

Data-to-Deal Series

D2D Component 2

CAPACITY: DEVELOPING INSTITUTIONAL CAPACITY – A BEST PRACTICE BRIEF

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SUMMARY

This best practice brief presents Component 2 of the Data-to-Deal (D2D) framework which addresses Capacity. This component focuses on strengthening national capacity to conduct robust and inclusive planning processes for energy and transport that unlock climate-aligned investment in low- and middle-income countries (LMICs). Many countries face persistent gaps in technical expertise, institutional coordination, and long-term continuity for planning. Component 2 comprises three sub-components: (i) Assessing needs for capacity strengthening, (ii) Implementing targeted capacity development programmes, and (iii) Sustaining the gains in

institutional capacity. The brief recommends demand-driven, iterative approaches that embed capacity within national institutions, prioritise trust-building and knowledge exchange across national institutions, and align closely with country-specific needs. Drawing on available diagnostic tools and recent country experiences, the brief outlines how ministries and planning agencies can select appropriate modelling toolkits, adopt standardised data practices, and integrate training into institutional structures. By operationalising this approach, countries can create a strong institutional foundation from which to advance the technical tasks associated with investment planning and finance.

KEY RECOMMENDATIONS

1. Capacity development should build on existing local skills and national priorities.
2. A two-tier national capacity ecosystem should be established to balance breadth and depth of expertise.
3. Capacity development programmes should systematically address data and modelling needs.
4. Capacity development should be designed for long-term sustainability and institutional memory.
5. A Monitoring, Evaluation and Learning (MEL) framework should be co-created to sustain capacity gains.

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This document forms part of a series of guidance notes, each focused on one D2D component. The series provides practical advice to governments and their partners on how to integrate D2D into national planning and financing processes.

This series (available [here](#)) is co-authored by leading international organisations, along with contributors from LMIC countries, to reflect a collective perspective on how best to leverage investment for climate-aligned energy and transport transitions.

The primary audience for these briefs includes energy and transport policymakers in LMICs at national and subnational levels, as well as development partners and international organisations that provide technical and financial support. The guidance applies to both mitigation and adaptation priorities, while recognising that the balance between them will differ across country contexts.



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1. Introduction

Low- and middle-income countries (LMICs) are working to transform major economic sectors to advance development priorities, meet climate commitments, and strengthen infrastructure resilience. Achieving these objectives will require accelerated socio-economic change across energy, transport, and other high-emitting sectors. Most countries, however, cannot achieve these transformations without mobilising much higher levels of finance [1].

The Data-to-Deal (D2D) framework, developed by over 75 global experts, provides a structured, evidence-based approach to help countries close this gap [1]. The framework consists of seven interlinked components – Politics, Capacity, Vision, Modelling, Engagement, Policy, and Finance – that move from political commitment

and institutional readiness through to financing. These components are designed to be adapted to national contexts, rather than be followed in strict sequence, and they are underpinned by sustained stakeholder engagement.

This brief focuses on **Component 2: Capacity – Developing Institutional Capacity**, which involves establishing institutional and technical capacity, including strengthening in-country human and technical resources to gather science-based evidence in support of finance mobilisation [1]. Maintaining such capacity in-country reduces dependency on external consultants, increases national agency and ownership, and ensures that transition plans are soundly informed by local knowledge. This brief sets out key principles and best practices for increasing institutional capacity,

Table 1: Interactions between Component 2 and other Components of the D2D Framework

D2D Component	Link to Component 2: Capacity
1. Politics: Securing political support	Component 1 establishes the political mandate for institutional capacity strengthening by identifying priority institutions, securing cross-ministerial commitment, and allocating resources for capacity development. Political mandates and buy-in are preconditions for effective institutional strengthening, while enhanced institutional capability in turn reinforces national ownership and continuity across planning cycles.
3. Vision: Aligning the development vision	Component 3 depends on strong institutional capacity to translate high-level visions into implementable transition pathways. Cross-sectoral teams trained under Component 2 can co-create shared national visions, aligning energy and transport priorities with development goals and ensuring that technical, social, and financial dimensions of the transition are coherently reflected.
4. Modelling: Undertaking deliberative modelling	Component 4 relies on the analytical and technical capacity developed under Component 2 to undertake robust, data-driven modelling in-country. By developing core modelling teams and embedding skills in domestic institutions, countries can manage data collection, scenario development, and versioning internally, ensuring that modelling processes are transparent, iterative, and nationally owned.
5. Engagement: Engaging with stakeholders	Component 5 builds on the institutional and facilitation skills developed under Component 2 to conduct inclusive, participatory planning. Training in communication and stakeholder engagement enables institutions to lead structured consultations, communicate modelling results clearly, and integrate diverse perspectives into planning and investment processes.
6. Policy: Enhancing the enabling environment	Component 6 benefits from the coordination and analytical capacity developed under Component 2, which equips institutions to translate planning outputs into actionable policy reforms. Enhanced institutional capacity enables government officials to assess policy linkages, prepare evidence-based policy briefs, and coordinate across ministries to implement reforms that support investment mobilisation.
7. Finance: Developing finance strategies	Component 7 depends on the financial literacy and institutional coordination fostered by Component 2 to translate investment plans into bankable project pipelines. Training programmes under Component 2 should therefore encompass financial and economic analysis skills, enabling collaboration between planning and finance ministries to ensure investment-readiness and effective pipeline development.

