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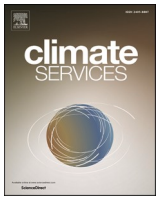

Measuring what matters: Building impact pathways to actionable information for the weADAPT platform

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HIGHLIGHTS

- Online platforms can help to bridge the climate adaptation knowledge-to-action gap.
- Understanding climate adaptation outcomes and impacts is key to effective knowledge management.
- A knowledge management Theory of Change must evolve to meet changing user needs.
- Trust and transferable, place-based knowledge supports research, policy and practice.
- Online platforms increasingly serve as hubs for learning, fostering connections, collaboration, and long-term partnerships.

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ABSTRACT

The potential of online knowledge platforms to support urgent climate action is increasingly recognized; however, their effectiveness is often hindered by the fragmentation and overabundance of information, which can impede learning and contribute to misinformation, redundancy, and erosion of trust. Despite their proliferation, few platforms have undergone systematic evaluation of their impact on research, policy, and practice. This study addresses this gap by assessing the usability and impact of the weADAPT online platform through a mixed-methods approach, combining a user survey and semi-structured interviews. The findings reveal clear pathways linking knowledge management (KM) aims and activities to outputs, outcomes, and longer-term impacts. Users reported that the platform effectively promoted climate change adaptation awareness, supported capacity development, influenced policy and planning, and facilitated knowledge exchange and collaboration. Further analysis identified six core KM activities—enhancing usability, inclusivity, trust, transferability, connectivity, and alignment with FAIR principles—as central to platform effectiveness. These findings informed a recent platform upgrade (2022–2024), the refinement of weADAPT's Theory of Change, and the development of a tailored monitoring, evaluation, and learning (MEL) framework featuring custom progress indicators. The study underscores the importance of aligning KM practices with user needs and evaluating platform impact in meaningful ways—measuring what we value, rather than merely what is easy to quantify. These insights offer practical guidance for knowledge managers and platform developers working to enhance learning and support evidence-based climate adaptation.

Practical implications chapter: As a climate service, the weADAPT online platform[1] primarily (but not exclusively) targets communities in low- to middle-income countries to help reach and give voice to vulnerable communities and those in "hard to reach" regions of the world. Acting on results of a survey (379 responses) and interviews (21) conducted (June 2022 – February 2023) on the impact and use of platform, weADAPT adopted six key knowledge management (KM) specific aims and related activities to support its mission to help users collectively "Learn, Share and Connect" (see Fig. 1 for three use cases that provide examples of these three pillars). These are as follows: 1) increasing usability through translation, tailoring, syntheses and capacity development; 2) enhancing inclusivity through just and equitable sharing of multiple knowledges; 3) building trust through collaborative KM processes; 4) creating transferability through sharing multi-scale, multi-sectoral place-based

Abbreviations: KM, knowledge management; MEL, Monitoring, evaluation and learning; FAIR, Findable, Accessible, Interoperable, and Reusable; CARE, Collective benefit, Authority to control, Responsibility, and Ethics; ToC, theory of change; CCA, climate change adaptation.

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[1] https://www.weADAPT.org.

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knowledge; 5) improving connectivity through cross-fertilization of knowledge, users, networks and influencing other platforms; and 6) promoting findable, accessible, interoperable, reusable (FAIR) and decolonized search and discovery. Insights from the survey helped refine the theory of change; establish a monitoring, evaluation, and learning (MEL) framework tailored to user feedback; and guide a technical upgrade of the platform finalized in January 2024.[2]

A range of outcomes and impacts were attributed to the use of weADAPT by users who responded to the survey and interviews from 83 countries in Africa, Asia, Europe, Oceania, and North and South America. These included, but were not limited to: supporting national policy and planning (e.g., preparing a chapter on vulnerability and adaptation in Sri Lanka's Third National Communication on Climate Change); developing strategic environmental assessments (e.g., in Yemen); drafting national strategy for adaptation to climate change (e.g. Ukraine, Philippines); building capacity among farmers, youth, and community members (e.g., in Zimbabwe, Ghana, and Nigeria); planning and implementing adaptation initiatives (e.g., in Tanzania); and contributing to reports, project documents, research papers, proposals, literature reviews, and analytic assessments (e.g., in Cambodia, Kenya, and the Philippines).

