INNOVATION & RESEARCH CAUCUS

SCALING MISSION-ORIENTED PILOT PROJECTS: ADVANCING DATA-DRIVEN INNOVATION

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REPORT PREPARED BY

Omar Abou Hamdan
Oxford Brookes University

Muthu De Silva
Birkbeck, University of London

Dize Dinckol
Birkbeck, University of London

Tim Vorley
Oxford Brookes University

Delivered with ESRC and Innovate UK

Authors

The core members of the research team for this project were as follows:

- Dr Omar Abou Hamdan, Oxford Brookes University
- Prof Muthu De Silva, Birkbeck, University of London
- Dr Dize Dinckol, Birkbeck, University of London
- Prof Tim Vorley, Oxford Brookes University

The authors contributed equally and are listed alphabetically by surname.

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EXECUTIVE SUMMARY

The primary challenge for mission-oriented innovation is not achieving small-scale success but successfully transitioning data-driven pilot projects into sustainable, system-wide solutions. This report outlines a strategic framework to ensure scalability is designed into pilot projects from inception, addressing systemic barriers related to governance, technical infrastructure, context transferability, and rigorous evaluation.

Data-driven projects move through distinct phases, starting with pilot design and implementation, which predominantly focuses on exploration; defining the problem/opportunity, testing solutions in a realistic environment, and prioritising flexibility and learning to create a knowledge base. This exploratory stage is followed by the scale-up phase, which often aligns with exploitation; here, the focus shifts to utilising and refining proven solutions, integrating with other related project output, standardising processes, and building exploitative capabilities for efficiency.

The scaling-up can take three interconnected paths: Horizontal (replicating the solution in new locations), Functional (adding new features, project components or partners), or Political (institutionalising the solution through policies). Ultimately, success depends on designing the initial pilot with scalability in mind and effectively transitioning from experimentation to reliable, sustained operational delivery across these scaling pathways.

Integrated Framework for Scaling Data-Driven Projects

Successfully scaling data-driven projects requires a phased approach that transitions from Pilot to Scale-up, integrating strategic, technical, and institutional considerations from the outset. Successful scaling requires a fundamental shift in mindset: moving from viewing pilots as isolated technical tests to treating them as mechanisms for systemic institutional and policy change. This necessitates proactive planning for institutional alignment, co-creative endeavour, knowledge transfer, and resource sustainability from the earliest design stages.

- **Phase 1: Pilot Design and Implementation**

The initial phase focuses on learning, experimentation, and building a foundation for scale by prioritising discovery and flexibility. Below are the key action areas and how they support successful scaling:

Table 1: Key Action Areas for Phase 1 - Pilot Design and Implementation

Action Area	Key Steps & Requirements	The Role in Scale-up
Establish Strategic Readiness	Define the problem/opportunity clearly and set measurable goals that align with the organisation's broader strategy.	Ensures the pilot has organisational buy-in, strategic oversight, and continuous motivation for long-term commitment.
Build the Ecosystem	Identify data needs, secure access, and validate the quality, relevance, and representativeness of the data. Establish interoperability standards (standardised data formats and data sharing interfaces) early on.	Creates a scalable data ecosystem and addresses key technical barriers before large-scale deployment.
Ensure Governance & Compliance	Embed legal, ethical, and regulatory frameworks (e.g., data protection rules) into the design and clearly define the roles of data controller and processor.	Safeguards against legal and ethical risk, establishing necessary governance for wider data sharing and institutionalisation.
Design for Adaptability	Position the pilot as a strategic entry point for broader systems change, not an isolated experiment. Identify core components that are transferable versus context-specific.	Allows the solution to be re-applied or integrated into new contexts and systems, overcoming the transferability dilemma.
Enable Learning	Integrate rigorous monitoring and evaluation (M&E) methods and metrics, and codify knowledge by documenting what works, under what conditions, and why.	Systematically captures generalisable insights and creates the knowledge base needed for adaptation and replication at scale.

- **Phase 2: Scale-up Implementation**

This phase involves the active utilisation and refinement of proven solutions, characterised by routine, efficiency, and institutionalisation.

Table 2: Key Action Areas for Phase 2 - Scale-Up Implementation

Action Area	Key Scaling Pathways & Activities	Focus
Select Scaling Strategy	Choose the appropriate pathway based on goals: Horizontal scaling (roll-out) for replicating to new locations/users; Functional scaling (diversification) for adding new features/partners; or Political scaling (vertical) for institutionalising via policy.	Expansion and Integration
Institutionalise and Resource	Secure long-term financial, technical, and human resources and embed the solution into national or organisational systems and budgets. Assign clear leadership, ownership, and delivery roles.	Sustainability and Resilience
Adapt and Localise	Engage local communities and stakeholders to tailor solutions to new settings, ensuring continuous relevance. Use documented knowledge to understand which principles require adaptation.	Relevance and Contextual Fit
Formalise Governance	Codify governance processes, formalise interoperability standards, and institutionalise practices (e.g., service-level agreements, quality assurance).	Operational Discipline and Efficiency

Key Recommendations for Organisations Scaling Data-Driven Pilot Projects

To maximise the success and sustainability of data-driven projects transitioning from pilot to scale-up, organisations should focus on the following key recommendations, particularly in managing institutional, technical, and transferability challenges:

1. Prioritise Institutional and Political Alignment

- **Secure Early and Continuous Buy-in:** Engage the leadership team, key ecosystem actors, and, where relevant, policymakers early in the pilot design phase to secure organisational buy-in and long-term commitment. This support is vital for access to resources and ensuring strategic oversight.

- **Establish Robust Governance:** Implement effective governance mechanisms that clarify roles, accountability, and the iterative process of experimentation, evaluation, and feedback. For scale-up, ensuring this includes mechanisms to audit compliance and ethical safeguards.

- **Embed into Existing Systems and Budgets:** Ensure solutions are integrated with institutional capacity and embedded into existing systems and national/regional/local/organisational budgets to secure long-term viability and continuity beyond initial pilot funding.

2. Build a Coherent and Interoperable Technical Architecture

- **Invest in Foundational Infrastructure (DPI):** Proactively invest in open, interoperable data systems and shared platforms (Digital Public Infrastructure) as the foundational layer. Weaknesses here can severely constrain higher-level scaling possibilities.

- **Standardise Data from the Start:** Address technical disintegration by establishing and adopting a standardised format for data and data access across different sources (internal and external) to ensure interoperability.

- **Clearly Define Data Roles:** To ensure accountability and legal compliance, clearly define the roles of the 'data controller' (entity holding the data) and the 'data processor' (entity using the data).

3. Manage the Transferability Dilemma through Learning

- **Systematic Knowledge Capture:** Implement rigorous Monitoring and Evaluation (M&E) systems to systematically capture, analyse, and translate lessons learned into actionable knowledge.

- **Distinguish Transferable from Context-Specific Knowledge:** Actively codify the knowledge gained, explicitly distinguishing which components and insights are context-dependent (local) and which are transferable (generalisable).

- **Design for Adaptation, Not Just Replication:** Recognise that scaling is about translation, not copying. Design pilots to be flexible and adaptable across contexts, and ensure scale-up efforts incorporate local engagement to tailor solutions to new settings.

Policy Recommendations to Support the Scaling of Data-Driven Pilot Projects

- **Encourage pilots to be designed for scale from the outset.** Funders could consider asking pilot applicants to set out a clear route to scale at the application stage, including how the pilot could move beyond demonstration.
- **Help secure early institutional and political commitment.** Senior sponsorship, interdepartmental coordination, and continuity mechanisms could help pilots survive changes in leadership, priorities, or electoral cycles.
- **Support funding continuity beyond the pilot stage.** Follow-on funding and pathways into institutional, municipal, or national budgets could help promising pilots mature and move into wider adoption.
- **Invest in shared data infrastructure and standards.** Shared, open, and interoperable data infrastructure, supported by common data standards, could reduce the cost and complexity of scaling across sectors and places.
- **Clarify governance and regulatory arrangements.** Clear guidance on data-sharing, data controller and processor roles, and the use of regulatory sandboxes could help organisations test governance and compliance models before wider rollout.
- **Fund enabling ecosystems, not only individual projects.** Cross-sector partnerships involving industry, academia, government, and local actors could support the wider conditions needed for scale-up.
- **Enable place-based adaptation.** Scaling can be treated as a process of translation rather than simple replication. Policy and funding criteria could allow pilots to adapt to local contexts while retaining core principles.
- **Strengthen monitoring, evaluation, and knowledge transfer.** Structured monitoring and evaluation, knowledge codification, and national or sectoral repositories could help ensure that lessons from pilots are shared and reused, reducing duplication and repeated failure.

1. Introduction

As governments and public sector organisations increasingly rely on data-driven innovation to address complex societal challenges, it is important to scale up successful pilot projects into system-wide transformations. However, scaling is not merely a matter of replicating or integrating successful pilot projects. It demands strategic planning, institutional alignment, and adaptive models that are adopted and evolved throughout both the pilot and scale-up phases to ensure sustainable expansion.

Scaling-up a pilot project involves expanding the successful elements of the initial small-scale project to address a larger, more significant challenge or a mission in a financially and operationally sustainable manner. Scaling-up could occur in multiple ways through integrating multiple projects, scaling up individual projects, and/or rolling out successful pilot projects across the nation/regions. These processes may include building on the findings from the pilot, adapting them to broader contexts, and implementing strategic plans to increase the project's reach and impact. Scaling-up also requires securing necessary funding, willingness to commercialise, ensuring cost-effectiveness, and engaging with stakeholders to support long-term sustainability and continued success.