and it concludes with practical recommendations for designing and implementing engagement that is inclusive, strategic, and finance-focused.

1.1. Inter-linkages

Within the D2D framework, Component 2: Capacity links to the other components as outlined in **Table 1**.

1.2. Value proposition

Ensuring that the central institutional players in the planning process are adequately equipped with technical, financial, and facilitation skills provides the foundation for rigorous and effective planning. The key value propositions of successful preparation towards consolidating those skills include:

- **Increased country ownership and agency.**
National institutions lead the technical and financial investment planning process, ensuring that transition plans are fully understood, owned, and actionable by those responsible for implementation.
- **Improved sustainability and continuity.**
Transition plans frequently need to be updated to reflect evolving political priorities and market conditions. Hence anchoring technical capacity in-country ensures that these plans do not immediately become outdated and irrelevant, but can be continuously revised by local actors.
- **Improved coordination and alignment.**
Ensuring adequate institutional capacity across a range of relevant actors in-country will provide the basis for meaningful dialogue and consensus-building around planning goals, which in turn facilitates coordination and alignment of policies and other implementation measures.

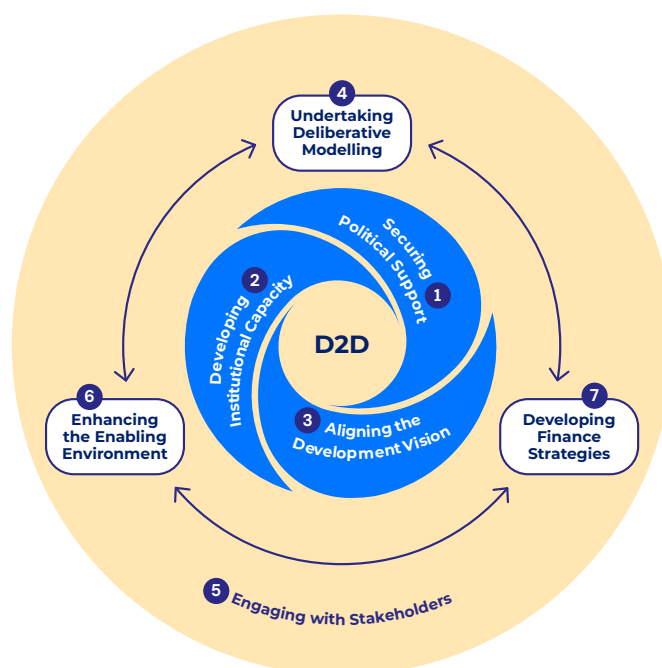
1.3. Sub-components

Preparation consists of three sub-components that collectively unpack the challenges of building institutional capacity:

1. **Assessing needs for capacity strengthening.**
From the outset, it is important to begin with a detailed understanding of the current situation, leading to an identification of which capacities need strengthening and where.
2. **Implementing targeted capacity development programmes.** This involves both the design and delivery of specific interventions for capacity strengthening, with a focus on constructing domestic knowledge infrastructure and establishing collaboration mechanisms.
3. **Sustaining the gains in institutional capacity.**
Since capacity strengthening is not a static one-off exercise, it is important to create an environment where capacity can be continuously developed, including careful monitoring and evaluation.

The rest of this brief presents a detailed analysis of these three sub-components, followed by targeted recommendations to support policymakers in designing and implementing effective national transition plans that lead to strategic finance mobilisation. Throughout, the brief draws on concise case studies to illustrate practical applications, common pitfalls, and replicable solutions in diverse LMIC contexts.

Figure 1. The D2D framework visualised.



