|---|
| Automatically adjust network configuration and volt age minimise energy losses and optimise system performance.<br>Allow for fewer field dispatches reducing costs, and allow for a better integration of renewables such as distributed PV and wind turbines. | Require extensive modelling and data requirements, and specialised training for personnel such as operators or planners. |

- **Conservation voltage reduction (CVR)**

In CVR, electricity is delivered to end consumers within an acceptable voltage range.

| Advantages | Challenges |
|---|---|
| Energy savings for the consumers and reduced carbon footprint from less fuel burned in power plants | Require advanced equipment and resource-intensive for utilities |

## Energy Transmission and Distribution (Cont.)

- **Voltage/VAR optimisation (VVO)**

Sensors and smart metres track power quality at different points in the feeder, and cut down excessive reactive power flow, increasing the carrying capacity of distribution lines and therefore cutting down on wasted energy and keeping voltages consistent across the network.

| Advantages | Challenges |
|---|---|
| Reduced energy losses, enhanced power quality by regulating voltage and avoiding flickering or dips, and lowering operating costs by postponing necessary upgrades on infrastructure. | A lack of coordination between voltage and VAR control systems can reduce the effectiveness of these tools |

- **Mini-grids**

Mini-grids are small-scale electrical systems that can operate either connected to the main grid, or independently.

| Advantages | Challenges |
|---|---|
| Operate disconnected from the main grid, allowing for electricity generation during major outages.<br>Facilitate and accelerate the adoption of local renewable energy sources. Create economic opportunities for local communities. | Clear regulations must be put in place to protect mini-grid investments. Serving low-income rural customers with variable incomes poses risks to revenue collection. |

## Individual Exercise: Silent Thinking (10-minute)

Based on the gaps/challenges identified in the morning session, what do you need to overcome those gaps/challenges to deploy renewable energy in your country? What kind of CTCN TA projects are needed to promote renewable energy deployment?

Write a chosen technology:

Based on the gaps/challenges identified in the morning session, what national coordination is required to overcome gaps/challenges, and deploy renewable energy?

# Session 3: Learning Energy System Transformative Technologies

Technology, as a means of implementation, can strengthen adaptive management by improving how institutions and countries collect and connect information, anticipate change, make decisions and adjust their responses over time. This session uses selected AI cases to examine how such capabilities are being developed in practice.

At the **institutional level**, the Palantir case illustrates how AI-enabled data integration and analysis can strengthen an organization's ability to work across fragmented information, identify emerging issues and support faster, evidence-informed adjustments in operations and decision-making.

At the **national level**, the Republic of Korea case demonstrates how AI and digital capabilities can be embedded across public institutions and national systems to strengthen foresight, coordination and responsiveness to changing conditions.

Rather than focusing on AI as a stand-alone technology, you will reflect on the **institutional arrangements, data, human capabilities, governance and partnerships required for technology to strengthen adaptive management in practice**. You will consider which elements could be relevant to their own national systems and where TA or partnerships could strengthen your country's capacity to anticipate, learn and adapt over time.

# Session 6: Phase 1 - Project design

A **climate narrative** is the story or framework through which people understand, communicate, and respond to climate change. It consists of 5 elements, namely, the problem, drivers, the gap, barriers, and actions to remove barriers.

| **STEP 1 (PROBLEM)** | **STEP 2 (DRIVERS)** | **STEP 3 (THE GAP)** | **STEP 4 (BARRIERS)** | **STEP 5 (REMOVING BARRIERS)** |
|---|---|---|---|---|
| Identify a key climate change problem related to your table's theme | Define the drivers of the problem<br><br>Separate climate and non-climate drivers<br><br>Connect the drivers to the problem using thread | For the climate-related drivers define **what still needs to be done**<br><br>Connect the missing solutions to the drivers (solutions can address multiple drivers) | For the solutions identified the barriers that prevent climate solutions (**why the gap has not been addressed**) | For each barrier explain how specific activities will address the barriers (**how the project removes barriers**)<br><br>Connect with thread to barriers |

<u>Why It Matters:</u> Narratives shape public opinion, policy, and behavior. The way climate change is discussed can empower people to act. Policymakers, media, educators, and activists use narratives—intentionally or not—to build support for specific actions or policies.