This report aims to demonstrate effective pathways for scaling up mission-oriented pilot projects, with a greater emphasis on data-related projects. By conducting a literature review of key characteristics, challenges, and success factors that enable data-driven pilot projects to evolve from experimental initiatives into scalable, institutionalised programmes, we emphasise the importance of strategic alignment, governance readiness, and stakeholder engagement throughout the process. Data-related projects are distinctive in that they generate continuous feedback loops, allowing for better representation of reality by using rich data as well as real-time monitoring, evaluation, and adaptation. They also require robust infrastructures for data governance, interoperability, and ethical safeguards, making their scaling pathways more complex but also more transformative.

The following sections of the report:

- First, introduce a process model that conceptualises how data-related projects evolve from pilot to scale.
- Second, discuss scaling strategies, models, and good practices gathered from across sectors to offer actionable insights for scaling data-related projects effectively and responsibly.
- Third, present how to overcome key challenges encountered when scaling up pilot projects.

Together, these sections provide a comprehensive framework to inform the design and implementation of scalable, mission-oriented data initiatives.

2. Process Model of Designing and Scaling-up Data-related Projects

A review of existing research across related areas—such as data ethics and governance, big data, innovation diffusion, data-driven value creation, and the scaling of healthcare services/interventions—reveals three interconnected pathways for scaling (e.g., Simmons and Shiffman, 2007; Winden and Van den Buuse, 2017; Eaton, McCay, Semrau, Chatterjee, Baingana, Araya, Ntulo, Thornicroft and Saxena, 2011):

- **Horizontal scaling up:** This path can also be called ‘roll-out’, where successful innovations are replicated in new locations or expanded to new user groups or populations (Simmons and Shiffman, 2007). This route can also include the solutions being expanded into new markets or across the organisation, such as introducing smart energy meters to the market (Winden and Van den Buuse, 2017). Data-related collaborative projects, horizontal scaling requires that data infrastructures, standards, and platforms can be replicated across regions or organisations, enabling interoperability and wider access to shared/open datasets.

- **Functional scaling up:** This path can also be called 'diversification', as this type of scale up consists of new innovations being added to and integrated with the existing models/products/services (Simmons and Shiffman, 2007). This route could also include the solution being expanded through inclusion of new partners, users, functionalities (Winden and Van den Buuse, 2017). Adding new functionalities to an existing tourist smart card system can be an example of functional scaling up (Winden and Van den Buuse, 2017). For data-related collaborative projects, functional scaling allows integration of new data sources, analytical tools, and user functionalities, strengthening the ecosystem's ability to generate richer insights and support diverse stakeholders.

- **Political scaling up:** This path can also be called 'vertical scaling up'. In this case, innovations gain political support and are institutionalised through regulations, policies, or legal action (Simmons and Shiffman, 2007). This route ensures that solutions are made sustainable through policymaking, implementation, and financing (Eaton, McCay, Semrau, Chatterjee, Baingana, Araya, Ntulo, Thornicroft and Saxena, 2011). An example of political scaling up could be the government treating an early and proactive solution provider NGO in early childhood education as an implementation agency for improved policies (Kirpal, 2002). For data-related collaborative projects, political scaling is critical to establish formalised governance frameworks, data-sharing regulations, and funding mechanisms that institutionalise collaborative data practices and ensure long-term sustainability.

Achieving these three types of scaling-up requires pilot projects to be carefully designed and implemented from the outset, with scalability built into their conception. However, some pilot projects may not have incorporated scale-up considerations from the beginning. In these instances, the project's stage of development should be evaluated to inform the design of a suitable scale-up strategy. The figure below (Figure 1), developed by the authors by integrating many sources of literature, illustrates a process model of scaling-up data-related projects. The model outlines a phased process of scaling up data-related projects, from early exploration to subsequent broader exploitation.

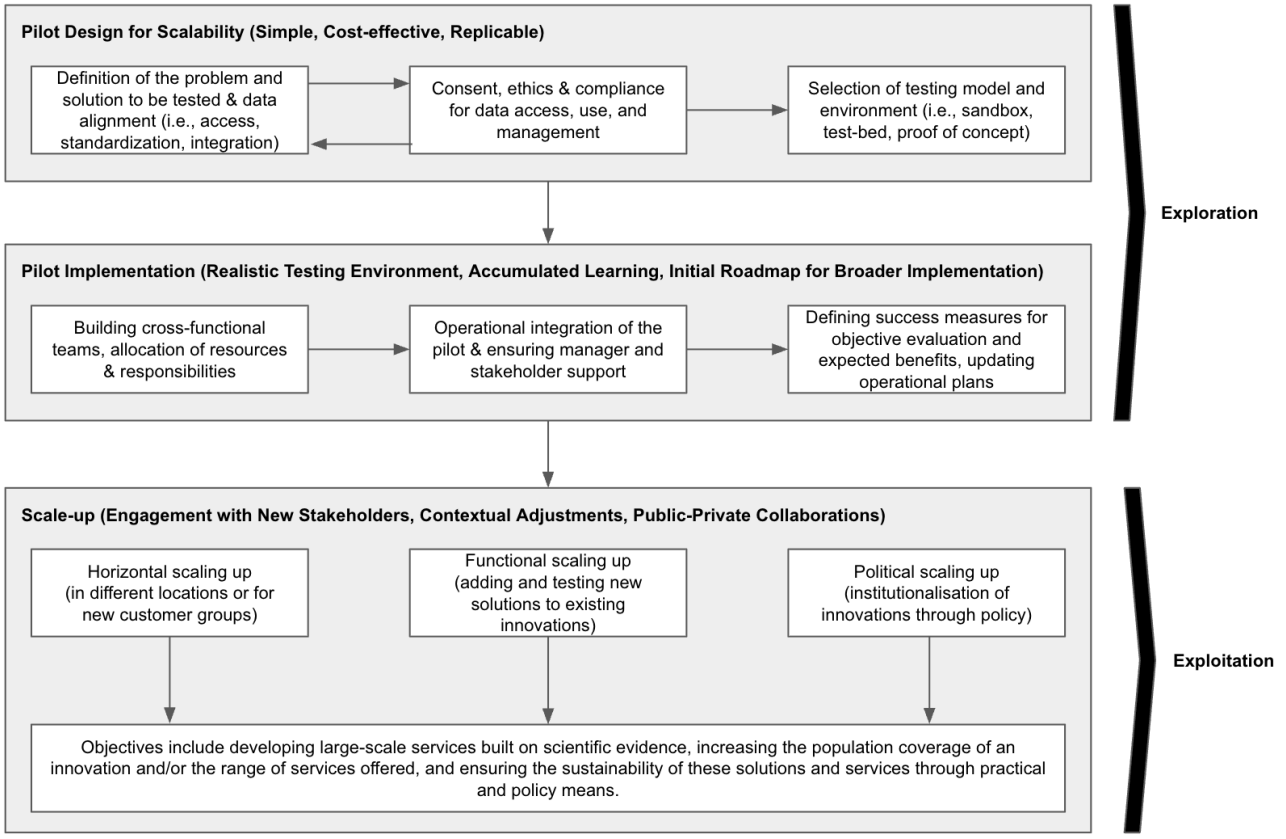

Figure 1: A Process Model of Data-related Projects from Pilots to Scaling-up

Sources: Alaassar et al., 2021; Ashkenas and Matta, 2021; Baumard and Starbuck, 2005; Berndtsson et al., 2020; Boscherini et al., 2010; Eaton et al., 2011; Kostkova et al., 2016; Leckenby et al., 2021; Mansfield et al., 2018; Powles and Hodson, 2017; Schmoeker, 2023; Siegal and Smith, 2006; Simmons and Shiffman, 2007; Susha et al., 2017; Van Winden and Van den Buuse, 2017; Vreugdenhil et al., 2010; Yamey, 2011

As illustrated in Figure 1, in the initial pilot design stage, focus is on clearly defining the problem to tackle, aligning data needs with the pilot's objectives, ensuring ethical and regulatory compliance, and selecting an appropriate testing environment to achieve most accurate and useful results. A simple and cost-effective pilot designed with replicability and scalability in mind is more likely to move to the next step.

This phase is followed by the pilot implementation stage, which involves testing and experimenting with proposed solutions within an environment as realistic as possible. At this stage, teams with appropriate capabilities and expertise are created, required resources are allocated, stakeholder support and commitment to the project is ensured, and the pilot is operationally integrated into the organisation. Along with crystallising success measures that

enable objective evaluation of the pilot, an initial roadmap for the next phase (scale-up) is shaped.

Finally, the last stage is the actual scaling-up, which can entail horizontal, functional, or political scale-up, as discussed above. Overall, key decisions and activities in these stages support successful transition of pilots to large scale, sustainable services or practices with increased population coverage, levels of innovation, and feasibility.

Because the pilot and scale-up stages resemble organisational exploration and exploitation activities, we have leveraged the relevant literature to provide richer insights into the progression of data-related projects. Exploration activities are characterised by search, experimentation, variation, discovery and innovation, while exploitation activities refer to "refinement, choice, production, efficiency, selection, implementation and execution" (Lavie, Stettner, and Tushman, 2010; March, 1991; p. 71). Exploration and exploitation activities require a different set of capabilities and organisational routines (Lewin et al., 1999; Galunic and Eisenhardt, 2001; Benner and Tushman, 2003). This distinction underscores the importance of developing and sustaining a diverse set of skills to effectively undertake and manage the activities associated with pilot and scaling-up phases (Table 3).