2. Best Practice Guidelines

Capacity exists, and needs to be maintained, at the level of individuals, institutions, and the enabling environment. This brief addresses especially the first two of these levels. Developing, strengthening, and sharing capacity for institutional, policy, and financial readiness is a long-term process, with the creation of relationships and trust at its core. Development partners are moving from talking about *capacity building* towards *capacity development* or *strengthening*, and *capacity and knowledge sharing* (see **Table 2** for full definitions). This shift acknowledges the inherent expertise and agency of domestic actors, foregrounding their knowledge, regional customs, and understanding of domestic challenges. This new framing, which informs this brief, emphasises a departure from a narrow, risk-focused approach to one that reshapes power dynamics, centres on local priorities, and fosters two-way capacity exchange (OECD, 2024). An important consequence is the focus on supporting knowledge ecosystems that can continue beyond the lifespan of the initial training programme.

Table 2: Definitions. Elaborated from [2, 3].

Term	Interpretation
Capacity building	Perceived as a one-way process, where one set of actors builds the capacity for others, acting on the assumption that there is no existing capacity.
Capacity development / strengthening	Highlights the presence of a long-term and continuous process that recognises existing capacity, expertise, and agency.
Capacity sharing	While including elements of all the previous definitions, it also highlights the diversity of expertise, need for mutual learning, and collaboration on equal grounds.

Development, strengthening, and sharing can be used depending on the type of capacity, on the context and on the needs being addressed. We mainly choose to use 'development' in this brief, as

it stresses the long-term nature of the process. Below we divide the recommendations by sub-components (needs assessment, programme implementation, and sustaining capacity) and offer examples of applications of practices in existing efforts. All the sub-components are continuous and iterative and not meant to be considered as one-off activities.

2.1. Assessing needs for capacity strengthening

The capacity development and strengthening process stems from capacity gaps and needs expressed by the requesting institutions. While the broad needs may be clear, the specific requirements that the capacity development process must address are not always immediately evident. This is especially true when they arise from deficiencies in the coordination between different institutions involved in national planning or when the potential of data-driven analyses is unknown. By examining organisational operations alongside the views of personnel and other stakeholders, diagnostic methods can help avoid systemic barriers to the success of the capacity development programme [4]. This diagnostic function complements the political economy analysis in Component 1: Politics and feeds into the early visioning work of Component 3: Vision, ensuring capacity interventions are targeted to real political and technical needs., ensuring capacity interventions are targeted to real political and technical needs.

For this reason, it is important to begin any capacity development engagement with an intentional needs assessment (see **Box 1** for a case study example). **Table 3** outlines the key factors for consideration in such an assessment, while **Table 5** in the **Appendix** provides an overview of available resources that can provide guidance on capacity needs assessments.

BOX 1. The African Continental Power Systems Master Plan (CMP)

Under African Union leadership via AUDA-NEPAD and regional power pools, a three-year project developed the African Continental Power Systems Master Plan (CMP), focusing on electricity interconnections and market integration, aligned with Africa-EU Green Energy Initiative goals and SDG7 [5, 6]. The EU was the lead co-ordinator, while the IAEA and IRENA provided modelling support. A core team of African energy modellers from AUDA-NEPAD, African Power Pools, and the African Development Bank led analytical activities. Much of the success of the programme, which trained over 20 African energy experts in power generation planning and transmission analysis and became an Agenda 2063 flagship initiative, rests on the fact that it is anchored in the African Union's priorities for infrastructure development and benefits from strong political commitment. See [AUDA-NEPAD](#) for more information [5].

2.2. Implementing targeted capacity development programmes

Once institutional needs are understood, tailored programmes can be designed to address them. Successful capacity development requires embedding expertise across the national

knowledge ecosystem, strengthening a core technical team, and ensuring that programme design is inclusive, well-resourced, and sustained over time. Such programmes should emphasise collaborative learning and be adaptable to evolving political and technical contexts. This sub-component comprises four key elements:

- **Embedding capacity across domestic institutions to avoid concentration in a single agency.**
- **Developing a core modelling team through progressive training.**
- **Securing flexible and sustained funding arrangements.**
- **Designing programmes inclusively, with attention to language, methods, and institutional context.**

2.2.1. Embedding Capacity Across Institutions

Embedding capacity across institutions creates resilience and broad ownership. The ultimate design objective is to ensure that capacity is embedded, maintained, and retained across the domestic knowledge ecosystem and does not simply remain in a single institution. This diversity allows knowledge outputs to be iterated, validated, and verified by other stakeholders, enhancing

Table 3: Key factors to consider when carrying out the capacity needs assessment.