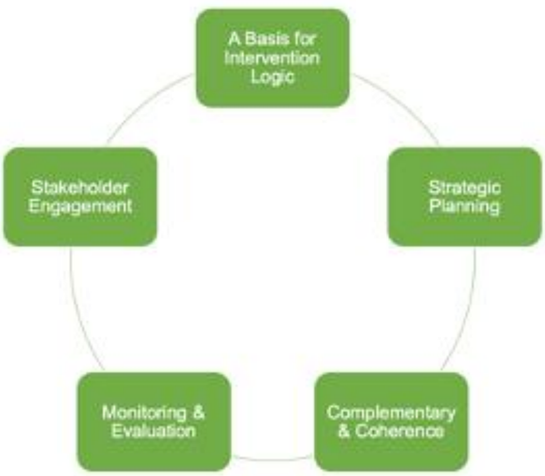
In the context of scaling up a project, a compelling narrative helps **communicate the value and urgency** of your project to investors, donors, government bodies, or community partners.

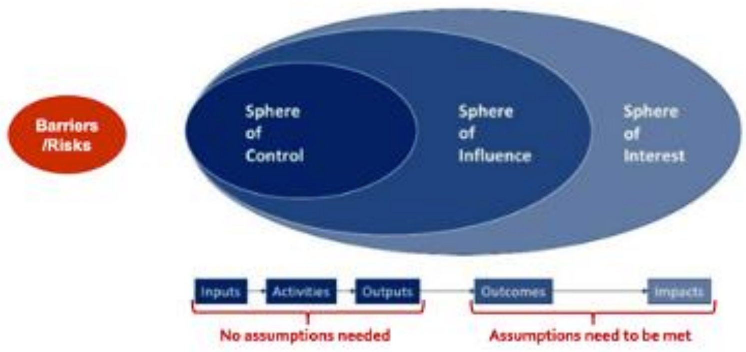
- **Emotional resonance**: Narratives that connect with people's values (e.g. protecting children, ensuring justice, securing livelihoods) are more persuasive than facts alone.
- **Strategic framing**: Whether you are pitching to a tech investor or a grassroots funder, tailoring your narrative (e.g. economic opportunity vs. climate justice) can align your project with their goals.

## Activity A: Brainstorm your climate narrative (30 min.)

| Hint 1 | Hint 2 | Hint 3 |
|---|---|---|
| ‘Lack of communication’ is not a climate problem | ‘Population growth’ is a non-climate driver | ‘No local government policies’ is a barrier |

A **theory of change (ToC)** is a strategic tool that explains how and why a desired change is expected to happen in a specific context. It maps out the logical pathway from inputs to impact, making your project’s assumptions, activities, and outcomes transparent and testable.




Activities are designed to address specific barriers or needs and generate change along a results chain. These changes are categorized into three levels: outputs (direct products), outcomes (short- to medium-term changes), and impacts (long-term change). One important note is that:

❗ Without a clearly defined scope, your ToC becomes vague or untestable.

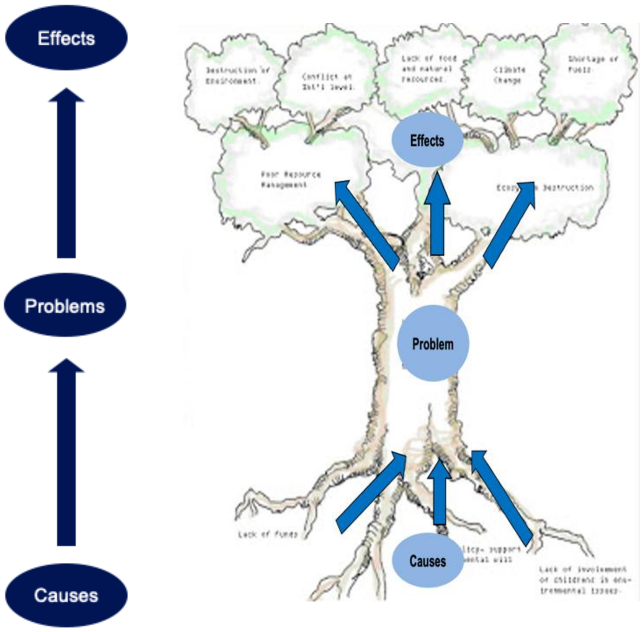
To define the project scope, let's organize the climate narrative elements brainstormed into a problem tree (root causes, core problem, and effects).