Table 3: The Shift in Structure and Outcomes as Projects Move from the Pilot Phase to the Scale-up Phase

Characteristics	Pilot Phase [aligns with exploration]	Scale-up Phase [aligns with exploitation]	Citation
Aims	▪ Discovery ▪ Innovation	▪ Selection of optimal solution ▪ Implementation	Lavie, Stettner, and Tushman, 2010; March, 1991
Key Activities	▪ Problem-based or non-problem-based search ▪ Experimentation, variation	▪ Refinement ▪ Production, ▪ Implementation and execution	Berger-Tal et al., 2014; Dougherty, 1992; Lavie, Stettner, and Tushman, 2010; Greve, 2007; March, 1991

Characteristics	Pilot Phase [aligns with exploration]	Scale-up Phase [aligns with exploitation]	Citation
Risk Appetite of the Organisation	▪ Higher risk appetite ▪ Flexibility and adaptive capacity	▪ Higher risk aversion	Swift, 2016
Key Skills	▪ Gaining new knowledge in an unknown territory ▪ Organisational learning	▪ Maintaining and utilising existing knowledge base	Berger-Tal et al., 2014; March, 1991; Greve, 2007
Key Outputs	▪ Radical innovation ▪ Absorptive capacity (developed through exploration experience and helps organisations distinguish "good" and "bad" opportunities)	▪ Incremental innovation ▪ Realising and further expanding the potential gains made possible by innovation	Benner and Tushman, 2003

2.1. Learning from Exploration Literature for Data-driven Pilot Project Design and Implementation

Exploration, which aligns with the pilot phase, involves organisational and inter-organisational learning through experimentation conducted by different units or teams (March, 1991; Greve, 2007). These insights position pilots as intentional, knowledge-generating interventions within the broader innovation journey (March, 1991; Siggelkow, 2003; Smith & Tushman, 2005; Tushman & O'Reilly, 1996; Venkatraman, Lee, & Iyer, 2007). For data-driven collaborative projects, the exploration emphasis translates into designing pilots that surface unknowns in data governance and analysis, interoperability, ethical safeguards, stakeholder coordination as well as testing and evaluating proposed data-driven solutions while building the absorptive capacity needed to recognise and integrate valuable external and internal data sources and identify viable solutions to scale up (Berger-Tal et al., 2014).

Exploration can be triggered by immediate performance shortfalls, prompting a “problemistic search” for remedies that target concrete organisational needs and challenges, which seems to have a greater buy-in for organisations (Greve, 2007). By contrast, non-problemistic exploration proceeds proactively. Such initiatives risk rejection at scale if decision-makers perceive misalignment with existing strategy or routines, a dynamic especially salient for data projects that introduce novel architectures or cross-organisational data-sharing practices (Dougherty, 1992; Greve, 2007). Effective pilots therefore make strategic relevance explicit, articulate clear learning goals, and establish feedback loops that capture technical, organisational, and ethical insights in real time, particularly in fast-paced or unpredictable environments where knowledge accumulation is both the primary objective and the foundation for subsequent scaling (Berger-Tal et al., 2014).

Exploratory activities in data pilots focus on identifying and accessing required resources, learning the contours of new data environments, and testing novel approaches - such as prototype data pipelines, schema harmonisation, privacy-preserving analytics, or multi-stakeholder governance models - before any attempt to exploit this knowledge at scale (Berger-Tal et al., 2014). In uncertain contexts, pilots should privilege flexibility and discovery over efficiency, using small bets to reduce technical and organisational risk, and documenting emergent routines that can later be standardised. This orientation establishes the knowledge base and routines that enable a smooth transition into exploitation/scaling-up while safeguarding against premature lock-in to suboptimal designs (March, 1991; Greve, 2007).

2.2. Learning from Exploitation Literature for Data-driven Scale-up Project Design and Implementation

Exploitation, which relates to scaling up, involves actively using and refining proven solutions across organisational and inter-organisational teams (March, 1991; Greve, 2007). Rather than a discrete switch, the transition from pilot to scale-up is best understood as movement along a continuum: experimentation evolves into replication, routinisation, and operational discipline as organisations repeat applications of the innovation and build exploitative capabilities (Brunner, Staats, Tushman, & Upton, 2009; Lavie et al., 2010). For data-driven projects, this means codifying governance processes, formalising interoperability standards, hardening infrastructures, and institutionalising practices (e.g., stewardship, access control, and quality assurance) that support reliable, cost-effective scaling.

In the scale-up phase, actors focus on maintaining and exploiting the knowledge acquired during explorative pilot stages while continuing targeted learning to update routines as environments change (Berger-Tal et al., 2014). Knowledge maintenance is more straightforward in predictable, stagnant environments, but requires greater resources and adaptive mechanisms in volatile or fast-changing contexts - common in data ecosystems where regulations, technologies, and partner capabilities evolve rapidly (Berger-Tal et al., 2014). Consequently, scale-up of data-related pilot projects emphasises the need for structured, efficiency-driven activities, lower risk taking, tighter coordination, and incremental innovation to strengthen reliability and throughput without undermining the integrity of shared data assets (March, 1991; Greve, 2007).

Where exploratory pilots prioritise discovery and experimentation, scale-ups consolidate gains through standardised processes, clearly defined roles, and performance metrics aligned to sustained operational delivery. Data collaborations that underscore high representativeness in data-related pilots and then scale-ups include service-level agreements for data sharing, clear accountability for stewardship, and mechanisms to audit compliance and ethical safeguards, along with the requirement to maintain these standards. The objective of moving from pilots to scale-ups is to translate exploratory insights into durable systems and scalable impact, ensuring that routines remain flexible enough to accommodate selective learning while predominantly oriented toward exploitation for stability, efficiency, and expansion (Brunner, Staats, Tushman, & Upton, 2009; Lavie et al., 2010; Berger-Tal et al., 2014) (Please see section 3 for some examples of successful approaches to scaling up pilot projects).

3. How to Design and Scale-up Data-Driven Pilots

Based on our review of research on business, management, and policy-making (e.g., Ashkenas and Matta, 2021; Siegal and Smith, 2006; Susha et al., 2017; Van Winden and Van den Buuse, 2017; Vreugdenhil), computer science (e.g., Berndtsson et al., 2020), public health and healthcare systems (e.g., Eaton et al., 2011; Kostkova et al., 2016; Mansfield et al., 2018; Simmons and Shiffman, 2007), we have identified several success factors as well

as challenges for designing and scaling up data-related pilot projects. Below, we provide a discussion regarding each of these factors.

3.1. Establish strategic and structural readiness for designing a scalable pilot

Effective scaling-up requires pilots to be grounded in a clear strategic foundation from the outset. If the pilot's aims are not aligned with the organisational or interorganisational scaling strategy, the pilot is unlikely to translate into sustained or system-level change. This alignment, combined with organisational buy-in, leadership commitment, and the active involvement of project champions, enhances the likelihood of successful scale-up. It embeds the pilot within the organisation's broader strategic objectives and ensures sustained purpose, managerial support, and strategic oversight throughout the scaling process. This step contributes to the establishment of a strong basis for the project by aligning the organisation's strategy, aims of the pilot, the data and data infrastructure needed to achieve these aims, ethical data use, and potential data partners.

Below are the factors that should be considered to establish strategic and structural readiness for designing a scalable pilot.

- Define and frame the problem/opportunity of the pilot using context-relevant data ⇨ Clearly articulating the problem/opportunity that the pilot aims to address/achieve is a crucial first step before launching the pilot. In this step, the problems or opportunities are grounded in the organisational or the environmental context where they arise. Doing so pushes for a clear problem/opportunity statement, which provides direction for the future steps, ensures establishment of measurable goals, and helps avoid abstract goals or distraction as the pilot progresses.

- Set clear goals and success criteria for the pilot from the outset ⇨ Building on the problem/opportunity statement, the next step would be determining and defining the pilot's goals and objectives. These objectives should be directly connected to the problem/opportunity statement and specified in clear, actionable, and measurable terms. From early on, success measures and scalable outcomes for the pilot should be determined to maintain focus and direction as well as measure progress.

- Engage leadership team, establish governance mechanisms, and secure organisational buy-in for the pilot and scale-up plans ⇨ Early support from leadership enables access to required resources, maintains motivation, and ensures long-term commitment within the organisation from pilot to scale-up. This engagement also promotes internal ownership, accountability, ongoing strategic oversight, creation of effective governance mechanisms, and an iterative process of experimentation and feedback. When a pilot project engages ecosystem actors, securing the buy-in of influential organisations is essential to its success. This link between the pilot team and leadership facilitates the active communication of early outcomes and insights and allows for recalibration of the pilot and its objectives. Building cross-functional teams (i.e., IT for data access; business people for business questions and desired outcome; experts to conduct and analyse the tests etc.) to take part in the pilot enables contributions from different expert perspectives, more effective communication regarding the pilot across departments, and ensures a suitable talent pool to drive the pilot. Conveying the objectives, benefits, implications, and value of the pilot internally cultivates organisational support.