Key Factors	Description
I. Who carries out the assessment	The needs assessment should be carried out as far as possible with a broad group of relevant institutions, among those identified by the political economy analysis (Component 1: Politics), promoting gender balance and inclusion of marginalised groups. It should identify needs at the individual, institutional, and enabling environment level. Stakeholder consultations can then take different forms. For example, they can be one-to-one discussions with key stakeholders or occur through consultation workshops involving a broad spectrum of actors.
II. Who leads the assessment	This process should be sensitive to the power dynamics and biases that exist within the “donor” and “recipient” dynamic, and the barriers that such interactions can pose to identifying real domestic need. As such, stakeholder engagement should be led by domestic experts, with an extensive understanding of the political economy of the energy and transport sector. Local academia can be a natural fit for this role, as it sits at the core of the national knowledge ecosystem and can create, update, and sustain capacity in the long term (and beyond government cycles).
III. Mapping of Analytical Tools	From these consultations, a mapping of existing analytical tools for technical, policy, and financial analysis and the current capacity to use them should emerge. The choice and use of tools should not be made <i>a priori</i> , but serve the intended function and fill a genuine gap. Notably in developing countries, when unfamiliar with new tools, planning and policy agencies often prefer those they already use or have recently been trained on. It is therefore crucial to provide a brief introductory overview on the scope of the tools available before the needs assessment.
IV. Mapping of Previous Efforts	Previous or existing initiatives in energy and transport planning should be identified and considered, so that this previous effort can be built on, co-adapted and developed further. Those with a vested interest in the knowledge products being offered should not lead the initial needs assessment.

both technical solidity and political support. It is to be expected that the initial political process (under Component 1: Politics) identifies a core of cross-sectoral and cross-jurisdictional institutions, represented through the Governing Coordination Function (GCF), the Political Steering Committee – Special Interest Group (PSC-SIG), and the Technical Delivery Group – Special Interest Group (TDG-SIG). Together these provide the structure for embedding and sustaining capacity. As capacity strengthens, the TDG-SIG can anchor technical training and data governance, while the GCF and PSC-SIG provide strategic direction and continuity of resources. (see **Box 2** for a case study example).

BOX 2. Energy Access Explorer (EAE) Working Group in Ethiopia

The Energy Access Explorer (EAE) Working Group in Ethiopia is hosted by the Energy Information Administration and Modelling Desk in the Ministry of Water and Energy, whereby EAE serves as the first digital public good in energy. This collaborative platform unites government agencies, utilities, development partners, and researchers to address energy planning data gaps. The Working Group co-developed the EAE Data Wishlist through stakeholder consultations, which led to the creation of a comprehensive list of indicators essential for geospatial energy planning, that evolved into a dynamic data tracking matrix. With quarterly meetings included in annual work plans, the group sustains engagement through data exchange, use case discussions, and awareness activities, fostering stakeholder trust through clear data ownership roles. See [WRI](#) for more information [7].

The process of skills acquisition for this core team will entail initial participation in broader capacity development activities for all relevant institutional players, followed by more in-depth and intensive capacity sharing and supplementary technical training to take the skills to a deeper level, leading to a final phase of learning-by-doing where the core team engages in the delivery of the planning exercise (see Component 4: Modelling). Levels of external support depend on the initial capacity for local institutions to lead the trainings. These external trainings will gradually decline as full self-sufficiency is achieved. A concrete example is provided below.

BOX 3. Lao PDR National Green Hydrogen and Ammonia Roadmap – Climate Compatible Growth (CCG) Lao PDR Country Partnership

In early 2025, the Ministry of Energy and Mines endorsed the National Green Hydrogen and Ammonia Roadmap, a key milestone achieved through sustained collaboration under the Lao PDR–CCG partnership. Its development was informed by a multi-sectoral working group comprising government officials, academic researchers, and private sector representatives. Through this initiative, Lao experts co-developed open-source models, established a core modelling team at the National University of Laos (NUOL), and successfully integrated modelling tools into national decision-making processes. The roadmap stands as a policy instrument derived from a long-term capacity development process, demonstrating the application of modelling outputs to investment mobilisation. See [Ministry of Energy and Mines](#) for more information [8].

2.2.2. Developing Core Modelling Teams

Core modelling teams provide the deep expertise needed for national planning. Within this broader institutional landscape, it will usually be necessary to create a core modelling team, which will be more directly involved in the delivery of the technical, financial, and policy analysis and will consequently require more intensive skills strengthening (see **Box 3** for a case study example).