**Activity B: Organize climate narrative elements into a problem tree (20 min.)**

**Hint 1**
The drivers and gaps are root causes

**Hint 2**
The barriers and actions are effects (branches and leaves)

**Hint 3**
CTCN TA is 1 year duration, can support up to 250K per project

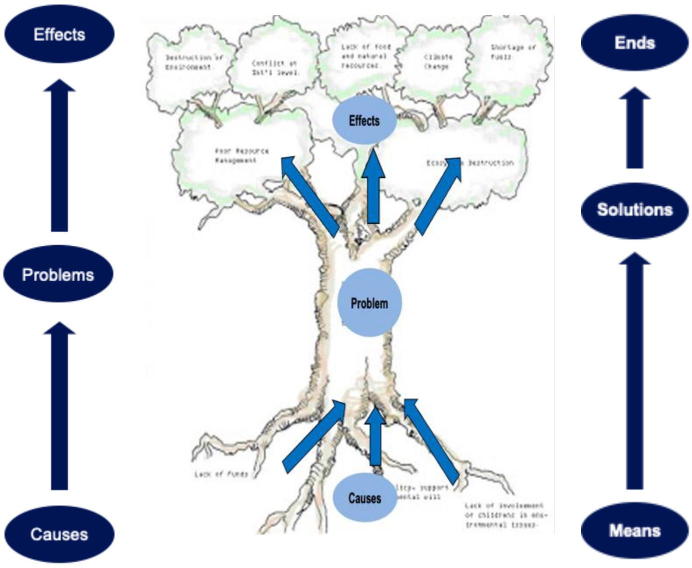



We now have a climate narrative-led project idea in mind. To communicate this idea effectively, it needs to be presented in the format of a concept note. A compelling concept note should include a clear section outlining the planned activities, expected outputs and outcomes, and an assessment of associated risks. In simple terms, this means that investors want to understand

❗ what the project will achieve, what it will deliver, and what risks might come with it. They're looking for a clear picture of the value and impact the project can bring.

To shed a clear value of the project, let's convert the problem tree into a solution tree (means, solutions, and ends).

### Activity C: Converting climate narrative into ToC (20 minutes)




**Hint 1**
Frame the elements positively!

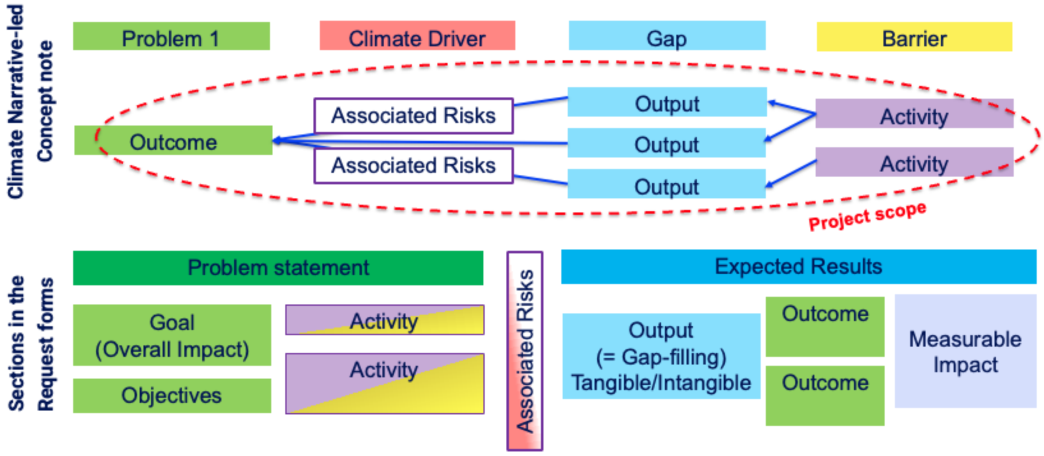
**Hint 2**
The drivers are climate risks, which are -most of the time- outside our control

**Hint 3**
The gap of 'No investment appetite' can be turned into an output of 'Adequate level of investment'

**What are the steps to change the problem tree into a solution**

## Additional information I

The climate-narrative-led concept note can be translated into a Request Form. Follow below steps, rewrite:
Step 1. Outcomes (converted from a 'problem') into **Goals and Objectives**
Step 2. Outputs (converted from 'gaps') into **Expected Results**
Step 3. Climate risks (converted from 'drivers') into **Associated risks**
Step 4. Add activities (converted from 'barriers') into **Problem statement**
Step 5. Reconfirm the **scope of a project** (*Check if activities are speaking to the outcome)




## Notes.

# Voluntary Technology Talk and Network Fair

These guiding sheets are intended to support structured exchanges during the CTC Network Fair and help participants capture key takeaways, level of interest, and potential follow-up opportunities.