3.2. Build a scalable data and technology ecosystem for the pilot and a potential scale-up

In the case of data-related pilots, data considerations should be addressed from the start - these considerations include what data is needed, who owns it, and how it can be accessed, stored, and utilised. These questions underline the need for approaching data-related decisions with an ecosystem perspective. Data ecosystems involve “organisations and individuals that generate, share and process related datasets”, which then are utilised in data-driven analyses, predictions, innovations, and decision making (Immonen and Kalaoja, 2019; p. 111693). For example, in health-care context, data ecosystems include rich data on individuals’ lifestyle, socioeconomic conditions, environment along with other health-related data collected via wearables, mobile applications, and social media (Ozalp, Ozcan, Dinckol, Zachariadis, and Gawer, 2022; Sheikh, Anderson, Albala, Casadei, Franklin, Richards, Taylor, Tibble, and Mossialos, 2021). Since data is provided and owned by different organisations in such cases, the potential to leverage data from different sources might be limited due to the interoperability problems (i.e. the challenges of different systems, products,

or organisations to work together seamlessly by exchanging and using data effectively), where policy interventions might play a role in addressing these issues (Dinckol et al., 2023; Sheikh et al., 2021).

Below are the factors that should be considered to build a scalable data and technology ecosystem for the pilot and a potential scale-up.

- Identify relevant data and secure data access, infrastructure, and partnerships for the pilot

  ⇨ At the earlier stages of a data-related pilot, the type of data required, the owner of that data, and how it can be accessed and utilised should be considered. Identifying where the relevant data is and who holds them can lead to partnerships with a set of public and/or private stakeholders, leading to a data ecosystem, which may include various participants depending of the problem, such as government departments or agencies, hospitals, digital platforms, or non-profit organisations. One way to enable these ecosystems is the creation of data collaboratives that facilitate access to data held by different parties. Data collaboratives can be defined as "cross-sector (and public-private) collaboration initiatives aimed at data collection, sharing, or processing for the purpose of addressing a societal challenge." (Susha et al., 2017; p. 2691). These entities allow different actors to combine their datasets to solve a grand problem and achieve a common objective, which could, if designed appropriately, result in the simultaneous generation of financial and societal value.

  Depending on the type of data and how it is used, the need for continuous access to data may arise during and after scale-up to support the long-term sustainability of the solution. For example, if the solution developed during the pilot requires continuous adaptation to changing conditions as and after it is scaled up, ensuring ongoing access to relevant datasets (e.g., via organisation-level data collection, ongoing collaborations with partners, or open access data) will be required. Given that a well-structured data pipeline for the organisation to collect and store data in a standardised format is developed as part of the pilot, the organisation's existing or new data can be reused for future use cases (Haefner, Parida, Gassmann, and Wincent, 2023). However, when an AI model that has been developed/trained in the pilot project and doesn't require continuous access to the same scale or scope of data, the use of the initial dataset set up may be sufficient for the

organisation to move forward with their own data resources. This may be viable as long as the pilot dataset aligns with the organisation's data structure, quality, and distribution. It is also important that the model may lose its accuracy over time if the real-world conditions diverge from the training data, which calls for monitoring and retraining the model after scaling up. Overall, the evolution of data access requirements is highly dependent on the type of solution developed and what its purpose is, which also should be accounted for during the pilot stage to ensure successful scale-up.

- Validate data relevance, quality, representativeness, and interoperability to ensure the accuracy and effectiveness of pilot outcomes ⇨ The data needs to be fit for the intended purpose of the pilot, where representativeness of the data and potential biases embedded in it become key concerns. For a data-driven solution to be scalable, it needs to be developed and tested according to its objectives and target (i.e., local, national, or global community, a set of users, decision-makers etc.). Another key challenge to consider is the (lack of) interoperability of different data, datasets, and data access interfaces. Typically, each organisational entity has their own data-related standards, and thus, the formats of data kept in different datasets are not compatible - evidently, this issue emerges even across departments of a single organisation. Therefore, it is necessary to establish and adopt a standardised format for data and data access across different sources.

- Ensure compliance with legal, ethical, and regulatory data frameworks and clearly define the roles of data controller and data processor ⇨ Regulations and legal requirements around accessing, storing, and using data have increased in parallel with the rise of digital economy. These elements must be identified and embedded in the project's design from the outset (i.e., adopting GDPR's data protection rules and developing relevant secure and transparent mechanisms for data storage and governance). Getting consent from data owners (i.e., individuals whose data will be used), which is distinct from partnering with entities holding this data, is also a necessary step for being able to use that data. Clearly defining the roles of 'data controller' (entity that holds the data) and 'data processor' (entity that uses the data) clarifies who is responsible for what, assessing legal obligations and ensuring accountability.

The following case (Figure 2) from Copenhagen illustrates how deliberate planning, cross-sector coordination, and infrastructure integration can help overcome some emerging obstacles and enable successful scale-up (Bundgaard and Borrás, 2021). The Copenhagen smart city case demonstrates that successful, city-wide scaling of technological pilots - such as those focused on traffic flow, air quality, and energy optimisation - requires moving the initiatives from innovation units into mainstream municipal operations through structural and political commitment. After proving measurable benefits, the city established shared data platforms and cross-departmental governance mechanisms to facilitate this transition. Crucially, the long-term viability was secured by strong political commitment, effective interdepartmental coordination, investment in open, interoperable data systems, and the creation of an adaptive policy environment supported by early stakeholder engagement, highlighting that technological adoption must be underpinned by robust institutional and governmental alignment.

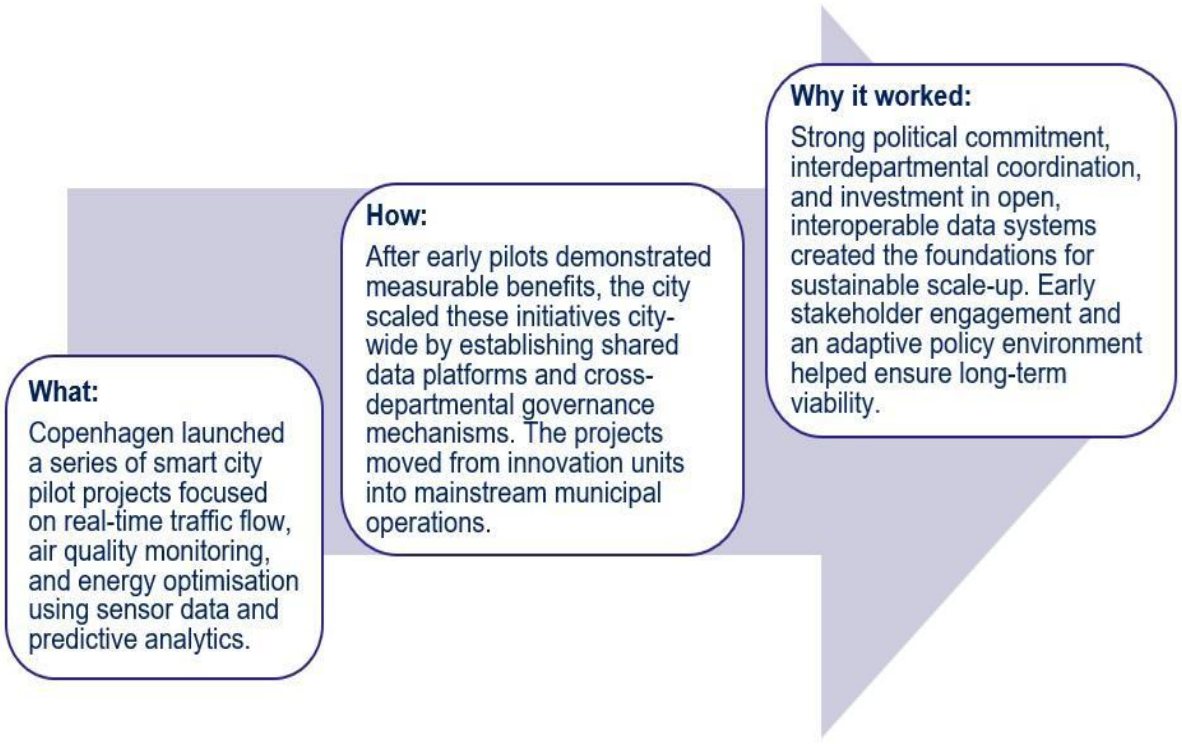

Figure 2: Scaling Smart City Innovations through Data Integration and Governance

The following case (Figure 3) from the Industrial Strategy Challenge Fund (ISCF) illustrates how challenge-led collaboration across industry, academia and government can carry data-enabled innovation beyond the demonstrator stage (UKRI, 2023). The ISCF invested around

£2.6 billion in collaborative programmes developing data-enabled technologies across manufacturing, artificial intelligence, mobility and clean growth, integrating data across sectoral boundaries so that digital innovations were designed from the outset for wider adoption. Scale was pursued not project by project but through the deliberate construction of ecosystems: challenge-led partnerships, shared governance arrangements, sustained stakeholder engagement and structured knowledge exchange allowed organisations to combine expertise, share data and transfer learning between pilots. Crucially, it was this combination of collaboration, governance and engagement — rather than technical performance alone — that produced the conditions for long-term adoption, highlighting that scale depends on collaborative ecosystems rather than on individual projects.