2.2.3. Ensuring Sustained Funding

Sustained and flexible funding prevents fragmented, short-term efforts. The delivery of a capacity development programme is often constrained by the structure and duration of the funding that supports it. Short-term funding and funding with a rigid structure (mandating approaches, types of tools, types of stakeholders, numbers, and nature of engagements, etc.) need to be avoided, as these tend

to result in uncoordinated action, one-off workshops and a lack of relevance, ownership, and uptake. Such funding may also undermine the success of the programme, particularly if the receiving institutions undergo significant restructuring during project implementation. Therefore, it is important that the funding structures and objectives of the programme are adaptable and flexible to domestic disruptions. Importantly, funders must be able and willing to collaborate with pre-existing development programmes to

avoid duplicating efforts and wasting resources, including domestic resources.

2.2.4 Designing Effective Programmes
Careful programme design ensures relevance, inclusivity, and long-term impact. When designing the programme, several key aspects must be considered (see **Table 4**). Importantly, all aspects must be co-created with domestic experts and the target audiences for the tools and knowledge products.

Table 4: Key aspects in capacity-development programme design.

Key Aspects	Description
1. Target audience of training	Identifying suitable institutions for capacity development is key; for example, choosing individuals and institutions that have the relevant expertise and are resilient to political change can be crucial for longevity. The institutions should interact and build relationships with domestic stakeholders and have the infrastructure for, and interest in, maintaining capacity in the long term. It is also important to develop capacity outside of government institutions, notably in the university sector, which is less susceptible to turnover, can provide technical support to government, and offers the opportunity to integrate skills into tertiary education curricula for longer-term impacts.
2. Mode of training	In settings where connectivity or digital literacy are limited, as well as contexts with stronger in-person learning cultures, online training programmes should be avoided. This also favours relationship building and creates trust, which is an important objective of this process. Online parts of trainings may be considered for specific parts of programmes already rolled out and that are delivered in this format as standard. The resourcing of hardware and software infrastructure and translation should also be budgeted.
3. Agents of programme delivery	Unidirectional trainings from donor-based experts to domestic experts are unlikely to be sensitive to both technical and sociopolitical contexts. Instead, training programmes should aim for an incremental handover of training leadership, whereby the final stages of training are led by domestic “champions” who have full competency and can provide peer-to-peer support, or at least aim for suitable experts from within the same region.
4. Written applications	It may be effective for stakeholders wishing to participate in the capacity development programme to submit a written application, identifying the areas requiring updated capacity, the intended policy applications, relevant planning activities, and the number of individuals to be trained. This approach enhances stakeholder commitment throughout the programme and legitimises the cooperation process. This is vital for securing the support of state agencies, even amid potential changes in government administration.
5. Programme length	There needs to be sufficient time allocated for iterating programme design with stakeholders to build collective understanding, ensure alignment with the stakeholders’ visions, and maintain high-level commitment. The programme’s timing should fit the policy cycle(s) it is intended to support, and consideration must be given to how to respond to immediate requests.
6. Local languages	Translating training materials and model interfaces and offering capacity development activities in domestic languages increases reach, fosters open and inclusive dialogue between national stakeholders, and ultimately increases ownership.
7. Methodology selection	Approaches and, if needed, tools should be chosen based on needs and gaps identified. Modelling is often key, but not a necessity. It is therefore important that domestic stakeholders and analysts steer a collegial discussion on whether modelling and specific tools are needed. Existing relevant data and model infrastructure needs to be mapped, and its use prioritised, and the modelling work should be grounded in local data.
8. Modelling tool selection	If modelling is needed, there is often tension between using complex tools, which may not be usable for many stakeholders, and the need to capture the context-specific elements that influence decisions. These competing considerations need to be balanced throughout the programme, in different ways depending on the actors. When high levels of detail are needed, modelling can become computationally intensive and LMICs often lack the necessary resources. Therefore, the programme must budget resources for IT infrastructure, hardware, software, and connectivity support.
9. Software selection	If modelling-based tools are needed, open and free tools should be prioritised for developing or emerging economies where costs need to be kept low. However, there must be objective consideration of the pros and cons of commercial and non-commercial tools in the specific context and based on existing technical and human capacity.

Key Aspects	Description
10. Data foundations	Irrespective of the methodological approach, access to high quality and timely data is a critical foundation for capacity development activities linked to science-based planning. Important issues to address are standardised data collection, organisation, management, and versioning to facilitate data checking and improve data quality. Adequate resources need to be dedicated to the data foundation, including the mapping of existing data governance frameworks and training on data management.
11. Transparency	Open-access data and open-source tools allow for transparency and facilitate a critical link between government institutions and academia. However, some contexts may require access to proprietary datasets. The programme must be sensitive to this need and protect such data, while devising approaches to ensure the confidentiality does not hinder knowledge sharing.
12. Regional collaboration	Regional training programmes, although resource-intensive, encourage greater peer learning and could benefit countries with limited capacity, strengthening regional collaboration and peer-to-peer knowledge exchange. They promote ownership, by decentralising capacity development programmes that are organised on a global scale and supporting regional knowledge sharing to complement domestic capacity.