Users attributed learning opportunities for themselves and their communities to the platform's simple language and neutral tone and well-synthesized material. In addition, users indicated that three features – the weADAPT global case study map (showing location and type of adaptation measure), downloadable newsletter, and thematic content structure – were key in supporting the translation of lessons learned for community-based and policy-based activities, and in discovering and using evidence for diverse research, policy, and practice undertakings. Users referred to the platform's "down-to-Earth language" to communicate "real-life" and "practical" cases; "trusted" and "recommendable" knowledge to educate, inform others and provide case-based concrete evidence to influence policy makers; and "current", "applicable" and "contemporary" information to stay up to date with adaptation trends and milestones, and shape new research and projects. Additionally, users underscored the value of the platform in helping form new partnerships and adaptation projects; learn about adaptation from a wide range of localities and perspectives; address knowledge gaps; develop capacity of local stakeholders; and, importantly, feel represented and heard.

Analysis of the uptake, outcomes and potential impacts attributed to the platform reinforced existing, guiding knowledge management (KM) aims and activities, and suggested additional ones. The platform accordingly devised its set of six aims and activities to underpin and support the weADAPT mission to help users learn, share, and connect; and to seek to provide content that is "usable" as opposed to just useful (Lemos et al., 2012) (Fig. 1). For example, the aim and activity of *improving connectivity and cross-fertilization between knowledge, users, and networks* are undertaken through measures that foster online and diverse communities of practice, provide discussion spaces, offer training opportunities, and give all organizations and contributors equal visibility on the platform. These measures and weADAPT's collaborative editorial processes pave the way for representing multiple types of knowledge and voices of marginalized actors.

The results of this study revealed pathways between KM activities (Section 3.3) and outputs, outcomes, and longer-term impacts. This led the weADAPT platform to undertake a more strategic visual and technical website upgrade (unveiled in January 2024); refine its theory of change; and adopt a monitoring, evaluation and learning framework to measure what users value (Hargreaves & Shirley, 2009); and monitor impact pathways into the future (Section 3.4).

1. Introduction

The imperative to accelerate global climate action and reorient development pathways toward sustainability has reached an unprecedented level of urgency (IPCC, 2023). Achieving this goal demands a systematic effort to draw lessons from past experiences and to build upon existing knowledge. However, this task is complicated by the sheer volume of information available and the continuous influx of new content to which individuals are exposed daily. Within the climate change domain, the 'proliferation of platforms' (Barnard, 2011)—often driven by donor requirements for project-specific, branded websites—has led to a proliferation of short-lived digital spaces. These platforms frequently become obsolete or are abandoned once project funding cycles conclude (VanderMolen et al., 2019). The consequence is a fragmented and siloed knowledge environment, where users must navigate multiple websites, often encountering broken links or outdated resources.

In addition to these structural inefficiencies, many platforms struggle to ensure equitable access to information and to keep pace with the rapid production of new material (Street et al., 2021). These challenges contribute to widespread information overload and redundancy, both of which hinder effective learning. Moreover, the rapid expansion of platforms and associated content has not been matched by the development of robust monitoring, evaluation, and learning (MEL) frameworks within the broader knowledge management (KM) ecosystem (Swart et al., 2017). Addressing this gap is essential to enhancing the relevance, accessibility, and impact of knowledge platforms in supporting climate change adaptation and resilience-building efforts.

In this context, new and transformative approaches to knowledge management and sharing are essential. They offer the potential to foster learning, translate knowledge into actionable insights, and bridge the persistent gap between theory and practice (Street et al., 2022; Arteaga et al., 2023). Online knowledge platforms, when designed and governed effectively, can serve as critical infrastructures for delivering high-quality, contextually relevant information to policymakers, researchers, and practitioners. These platforms can also facilitate the identification and implementation of climate adaptation strategies (Palutikof et al., 2019b). Strengthening the connectivity of fragmented digital knowledge—particularly through improved mechanisms for search and discovery—can significantly enhance the utility and uptake of climate information. Furthermore, promoting the exchange of knowledge through well-documented good practices and lessons learned can reinforce the integration of science, policy, and practice, thereby advancing more informed and coordinated climate action (Bharwani et al., 2019).

[2] Due to the end of life of the content management system (CMS), Drupal 7, used by weADAPT.

1.1. FAIR online climate adaptation services

To respond to the urgent and complex nature of climate change challenges, information on platforms must be salient, credible, and legitimate (Cash et al., 2003) and foster effective translation from climate knowledge to climate action. In other words, platforms must make information and knowledge both relevant and usable or – using more recently coined principles – FAIR (Wilkinson et al., 2016, findable, accessible, interoperable, reusable). Information is often deemed "usable", as opposed to just "useful" (Lemos et al., 2012), if it is perceived as relevant to policy and societal needs (salient); of high quality and reliable in nature (credible); and, unbiased, encapsulating diverse values and beliefs (legitimate) (Cash et al., 2003; Sarkki et al., 2015). Other prerequisites for the ultimate use of information include the existence of appropriate policy frameworks and institutions, the capacity and agency of individuals to make decisions, and the timeliness and pertinence of the knowledge being shared (Vincent et al., 2020; Karcher et al., 2021).