Suggested guidance for NDEs:

- Note technologies, expertise, or services relevant to your country priorities.
- Capture ideas for future collaboration, technical assistance, or knowledge exchange.
- Indicate your level of interest to support potential follow-up after the Forum.

## NDE Meeting Notes & Interest Tracking Sheet

| Organization 1 | | Organization 2 | |
|---|---|---|---|
| Organization met | Technologies / Expertise Discussed | Organization met | Technologies / Expertise Discussed |
| Relevant National Priorities or Needs | Potential Follow-Up Opportunity | Relevant National Priorities or Needs | Potential Follow-Up Opportunity |
| Level of Interest<br>*High / Medium / Low* | Follow-Up Needed?<br>*Yes / No* | Level of Interest<br>*High / Medium / Low* | Follow-Up Needed?<br>*Yes / No* |

| Organization 3 | | Organization 4 | |
|---|---|---|---|
| Organization met | Technologies / Expertise Discussed | Organization met | Technologies / Expertise Discussed |
| Relevant National Priorities or Needs | Potential Follow-Up Opportunity | Relevant National Priorities or Needs | Potential Follow-Up Opportunity |
| Level of Interest<br>*High / Medium / Low* | Follow-Up Needed?<br>*Yes / No* | Level of Interest<br>*High / Medium / Low* | Follow-Up Needed?<br>*Yes / No* |

| Organization 5 | | Organization 6 | |
|---|---|---|---|
| Organization met | Technologies / Expertise Discussed | Organization met | Technologies / Expertise Discussed |
| Relevant National Priorities or Needs | Potential Follow-Up Opportunity | Relevant National Priorities or Needs | Potential Follow-Up Opportunity |
| Level of Interest<br><br>*High / Medium / Low* | Follow-Up Needed?<br><br>*Yes / No* | Level of Interest<br><br>*High / Medium / Low* | Follow-Up Needed?<br><br>*Yes / No* |

| Organization 7 | | Organization 8 | |
|---|---|---|---|
| Organization met | Technologies / Expertise Discussed | Organization met | Technologies / Expertise Discussed |
| Relevant National Priorities or Needs | Potential Follow-Up Opportunity | Relevant National Priorities or Needs | Potential Follow-Up Opportunity |
| Level of Interest<br>*High / Medium / Low* | Follow-Up Needed?<br>*Yes / No* | Level of Interest<br>*High / Medium / Low* | Follow-Up Needed?<br>*Yes / No* |

# Post-programme: Aligning with 2025 contents Phase 2 - Project implementation

During the 2025 SIDS programme[3], you learned about segmentation and stakeholder orientation concepts. These concepts are particularly important because overall quality of a project outputs depends on who you engage in delivering what activities planned for the project.

Rather than treating the system as one homogeneous target group, stakeholders are segmented according to their role in enabling change:

- **Micro - Households and end users:** Outputs should respond to behaviours, incentives, capabilities, accessibility and everyday decision-making.
- **Meso - Academia and knowledge institutions:** Outputs should strengthen evidence, research, validation, learning and the capacity to adapt solutions over time.
- **Exo - Businesses and technology providers:** Outputs should address technological feasibility, business models, implementation capacity, supply chains and scalability.
- **Macro - Policymakers and institutions:** Outputs should support regulation, standards, financing, coordination and the policy conditions needed for sustained implementation.

The key implication is that **the same project should not produce the same type of output for every stakeholder**. A technically sound solution may still fail if households cannot adopt it, businesses cannot deliver it, researchers cannot generate the evidence needed to improve it, or policymakers cannot create an enabling environment.

Therefore, applying segmentation during implementation improves the **quality and usability of project outputs** by asking: *Who needs to use this output? What decision or behaviour should it support? What barriers and incentives matter to that stakeholder? And how does their role connect with other parts of the system?*

The behavioural-technological-policy arrow in the figure reflects this progression. **System transformation requires these interventions to reinforce one another**, rather than relying on technology alone. In this sense, stakeholder orientation shifts project implementation from producing technically complete deliverables to producing outputs that are **fit for use, connected across the system, and more likely to endure beyond the project period**.

At your own pace, complete below two activities - D and E.