2.3. Sustaining the gains in institutional capacity

Capacity development is not a one-off event but an iterative process that must adapt to changing institutional and political realities. Sustaining gains over the long term requires embedding feedback systems, fostering peer-to-peer learning, and securing a pipeline of skilled professionals who can refresh and expand capacity over time. Budget continuity and expert networks are also essential to prevent knowledge erosion and ensure institutional memory. This sub-component comprises four elements:

- **Establishing Monitoring, Evaluation, and Learning (MEL) systems.**
- **Training the trainers to expand expertise within institutions.**
- **Developing a self-sustained community of skilled professionals through curricula.**
- **Ensuring financial continuity and developing expert networks.**

2.3.1. Establishing Monitoring, Evaluation and Learning (MEL) Systems

Monitoring, Evaluation, and Learning (MEL) systems sustain capacity gains by tracking progress and adapting to change. A MEL framework should be implemented and resourced from the outset to ensure that the capacity development addresses real gaps and is

maintained beyond the original intervention with sustained high-level support. Continuous feedback mechanisms can be built into each phase of programme implementation to systematically track progress, assess effectiveness, and ensure alignment with evolving stakeholder needs and policy context. Indicators to be monitored should be defined collaboratively with national stakeholders and should assess both learning outcomes, policy relevance, building trust and ownership in the working groups, and the development of the enabling environment. Monitoring should also encompass validity, that is, an assessment of the quality of teaching and learning, and the presence of barriers or enablers to the continuous development of teachers/trainers. Where capacity development has resulted in the adoption of modelling tools for planning, the extent to which the model infrastructure can support and maintain the capacity over time needs to be monitored. It is therefore important that arrangements are in place for continuous improvement and update of these tools, so that they remain fit for purpose over time (see **Box 4** for a case study example). This can be done by formalising national modelling units within the landscape of government institutions. Universities are also well placed to house centres of modelling excellence.

BOX 4. Monitoring, Evaluation and Learning (MEL) Framework for EAE

The MEL framework for Energy Access Explorer (EAE) systematically tracks how the platform contributes to data-informed energy planning and decision-making. As governments, private sector actors, and civil society adopt EAE globally, the framework then assesses whether the platform is being used effectively and whether it is enabling better policies, investments, and solutions for clean energy access. The framework covers key result areas from platform uptake to improved planning outcomes and broader energy access impact. Indicators include unique institutions using EAE for prioritising underserved areas, policies, or projects citing EAE data, stakeholder feedback incorporation, and platform growth metrics like geographic coverage and integrated datasets. This helps the World Resources Institute to ensure EAE remains relevant and impactful. See [WRI](#) for more information [7].

2.3.2. Training the Trainers

Training trainers multiplies impact and embeds expertise locally. An important sustainability goal for capacity development programmes is to leave behind trainees who have become sufficiently advanced to be able to train others. This entails a conscious process of providing capable individuals from relevant institutions with the opportunities to emerge and gradually take leadership in trainings (see **Box 5** for a case study example).

BOX 5. Training Trainers – CCG and RE-INTEGRATE

CCG invests in training participants of Energy Modelling Platform schools to become trainers and join global communities of practice, enabling Global South stakeholders to lead their own training events using adapted materials [9]. This "train-the-trainers" approach creates self-sustaining capacity, whereby previous trainees from Kenya and Tunisia now lead courses and expanded offerings into French. Supporting this effort, CCG, the EU-funded RE-INTEGRATE project, and Open University created proficiency badges for energy modelling and training [10, 11]. The standardised certification system includes Bronze, Silver, and Gold badges for modelling proficiency, plus Associate and Lead Instructor badges for teaching competence. The aim is to strengthen international recognition for this expertise. See [RE-INTEGRATE](#) for more information [11].

2.3.3. Developing a Skills Pipeline

A steady pipeline of skilled professionals secures long-term capacity.

Capacity development is not a linear process, since individuals leave institutions and institutions themselves also evolve, prompting the need for a certain degree of repetition in the capacity development effort. Universities can play an important role in securing a longer-term supply of skilled analysts by embedding planning and associated modelling techniques into national university curricula. Ideally, the achievement of this goal should be integrated into the design of the capacity development programme, through conscious prioritisation of local academics (see **Box 6** for a case study example).