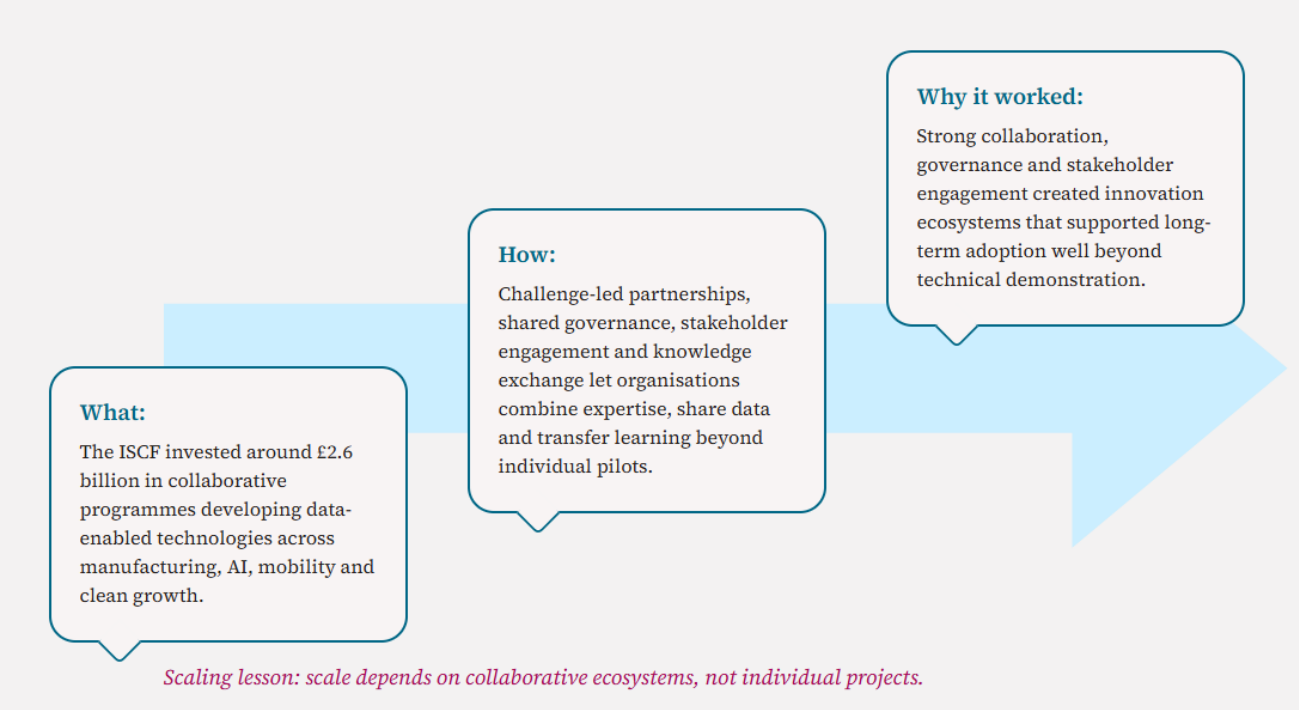

Figure 3. Industrial Strategy Challenge Fund — building innovation ecosystems for scale.

3.3. Design and initiate an adaptable pilot with scalability in mind

For the pilot to move to the scale-up stage and lead to broader transformation, it should be designed from the outset to be scalable in the future. Key steps to achieve this is considering the pilot as the first step to reach a broader, larger strategic goal, ensuring stakeholder buy-

in, and readying the technical and organisational conditions to allow the solution to diffuse into different contexts and/or be integrated with other projects for greater, scalable impacts.

- Position the pilot as a strategic entry point for broader systems change - not an isolated experiment ⇨ Framing the pilot as the first phase of a longer term and system-level transformation, rather than a one-off initiative or experiment, would support its transition to a scale-up. This approach underlines the pilot's value and effectiveness as a learning mechanism (i.e., learning by doing) and a tool for wider-level change, going beyond being a mere demonstration of potential solutions to an organisational or inter-organisational problem or opportunity. The actionable knowledge and learnings gained from the pilot can be applied more broadly across new or broader contexts or integrated with other projects/solutions to generate scaled-up impacts.

- Design pilots to be flexible and adaptable across contexts (i.e., across different organisations, communities, geographies) ⇨ A pilot designed for scalability should strike the balance between focusing on a narrowly defined core problem (which is identified in its specific context) and being flexible and adaptable enough so that it can be reapplied in other settings. To ensure this, the essential components/modules of the pilot (in relation to the problem and potential solutions) should be identified and articulated so that these modules can be adapted in new context as appropriate. At this stage, pilot participants should promote exploration (i.e., learning, prototyping) without losing sight of long-term exploitation objectives (i.e., outcomes, scale up plans). A key factor impacting the large-scale adoption of the piloted solution is the pilot environments' lack of complexity and representativeness compared to the real world. This challenge can be overcome by deliberately incorporating diverse test conditions, stakeholder perspectives, and simulated real-world complexities into the pilot design. By stress-testing solutions in varied contexts and building feedback loops, pilots can better anticipate scaling challenges and ensure that the outcomes remain robust and transferable beyond the initial environment.

- Secure resources early on for transitioning from pilot to scale-up ⇨ Identifying and acquiring necessary resources to conduct the pilot, extract and diffuse the acquired

knowledge, and scale-up the piloted solutions is crucial for broader adaptation and replication of these solutions. Preparing for this process requires aligning the pilot with institutional budgets and allocating long-term financial, technical, and human resources. Cordova-Pozo and Belizán (2024) note how lack of infrastructure and political volatility limit scale.

Figure 4 below illustrates how successful scale-ups depend on early institutional alignment and system integration. This case illustrates that while pilot projects in reproductive health demonstrated clear benefits, scaling them across broader populations faced systemic challenges - including limited trained personnel, fragile infrastructure, and lack of long-term funding. Successful scale-up efforts were those that engaged health ministries early during the pilot phase, invested in local workforce and capacity development, and embedded interventions into national health plans and budgets. Crucially, sustainability was achieved when pilots aligned with institutional capacity and were integrated into existing systems. Key enablers included internal budget commitments, leadership continuity, local engagement and targeted capacity-building - all of which helped ensure long-term adoption and adaptability.

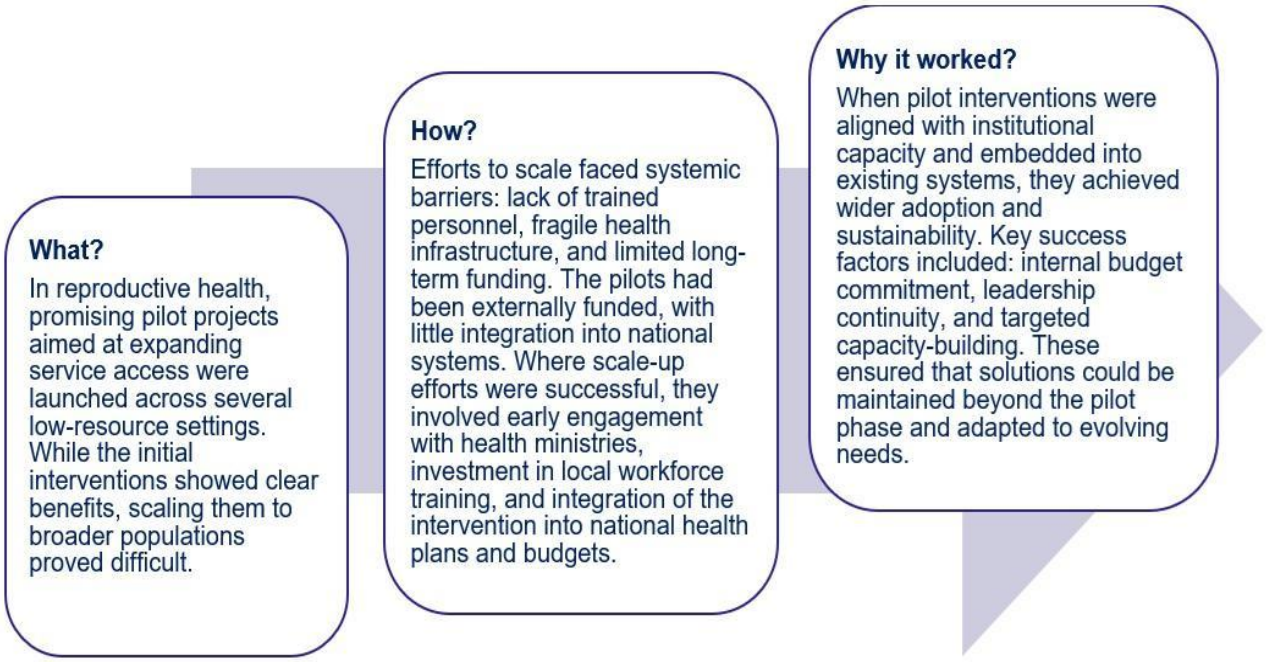

Figure 4: Understanding the Path from Pilot Projects to Sustainable Scale in Reproductive Health Field

3.4. Enable organisational learning, monitoring, and knowledge diffusion throughout the pilot

- Integrate monitoring, evaluation, and learning ⇨ To be able to evaluate the success of the pilot and measure progress, the pilot team and stakeholders should develop indicators (e.g., specific success measures, milestones, a theory of change that explicitly states the hypotheses, assumptions, and activities) aligned with the goals of the pilot and the subsequent scale-up. Continuously monitoring and evaluating whether the pilot is meeting its intended outcomes and readjusting as needed would increase the likelihood of a successful pilot and following scale-up.