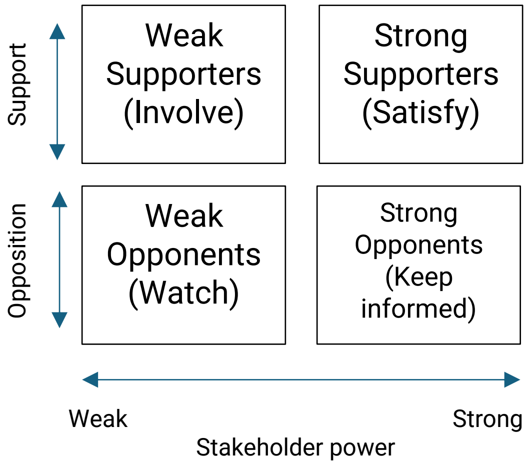
[3] https://www.ctc-n.org/whats-happening/events/2025-sids-joint-programme-nde-forum-and-capacity-building-co-creation-system

## Activity D: Identify segments for the project (45 min.)

**Step 1. Go deeper**
**Who aren't we talking to, but should be?**

**Step 2. Sort out responsibilities**
**Who is responsible for leading Actions X, Y, Z?**

**Step 3. Consider**
**Who are the supporters and opponents?**




**Notes.**

## Activity E: Review the Response Plan through the Lens of Stakeholder Segments and Their Orientations (30 min.)

### Example 1. W-E-F Nexus

**CTCN Technical Assistance**
Response Plan - Terms of Reference
Version: 05/2024

| **Title** | *Capacity building on flood monitoring experts for effective management of Early Warning System in country X* |
|---|---|

**11. Main in-country stakeholders in implementation of the technical assistance activities:**

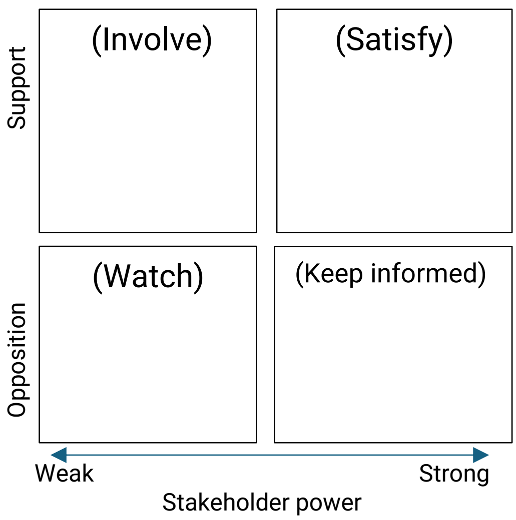
*Using the table below, please list and describe the role of in-country stakeholders, participants and beneficiaries who will be involved in or directly consulted during implementation of the assistance.*

| In country stakeholder | Role in implementation of the technical assistance |
|---|---|
| Ministry of Environment and Climate | NDE of country X - Key liaison for CTCN support and coordination. Lead government body overseeing the project. |
| Ministry of Agriculture and Waterways | Lead agency for implementing activities, policy revisions, capacity building, and data management enhancements. |
| Other related ministries | Collaborate on policy revisions, provide expertise, and ensure sector integration. |
| Farmer Associations/Clusters/Cooperatives; | Participate in training, study visits, and adoption of climate-smart practices; provide feedback and traditional knowledge. |
| Local Farmers and Community Groups | Beneficiaries of capacity-building activities |
| Agroprocessors; Exporters | Collaborate on market linkages and value chain development for climate-resilient crops. |
| Civil Societies and NGOs | Support community engagement, awareness-raising, and resource mobilization. |
| Relevant private sectors | Data provider. |
| Financial Institutions; Donors; Bilateral Funders | Provide funding support, resources, and sustainability planning. |

**Step 1. Go deeper**
**Who aren't we talking to, but should be?**

**Step 2. Sort out responsibilities**
**Who is responsible for leading Actions X, Y, Z?**

**Step 3. Consider**
**Who are the supporters and opponents? Who are the key stakeholders we need to engage most actively to ensure the success of this project?**



## Example 2. Building and Infrastructure



| **Title** | *Enhancing the acceptance of green building codes in country Y* |
|---|---|