BOX 6. CCG FlatPack Initiative

The FlatPack programme sustains capacity development by integrating energy modelling content into local university curricula, ensuring sustainable supply of skilled professionals. It supports academics from Low- and Middle-Income Countries with ready-made teaching materials developed by CCG that can be quickly incorporated into graduate courses, covering open-source models relevant to energy transition. Academics who attended CCG's Energy Modelling Platforms (EMPs) can participate, receiving support to identify integration opportunities within existing graduate programmes. The initiative provides ongoing assistance for course design, access to teaching materials, and skills upgrades to instructor level, creating lasting educational impact beyond individual training events. See [CCG](#) for more information [12].

2.3.4. Ensuring Budget Continuity and Networks

Funding and expert networks anchor knowledge and prevent skills erosion.

As noted, capacity development programmes are vulnerable to the withdrawal of external donor support. For benefits to be sustained, it is important to devise budget allocation strategies to provide for the maintenance of the knowledge ecosystem. These costs should be significantly lower than during the start-up phase, but not negligible. External

organisations that support or fund the capacity development programme may contribute by offering transitional support.

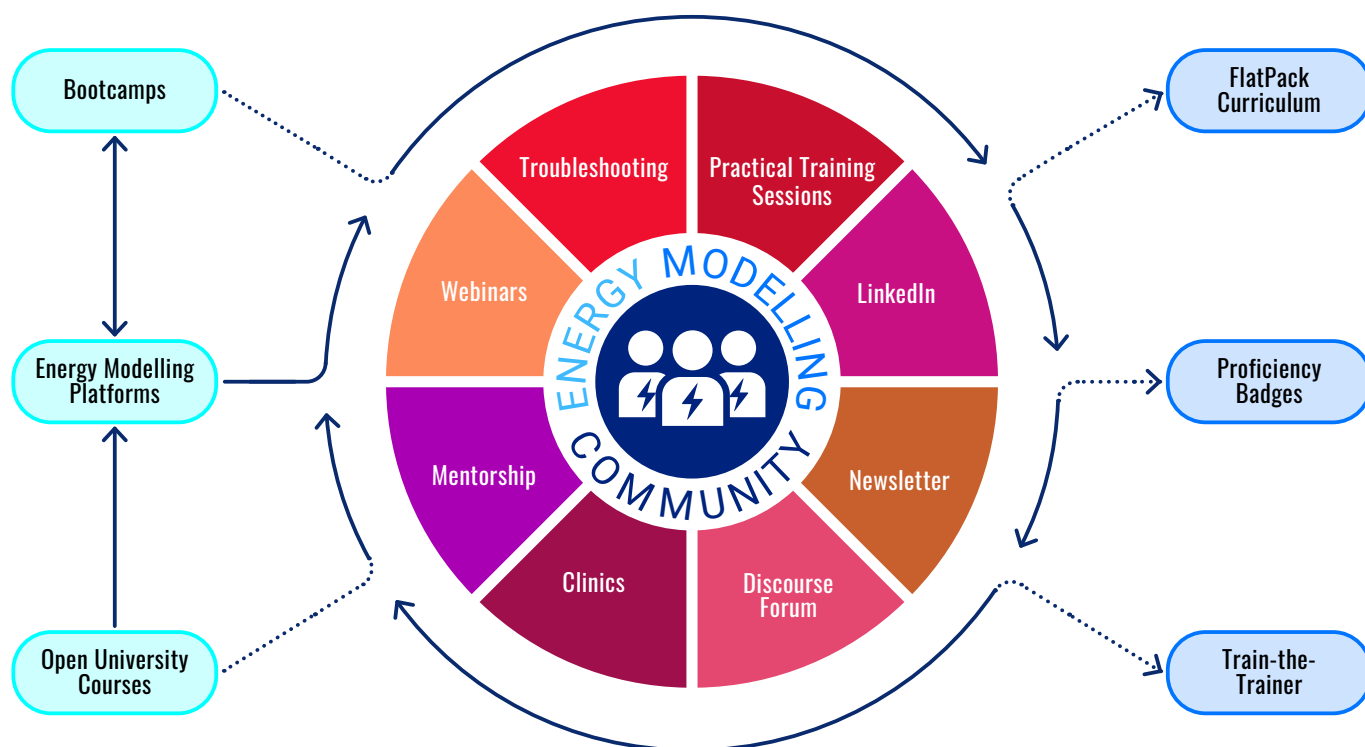
Domestic and regional communities of experts with active, accessible networks will foster continued capacity development. It is important to maintain connections between those that have acquired technical skills during capacity development programmes. These knowledge networks should be integrated into the pre-existing national innovation and policy systems (comprising government, private sector, community-based organisations and associations, and academic actors) to ensure strategic and integrated impact, broadly spread the knowledge, and ensure the inclusion of domestic knowledge systems. Local academia is an important part of the national knowledge ecosystem, is not time-bound, and is mandated

to teach and train. As a result, it is well placed to take a leading role in such networks, ensuring the long-term sustainability of capacity