- Codify and institutionalise knowledge that emerges during the pilot ⇨ To enable pilot outcomes and learnings to scale up by broad implementation, pilot participants should codify the 'tacit knowledge' they gained during the pilot by documenting what works, under what conditions, why, and how these can be adapted to new contexts and/or integrated with other projects to enhance impacts. Equally important is documenting what did not work well, why particular approaches or decisions were unsuccessful, and the contextual factors that contributed to these outcomes. Capturing how challenges were addressed, mitigated, or adapted during the pilot enables future projects to anticipate similar risks, avoid repeating mistakes, and strengthen the design of subsequent scale-up activities. It is crucial to identify and explain contextual dependency of the knowledge to determine what is transferable and what is not. To store and diffuse the knowledge gained in the pilot across the organisation or communities, organisations can leverage structured knowledge repositories, learning networks or communities, and training programmes. In this process, explaining the value and practical implications of the pilot to new adopters (through techniques like storytelling, use cases, and community-of-practice) can support scaling by motivating new adopters.

3.5. Plan for adaptive and inclusive scale-up of the identified solutions in novel or broader contexts

- Select and articulate a scaling strategy across new environments ⇨ Based on the goals and characteristics of the new context, stakeholders should choose an appropriate path for scaling-up –roll-out (horizontal), diversification/integration (functional), or political scale-up. Accordingly, a roadmap for the implementation of pilot outcomes in new contexts should be outlined and measurable milestones for effective implementation should be determined.

- Ensure strategic alignment during transition from pilot to scale-up ⇨ As in the pilot design, consistency between the goals of a wider implementation of pilot outcomes and organisational strategy should be maintained during scale-up. Clearly assigning leadership roles and ensuring delivery and monitoring mechanisms are in place support effective scale-ups.

- Facilitate effective adaptation to new contexts by engaging stakeholders ⇨ Implementation of the solutions and learnings achieved during the successful pilot at scale requires involvement of local communities, partners, and target users in the new contexts. This would help stakeholders tailor piloted solutions to new settings and maintain their relevance.

  The study of water management pilots by Vreugdenhil et al. (2010) reveals that the successful scaling of pilot projects hinges on the deliberate and structured capture of knowledge (Figure 5). The common failure of projects to scale stems from weak monitoring and evaluation, which locks critical insights into local contexts and prevents the generation of knowledge that is accessible and useful to future implementers. Success was achieved when teams actively distinguished between context-specific and transferable knowledge. They employed structured evaluation tools, thorough documentation, and reflective sessions to clarify which lessons were generalisable and which were tied to local conditions. This process of identifying and capturing transferable principles - rather than assuming all lessons would automatically generalise - allowed new adopters to understand

the underlying principles and adapt solutions to their own unique contexts, ultimately enabling system-level learning and effective scaling

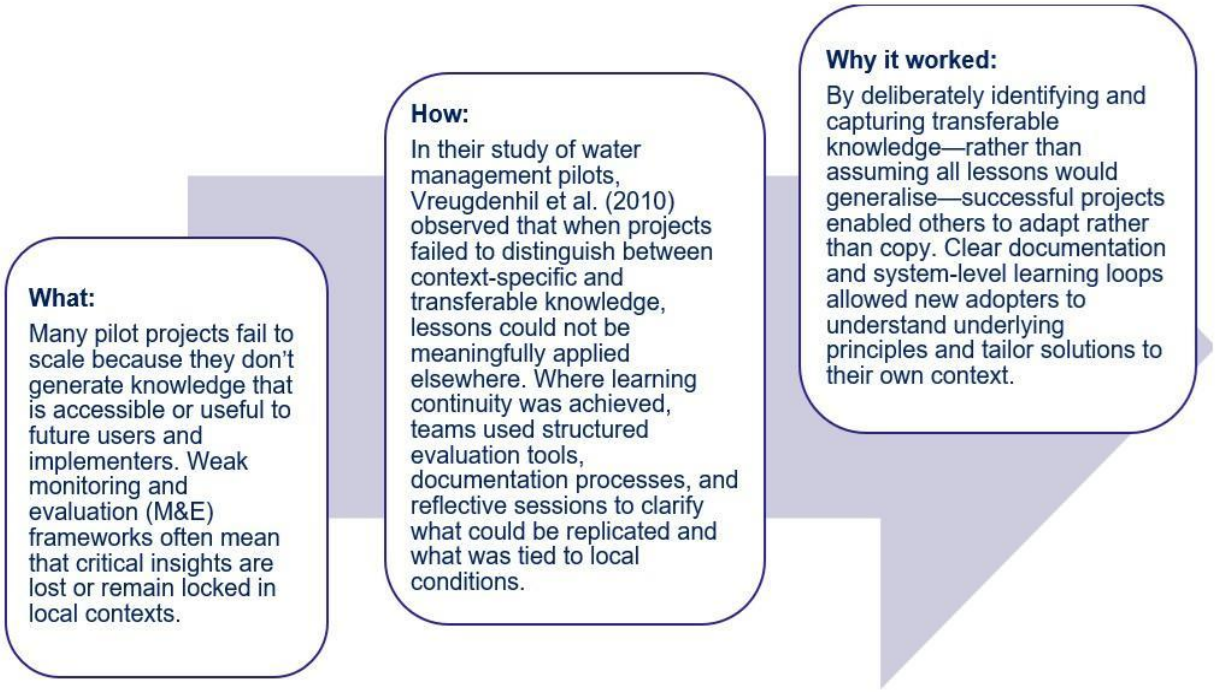

Figure 5: Capturing and Transferring Knowledge for Scalable Impact in Water Management Pilots

Figure 6 below shows how scaling can proceed by adaptation rather than replication (UKRI, 2023). Prospering from the Energy Revolution (PFER) invested over £100 million to develop and test Integrated Smart Local Energy Systems across the UK, combining real-time energy data, renewable generation, battery storage and digital technologies to improve local energy management and resilience. Rather than transferring a single fixed model between locations, projects adapted their governance arrangements, technical design and data-sharing practices to local conditions, while building partnerships between local authorities, businesses, universities and communities. Transfer across regions therefore rested on cross-sector collaboration and continuous knowledge exchange, with place-based adaptation preserving the core technical and governance principles even as local implementations diverged — indicating that solutions must be adapted to their contexts if they are to travel.

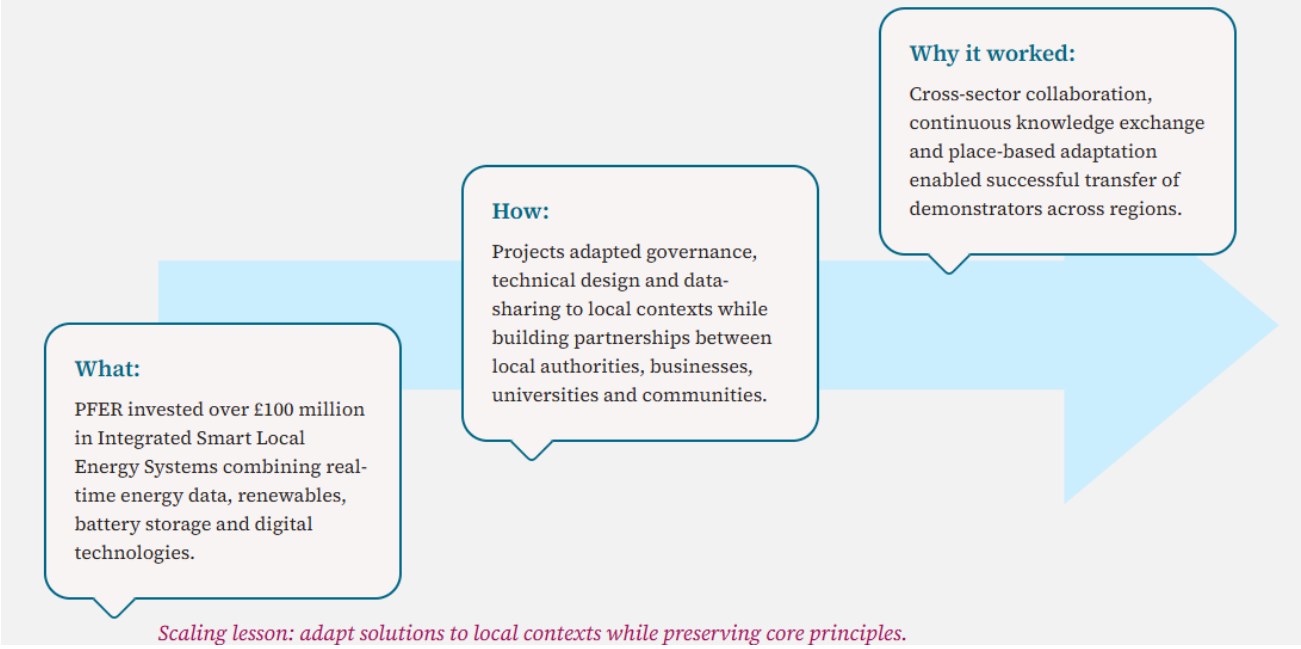

Figure 6: Prospering from the Energy Revolution — scaling through place-based adaptation

- Sustain momentum through committing resources and creating ownership in scale-up ⇨

  Implementation of the solutions and learnings achieved during the successful pilot requires involvement of local communities, partners, and target users during scaling-up to new contexts. This would help stakeholders tailor these solutions to new settings and maintain their relevance. For hands-on management by a knowledgeable and experienced actor, the pilot leader can become the 'champion' of the scale-up to drive organisational momentum and cross-team alignment. Mobilising resources and assigning clear leadership, ownership, and delivery roles can increase the effectiveness and success potential of a scale-up.