**11. Main in-country stakeholders in implementation of the technical assistance activities:**

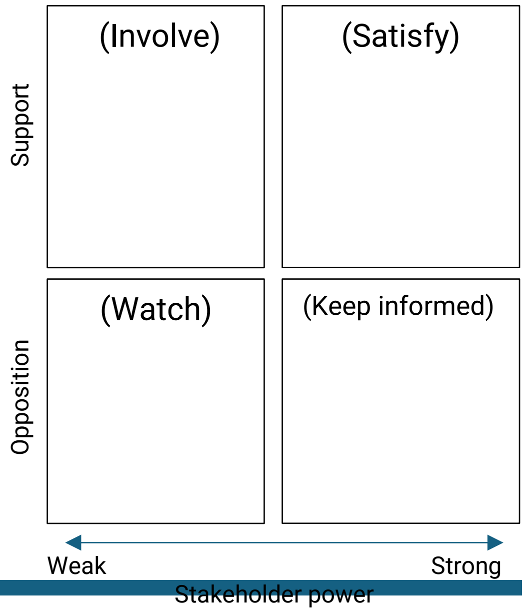
*Using the table below, please list and describe the role of in-country stakeholders, participants and beneficiaries who will be involved in or directly consulted during implementation of the assistance.*

| **In country stakeholder** | **Role in implementation of the technical assistance** |
|---|---|
| Ministry of Environment and Climate | NDE of country Y - Key liaison for CTCN support and coordination. Lead government body overseeing the project. |
| Ministry of Energy / Ministry of Housing | Lead agency for implementing activities, policy distribution, capacity building, and data collection enhancements. |
| Green building council | Data and research input to enhance the quality of green building codes manual and guidelines. |
| Institute of Architects | Participate in training, study visits; provide feedback and existing knowledge. |
| District Councils | Beneficiaries of capacity-building activities. |
| Local newspaper | Public relation on building codes. |
| Civil Societies and NGOs | Support community engagement, awareness-raising, and resource mobilization. |
| Relevant private sectors | Data provider. |
| Financial Institutions; Donors; Bilateral Funders | Provide funding support, resources, and sustainability planning. |

**Step 1. Go deeper**
**Who aren't we talking to, but should be?**

**Step 2. Sort out responsibilities**
**Who is responsible for leading Actions X, Y, Z?**

**Step 3. Consider**
**Who are the supporters and opponents? Who are the key stakeholders we need to engage most actively to ensure the success of this project?**



# Phase 3 - Project Follow-up

**Recap:** Social Return on Investment (SROI) is a framework for measuring and accounting for the broader social, environmental, and economic value created by a project, organization, or initiative—not just the financial return.

❗ SROI tells you how much **social value** is created for every unit of investment. For example, an SROI ratio of 3:1 means that for every $1 invested, $3 of social value is generated.

**Consideration Points in Applying SROI**
SROI can be applied,

- To estimate the projected value of expected outputs;
- To evaluate the actual value of completed outputs.

Regardless of when it is used, SROI serves as a tool to communicate the broader social value generated by a project.

To ensure transparency and accountability, it is essential to clearly **disclose key attributions**—that is, how much of the impact can reasonably be credited to the intervention—as well as any **associated risks**. These risks include factors such as deadweight (what would have happened anyway), displacement (whether benefits come at the expense of others), and drop-off (how impact diminishes over time). Addressing these considerations helps stakeholders understand the scope and limitations of the reported impact, thereby strengthening the credibility of the SROI findings.

At your own pace, complete below two activities - F and G.

Check ‘Additional Information II’ which provides guidance on where and how to apply these concepts to enhance the overall quality of TA request forms.

## Activity F: Understanding SROI (45 min.)

| Intended Change | Impact Sought | Indicators of Cost |
|---|---|---|
| Descriptive Statement | Health, society, or planet issue | Cost to society |
| Write a descriptive sentence here: **what is it that you are seeking to change**? | Name the broader issue here: **what is the environmental issue or concern?** | Understand the total cost of the **Impact.**<br>The cost of **the issue** was estimated as:<br>[ A ]<br>(Name your source of information)<br><br>Understand the nature of this cost<br>**Ask: What does this cost cover?**<br>(is it the cost for the whole country? A province? A town?)<br>[ ]<br><br>Create a unit cost for this issue<br>**Ask: How many units does this cost cover?**<br>(how many people, or square kilometres?)<br>[ B ]<br><br>Divide the total cost by the number of units (**A ÷ B**)<br>(This is the **unit cost**)<br>[ **$** C ] |