BOX 7. Energy Modelling Community

The Energy Modelling Community was developed to provide ongoing technical support for CCG's EMP Alumni. It builds strong networks among course graduates and instructors, offering real-time troubleshooting through online discussion forums and professional enrichment via monthly webinars and clinics. **Figure 2** outlines the community's structure: the left-side shows pathways to join, the centre displays community offerings, and the right-side highlights cross-cutting initiatives. The objective is preventing skills erosion among capacity development alumni while supporting and incentivising continued skill advancement to reach higher competence levels, ensuring initial training investments translate into sustained professional development. See [CCG](#) for more information [13].

Figure 2: CCG's Capacity Development and Energy Modelling Community (EMC) Ecosystem. Source: Authors.



3. Recommendations

Drawing on the best practices in institutional capacity development identified in the existing literature and on the collective experience of the co-authors, the following recommendations distil key insights into actionable lessons for governments and line ministries to integrate into their national strategy development processes. They will also be relevant for development partners and international organisations seeking to support countries in their planning process. Designed to align with the broader D2D framework, these recommendations aim to support the development of transition plans that attract and secure the required funds for implementation.

1. Capacity development should build upon existing local skills and national priorities.

Capacity development programmes need to avoid unidirectional transfer of skills and recognise existing national capabilities. They need to be tailored to local contexts, based on a careful assessment of needs and priorities. They should also be broad enough to encompass all relevant technical, financial, policymaking, and facilitation skills needed to successfully develop and implement investment plans.

2. A two-tier national capacity ecosystem should be established to balance breadth and depth of expertise.

Capacity development goes beyond single institutions to create national knowledge ecosystems. This entails training a broader swathe of institutional actors to an intermediate level (where they are equipped to demand, interpret, and apply planning outputs), while a smaller core team of experts undergoes a deeper level of training (where they are empowered to deliver planning outputs and develop skills). These domestic

“champions” should be identified during capacity development processes, so they can act as long-term support and advocates in the country.

3. Capacity development should systematically address data and modelling needs.

Capacity development programmes should include training on best practices for data collection, management, and versioning. The selection of appropriate modelling tools and knowledge products should be compatible with domestic social and technical infrastructure to ensure longevity.

4. Capacity development should be designed for long-term sustainability and institutional memory.

To ensure that the gains from capacity development programmes are truly sustainable, a long-term iterative engagement is required, ideally synchronised with country planning cycles. Through features such as ‘train-the-trainers’ initiatives and university curricula integration, capacity development programmes can go beyond training people to creating systems that train people. The programmes must also remain adaptable to the gaps and evolving institutional landscape and support should be given for institutional memory retention.

5. A Monitoring, Evaluation, and Learning (MEL) framework should be co-created to sustain capacity gains.

This will both assist the diagnostic phase of the process and create accountability for sustaining capacity gains over time. The framework should be co-created in collaboration with the institutions being trained and based on indicators mutually agreed with national stakeholders.

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APPENDIX: RESOURCES

Table 5: Resources that provide guidance on how to carry out a capacity and/or needs assessment.

Resource	Description
Paris Committee on Capacity-building (PCCB) Toolkit [14]	The PCCB has developed this toolkit to help countries identify their capacity needs and gaps. The toolkit provides an overview of a capacity assessment cycle, as well as resources, case applications, tools, and best practice guidance.
Capacity Assessment Tool for Climate Action Transparency (CAT4CAT) [15]	The tool aims to support the assessment of an organisation's existing capacity for contributing towards enhanced effectiveness and transparency of climate action in a country, focusing on four domains: Goals and Strategy, Systems and Infrastructure, Human Resources, and Organisational Assets.
IEA: Assessing Enablers [16]	This is part of the International Energy Agency's (IEA) Developing Capacity for Long-Term Energy Policy Planning: A Roadmap. This section discusses key enablers required for successful long-term energy policy planning; within each section there is also a self-assessment tool.

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