4. How to Overcome Key Challenges of Designing and Scaling Data-Driven Pilots

Scaling data-driven pilots from successful, small-scale experiments into sustainable, wide-scale solutions is often halted by systemic barriers. These challenges, which span governance, technology, context, and evaluation, necessitate a strategic shift from viewing

pilots as isolated technical tests to treating them as mechanisms for systemic organisational and policy change. Overcoming these obstacles requires proactive planning for institutional alignment and knowledge transfer from the earliest stages of the project design. The following sections detail these specific challenges and provide relevant examples of how past projects have successfully managed these obstacles, offering necessary context to the design and implementation strategies discussed previously.

4.1. Overcoming Institutional Resistance and Fragmentation

Many organisations struggle with rigid hierarchies and poor coordination, which limit efforts to scale innovations across departments. Without explicit efforts to engage those who will use or manage the system, the pilot risks becoming a misleading initiative. Co-creative strategies, such as holding joint workshops where departmental staff co-design features or forming stakeholder advisory groups to guide decision-making, can help overcoming such challenges. In addition to technical investment, scaling also requires governance innovation (Palumbo et al., 2023). In ICTD (Information and Communication Technologies for Development) context, Baduza & Khene (2021) document cases where projects failed to scale due to institutional unpreparedness and absence of long-term strategic vision.

To counter the persistent challenges in scaling ICTD projects, Baduza & Khene (2021) propose a Comprehensive Scalability Assessment Framework (CSAF) grounded in systems theory and amplification theory. This framework is structured around four core themes: stakeholder composition, model feasibility, resource sustainability, and resilience. Each theme addresses a critical dimension of scalability, offering a holistic lens through which interventions can be evaluated for their readiness to expand beyond pilot phases.

- **Stakeholder composition** emphasises the importance of inclusive and representative engagement across all levels of the ecosystem. This includes not only end-users and beneficiaries but also funders and policymakers. While the pilot phase may require a focused group of stakeholders with the expertise and authority to initiate and test the project, scaling up often requires expanding stakeholder involvement to include new delivery partners and decision-makers. Effective scalability therefore depends on aligning interests, establishing shared ownership, and defining clear roles as the stakeholder ecosystem evolves.

- **Model feasibility** refers to the practicality and adaptability of the intervention's design. Scalable models must be context-sensitive yet modular enough to be replicated or adapted across diverse settings. This involves assessing whether the intervention's core components can function under varying infrastructural, cultural, and policy conditions.

- **Resource sustainability** focuses on the long-term viability of financial, human, and technical resources. Projects that rely heavily on external funding or specialised expertise often struggle to scale. The framework encourages early planning for local capacity-building, budget integration, and institutional support to ensure continuity beyond the pilot phase.

Resource sustainability focuses on the long-term viability of financial, human, and technical resources. Projects that rely heavily on external funding or specialised expertise often struggle to scale. The framework encourages early planning for local capacity-building, budget integration and the development of multidisciplinary teams with the appropriate technical and stakeholder engagement expertise to support long-term implementation. This helps ensure continuity beyond the pilot phase.

- **Resilience** addresses the intervention's ability to withstand disruptions and adapt to changing environments. This includes political shifts, technological evolution, and socio-economic fluctuations. Resilient projects embed feedback mechanisms, learning loops, and governance structures that allow for iterative refinement and strategic adaptation.

The CSAF also stresses that scalability assessment must encompass program theory, process evaluation, and outcome evaluation. This means understanding not just what the intervention aims to achieve, but how it operates and what results it delivers in practice. By integrating these layers, decision-makers can better judge whether a project is truly ready for scale.

In essence, the CSAF provides a structured pathway for evaluating and strengthening the scalability of ICTD projects, ensuring that promising pilots are not only impactful in isolation but also viable and resilient when extended to broader populations.

The following case demonstrates (Figure 7) how the long-term duration of support was crucial for scaling-up (UKRI, 2024). The Made Smarter Innovation Challenge invested over £250 million in digital manufacturing innovation, including the Smart Pharma Supply Chain project,

which tested real-time supply chain data, predictive analytics and connected manufacturing systems to improve pharmaceutical production and supply chain resilience. Manufacturers, researchers and technology companies collaborated throughout the pilot, and follow-on investment together with wider ecosystem support allowed the technologies to be developed further once the demonstration had concluded. It was this continuity of funding and support — not the demonstration itself — that allowed the technologies to mature towards industrial adoption, underlining that successful pilots require continued investment beyond the pilot stage.

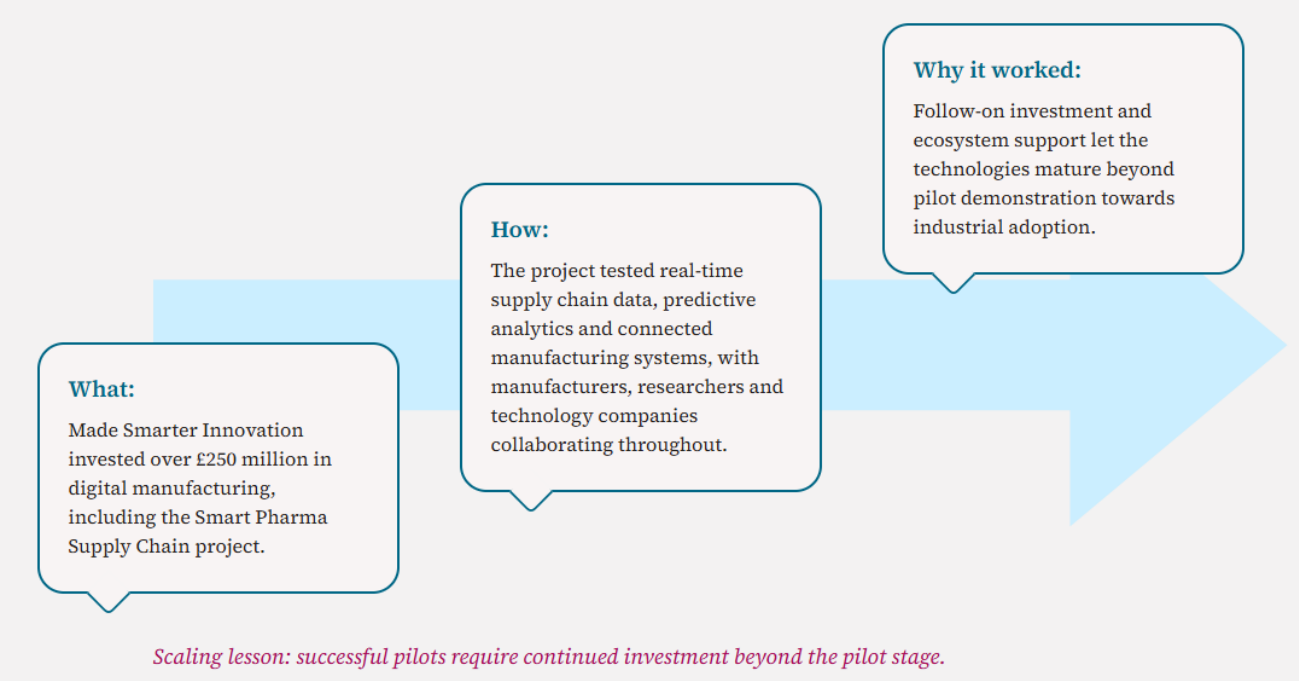

Figure 7: Successful pilots require continued investment beyond the pilot stage

4.2. Overcoming Technical Disintegration and Infrastructure Misalignment

Incompatible systems and computing infrastructure are persistent technical barriers to scaling, especially in cases where new data and dataset integrations are necessary for scaling up the solution. A pilot may work in isolation but fail when required to link with legacy systems or other platforms to aggregate data. Engin et al. (2025) introduce the **Algorithmic State Architecture (ASA)**, a four-layer model that conceptualises AI-enabled governance as interdependent layers:

- **Foundational Layer (Digital Public Infrastructure - DPI):** Provides the shared systems (e.g., identity verification, microservices) that form the essential technical backbone.
- **Intelligence Layer (Data-for-Policy - DfP):** Focuses on collecting and analysing data to foster evidence-based policymaking using sophisticated analytical tools.
- **Process Layer (Algorithmic Governance - AG):** Deals with how AI systems augment and automate decision-making processes while ensuring accountability and human oversight.
- **Service Layer (GovTech):** Represents the innovative, technology-driven service delivery to citizens.

This architecture demonstrates how misalignment among these layers can block scaling since each level builds upon and enables the capabilities of the next. Specifically, weaknesses in foundational elements (e.g., DPI) often severely constrain possibilities at higher layers, creating implementation bottlenecks that limit overall effectiveness. In this case, the challenge of technical disintegration was proactively countered by investing in open, interoperable data systems. By strengthening the Foundational Layer (DPI) early on, Copenhagen ensured that the data generated by traffic and energy pilots could be successfully accessed and utilised by the Intelligence Layer (DfP) across the entire municipality, demonstrating that successful AI adoption requires strategic coordination across all layers to ensure technical coherence and scaling readiness. Therefore, the ASA framework shows that successful AI adoption in government requires strategic coordination across all layers to ensure technical coherence and scaling readiness.