| Evidence-based Assumption | Estimated Value |
| --- | --- |
| Evidence of relationship between impact and outcome | Estimate the value for your area of action/influence |
| **USE EVIDENCE (META-ANALYSES)**<br><br>Determine:<br>The amount that the impact/issue changes because of the outcome change<br><br>% **D**<br><br>**Ask:**<br>What percentage reduction in my impact issue will occur when there is a change in outcome? | **CALCULATE**<br><br>The number of units in your program<br><br>By **unit cost**<br><br>$ **C**<br><br>By degree of **potential impact change**<br><br>% **D**<br><br>= **monetised value of your program**<br><br>$ **E** |

| Input | Return | SROI |
|---|---|---|
| Input | Return | SROI |
| **The amount of money invested in your program**<br><br>$ | **The amount of value realised**<br>(the monetised value of your program)<br><br>**$** **E** | **The social return on investment**<br><br>**1:** |

## Activity G: Draft email template using SROI, for the use of NDEs team (30 min.)

# Value estimation

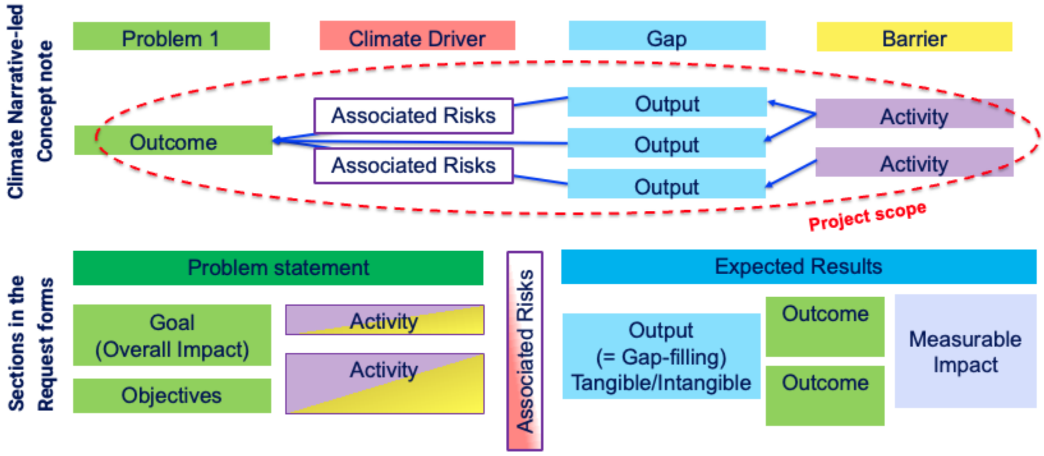
| Intended Change | Outcome | Indicators | Calculated Value | Assumption | Calculation | Potential Value |
|---|---|---|---|---|---|---|
| **Increase recovery of e-waste** | Diversion of e-waste from landfill | [1] In Australia, A $430 million worth of recoverable materials are sent to landfill<br>B<br>[2] There are 27,400,013 people living in AUS: (430 M/27.4 M)<br>Total = $15.70 of lost value per person | [3] Number of people in program area: C 407,859<br>**407,859 * $15.70 is** $6,403,386 per year in lost recovery value | [4] Program improves recovery by D 10% | Yearly costs E of: $6,403,386 by improvement of 10% | $640,338 |

**Reference**

A = 1. Size of issue: https://www.cleanup.org.au/e-waste
B = 2. Population of AUS: https://www.abs.gov.au/statistics/people/population
C = 3. Population of Sunshine Coast Regional Council: https://www.sunshinecoast.qld.gov.au/experience-sunshine-coast/statistics-and-maps/population-growth (Number of units in program)
D = 4. Program effect: https://www.mdpi.com/2071-1050/13/13/7272

## Additional information II

The climate-narrative-led concept note can be translated into a Request Form. Follow below steps, rewrite:
Step 1. Outcomes (converted from a 'problem') into **Goals and Objectives**
Step 2. Outputs (converted from 'gaps') into **Expected Results**
Step 3. Climate risks (converted from 'drivers') into **Associated risks**
Step 4. Add activities (converted from 'barriers') into **Problem statement**
Step 5. Reconfirm the **scope of a project** (*Check if activities are speaking to the outcome)
**Step 6. Use SROI to strengthen the 'Measurable Impact' section under Expected Results.**




### Notes.

For further clarification on introduced concepts and activities, please direct your questions to Jeawon.kim@un.org.