4.3. The Transferability Dilemma

Success in one location does not guarantee success elsewhere, as differences in culture, regulation, capacity, incentive structures, or stakeholder dynamics can disrupt scaling. To address this, pilots should explicitly define which components are transferable versus context-specific from the start. Corôa et al. (2023), in their umbrella review on scaling in health and social care, highlight that adaptation to local environments is not optional but a prerequisite for scaling. Their findings show that interventions often fail when they are replicated wholesale without accounting for contextual variation, leading to mismatches

between design and implementation environments. Below are key ways to overcome transferability dilemma:

- **Scaling requires systematic approaches to adaptation**: Scaling efforts must incorporate local-scale modelling tools that embed specific contextual measures, ensuring interventions are tailored to diverse environments rather than replicated wholesale. These tools generate precise, context-sensitive insights rather than relying on blanket replication strategies. For example, scaling health and social care interventions across diverse populations demands tailoring to local governance structures, workforce capacity, and community needs (Corôa et al. 2023). Without such adaptation, interventions risk being unsustainable or ineffective despite initial success.
- **Realistic pilot environments are critical for surfacing integration challenges early:** Designing pilots in testbeds that mimic real-world complexity, or co-designing with future implementers, forces stakeholders to confront issues of interoperability, resource allocation, and institutional fit before scale-up. This proactive engagement ensures that adaptation is embedded into the scaling process rather than treated as an afterthought.
- **Stakeholder involvement and iterative learning are key to overcome transferability dilemma**: Successful scaling cases often integrate feedback loops that allow implementers to refine interventions continuously as they expand into new contexts. This aligns with broader scalability frameworks that stress resilience and stakeholder composition as key dimensions of readiness.

In summary, scaling is not about replication but about translation. Pilots must be designed with adaptability in mind, supported by modelling tools, realistic environments, and co-design processes that anticipate and address contextual differences. By embedding adaptation into the DNA of pilot projects, organisations increase the likelihood that interventions will achieve sustainable impact across diverse settings.

4.4. Weak Evaluation and Policy Shifts

Over time, changes in leadership, priorities, or regulations can weaken scale-up efforts (Palumbo et al., 2023). Without embedded champions or continuous policy engagement,

momentum may stall. Scaling strategies must therefore include risk buffers, governance champions, and ongoing engagement with policymakers to navigate shifting environments. For pilot projects in water management, for example, Vreugdenhil et al. (2010) emphasise the need to distinguish context-dependent knowledge from generalisable insight and to monitor policy shifts that may disrupt scale-up:

- **Distinguishing context-dependent knowledge from generalisable insights:** Their study highlights that pilots often generate rich, localised learning that may not directly transfer to other settings. To overcome this, institutional repositories for lessons learned must be established, enabling policymakers and practitioners to identify which principles are replicable and which require adaptation. This deliberate knowledge capture is essential because policy experiments operate under complex and dynamic conditions, where political, social, and ecological factors interact unpredictably.
- **Rigorous Monitoring and Evaluation (M&E) systems:** If pilots lack such systems, valuable insights remain locked within the pilot phase and cannot inform broader replication. Effective M&E ensures that lessons learned are systematically captured, analysed, and translated into actionable knowledge for future contexts.
- **Political dimensions of experimentation:** Scaling is not merely a technical exercise but a political process that requires negotiation, legitimacy, and alignment with broader governance structures. Successful scale-up depends on embedding pilots into institutional frameworks, ensuring continuity despite leadership turnover, and fostering resilience against policy disruptions.

Taken together, these insights suggest that scaling success relies on strengthening M&E systems, embedding governance champions, and institutionalising knowledge repositories. By doing so, organisations can safeguard transferable principles, anticipate disruptions, and ensure that pilot innovations evolve into sustainable, system-wide practices, by overcoming the challenges of weak evaluation and policy shifts.

5. Conclusions

As demonstrated across sectors such as health, smart cities, and public administration, effective scale-up depends on more than just technological readiness; it requires strategic planning, ecosystem coordination, robust governance, and iterative learning. The process model outlined in this report highlights the need to institutionalise successful pilots through adaptable structures and stakeholder engagement. While challenges such as data fragmentation, funding discontinuity, and institutional resistance persist, opportunities also emerge in the form of open platforms, cross-sectoral collaboration, and mission-driven programs. Characteristics such as embedded feedback mechanisms and a commitment to public value are key indicators of scalability. This report supports a dynamic and context-sensitive approach to scaling that balances innovation with governance. Ultimately, building national data capability demands portfolios of projects that not only deliver impact at the pilot stage but are also designed for long-term, system-wide scale.

Table 4: Core Principles for Scaling Data-Driven Pilot Projects: What, How, and Why It Matters

What
Scaling data-related projects from pilot to full implementation involves overcoming technical, institutional, financial, and political barriers. These challenges often emerge from poor pilot design, system fragmentation, and a lack of alignment between project goals and real-world scaling conditions.
How
To scale effectively, these challenges must be tackled early, during the pilot design phase. Designing for scalability from the outset includes considering institutional readiness, system integration, knowledge transfer, and future user needs.
Why It Matters
Failure to address these barriers results in pilots that are not sustained, cannot be transferred across contexts, or are never institutionalised. By proactively addressing these issues, organisations can lay the groundwork for sustainable and impactful scale-up.

Scaling mission-oriented, data-driven pilots requires more than technical feasibility. It demands strategic intent and adaptive frameworks. As seen across smart cities, public health, and digital governance, early investment in cross-functional leadership and data management builds a stronger foundation for scaling up. Pilots that are treated as iterative, co-created learning environments are more likely to transition into systemic solutions. By embedding accountability, long-term resourcing, and stakeholder trust, organisations ensure

that pilots evolve into durable components of national data capability. Many pilots run on short-term grants and lack institutional funding or staffing required for scale.

6. Policy Recommendations: Supporting Pilots to Successful Scale-Up

1. Institutional and Political Commitment

- **Consider asking for a scale-up plan as part of pilot funding applications, rather than treating it as an afterthought.**
  The report's core finding is that scaling is a design choice made at the pilot stage, not something added after a pilot has demonstrated success. Funders could therefore consider asking applicants to include a scalability or exit-to-scale plan in applications for programmes intended to support pilots.

- **Encourage senior or political sponsorship before the pilot starts.**
  The report identifies that pilots are more likely to move into mainstream operations when there is sustained political commitment and interdepartmental coordination. Applicants and policy makers may therefore wish to identify and formally engage a senior sponsor at the outset, rather than waiting until the point of scale-up.

- **Build in continuity mechanisms across leadership and electoral cycles.**
  The report notes that scale-up efforts can stall when leadership, priorities, or regulations change. Policy makers could consider mechanisms such as embedded governance champions and handover protocols to help pilots withstand changes in political leadership.

2. Funding and Resource Continuity

- **Consider funding beyond the pilot stage.**
  The report shows that it was continuity of funding, rather than the pilot itself, that enabled technology to mature towards industrial adoption. Policy makers could therefore consider structuring funding calls with a follow-on investment tranche, rather than relying solely on one-off pilot grants.

- **Support pathways into institutional or national priorities, not only grant funding.**
  Many pilots rely on short-term grants without a clear route to longer-term institutional commitments. Funders could ask applicants to indicate how, if successful, the solution might be embedded in existing departmental, municipal, or national priorities.

- **Use a structured framework to assess scalability readiness before committing scale-up funding.**
  This could draw on dimensions such as stakeholder composition, model feasibility, resource sustainability, and resilience, as reflected in the report's CSAF-style approach. Such a framework would give policy makers an evidence-informed basis for decisions, rather than relying on pilot "success" alone.

3. Data Infrastructure and Interoperability Standards

- **Invest in shared, open, interoperable data infrastructure, including Digital Public Infrastructure, ahead of individual pilots.**
  The report shows that the lack of shared, open, and interoperable data infrastructure increases the cost and reduces the efficiency of scaling pilot projects. Policy makers could therefore treat investment in Digital Public Infrastructure as a prerequisite public good, rather than as a cost to be addressed separately by each pilot.

- **Encourage common data standards and formats across departments and agencies.**
  Interoperability challenges often arise because organisations use different standards and systems. A policy-level steer towards standardised data formats and access interfaces could help remove a major bottleneck to scaling.

- **Clarify data controller and processor roles in funding and procurement terms.**
  This would help ensure that accountability for data use is clear before a pilot begins collecting or processing data.

4. Governance and Regulatory Clarity

- **Provide clear and proportionate regulatory guidance for data-sharing across sectors.**
  This is particularly important for cross-organisational or cross-sector pilots in areas such as health, energy, and mobility.

- **Support regulatory sandboxes or equivalent mechanisms.**
  These could allow pilots to test governance and compliance models in a realistic but lower-risk environment before wider rollout.

5. Ecosystem and Cross-Sector Collaboration

- **Fund ecosystems, not only individual projects.**
  The report found that successful programmes scaled impact by deliberately building challenge-led partnerships and shared governance across industry, academia, and government. Policy makers could therefore design funding calls that require or incentivise cross-sector consortia pilots.

- **Enable place-based adaptation rather than mandating a single fixed model.**
  The report shows that pilots were successfully scaled when governance and technical design were adapted to local conditions while preserving core principles. Policy could therefore reward adaptive replication, rather than rigid copy-and-paste rollout.

6. Knowledge Transfer

- **Encourage structured monitoring and evaluation and knowledge codification as part of funding conditions.**
  The report repeatedly identifies weak monitoring and evaluation as a reason why valuable lessons remain locked within individual pilots. Funders could ask applicants to document the distinction between context-specific findings and transferable or generalisable lessons.

- **Establish or fund national or sectoral knowledge repositories.**
  Such repositories would allow lessons from one pilot to be accessed by others

attempting to scale similar solutions, helping to reduce duplicated effort and repeated failure.

- **Avoid one-size-fits-all replication mandates.**
  Policy should recognise that scaling is a process of translation, not simple copying. Funding and evaluation criteria could allow for contextual adaptation, rather than penalising justified deviation from the original pilot design.

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