Yet, these factors can be interpreted and evaluated in different ways by different actors (ibid.; Dilling and Lemos, 2011). It is therefore imperative to understand who the intended and actual users are, as well as their differentiated needs and capacities, to achieve balance and complementarity between such attributes and to avoid disregarding some needs at the expense of others (Cash et al., 2003; EEA, 2015).

1.2. Measuring outcomes – what is 'usable'?

Thus far there have been limited systematic evaluations of the impact of online climate adaptation services and the degree to which they address users' needs and values (Swart et al., 2017; Restemeyer and Boogaard, 2020). Boon et al. (2022) emphasise this MEL research "gap" in the wider climate services literature, with their review finding that evaluations tend to focus on "intermediate success variables", such as use, access, and "perceived variability, and rarely assess the services' uptake, impacts or outcomes, particularly regarding adaptation decisions and actions. Additionally, even when claimed as stated outcomes, few evaluations address awareness and behaviour change, policy outcomes, network creation, relationship building, enhanced decision-making, capacity development, replication or modification of adaptation actions, changes in stakeholder engagement and other action on the ground (Karcher et al., 2023).

This gap could be explained by cases where the claimed outcomes were unintended and therefore not initially monitored in the evaluation, or by shortcomings in evaluation approaches, methods, and measures (ibid.). For example, standard website analytics alone are insufficient in providing meaningful insights into platforms and their impact (Pringle, 2011; EEA, 2015; Swart et al., 2017; Palutikof et al., 2019b), and can be inaccurate or underestimate use, particularly if platforms encourage the citation of original sources. Understanding the contribution of online platforms to climate adaptation outcomes requires a systematic evaluation that goes beyond standard web analytics towards more qualitative, interactive data collection and proxy-based indicators (Swart et al., 2017; Palutikof et al., 2019b; Pringle, 2011). It requires formulating an understanding of whether "we are doing the right things" from a KM perspective and measuring what we value in terms of "impact", as opposed to solely "doing things right" (ibid.). That is, if we make the mistake of only valuing that which we measure (Hargreaves & Shirley, 2009) we may miss understanding the actual use or indeed misuse of the knowledge shared online.

Approaches to evaluating the use and success factors of online climate adaptation knowledge brokering platforms have included: participatory observation to identify active users and assess platform inclusivity and user motivations (Restemeyer and Boogaard, 2020); content and database analysis to evaluate user involvement and content quality (ibid.; Mitchell et al., 2016); document analysis to understand user demographics (Laudien et al., 2019); statistical analysis to examine platform popularity, usage factors, and links between science and policy (Mattern et al., 2018; Sanderson et al., 2016; Palutikof et al., 2019a; Restemeyer and Boogaard, 2020); interviews and surveys to explore user needs, preferences, and behaviors (Hammill et al., 2013; Clar and Steurer, 2018; Mattern et al., 2018; Palutikof et al., 2019a; Laudien et al., 2019; Jevne et al., 2023); and user feedback through meetings, workshops, contact options, social media, and newsletters to assess platform usability (EEA, 2015). Such studies have highlighted users that are not being targeted or reached (Hammill et al., 2013; Mattern et al., 2018; Restemeyer and Boogaard, 2020), as well as examples of how platforms and their content are used in practice (Mattern et al., 2018; Laudien et al., 2019). This includes raising awareness, research, developing adaptation strategies and plans across governance levels, supporting participatory processes within decision-making contexts, and, supporting coordination among countries with shared adaptation interests and challenges (ibid.).

1.3. Evaluating impact – how does it add value?

To effectively assess the contributions of online climate adaptation services to broader climate action goals, it is essential to adopt structured and reflective approaches to monitoring, evaluation, and learning (MEL). Theories of Change (ToCs) have also emerged as a widely used tool in this context, offering a framework to map out pathways toward desired outcomes and impacts, while identifying key assumptions, interventions, and indicators along the way (Valters, 2015) and can support filling of the gaps in MEL identified by Boon et al. (2022). ToCs have been applied to climate adaptation initiatives, including programmes for Small Island Developing States (Pringle & Thomas, 2019), National Adaptation Plans (Dekens and Harvey, 2024), and more rarely to knowledge platforms such as the Global Coffee Platform (GCP; Ul Haq, 2024) and the EIT Climate-KIC through its collaboration with the Transformative Innovation Policy Consortium (Palavicino et al., 2023). These applications help articulate how specific activities contribute to longer-term goals and support critical reflection on whether initiatives are aligned with their intended impacts.

ToCs support structured thinking throughout the design, implementation, and evaluation phases (Vogel, 2012; Brown, 2020), and serve as a valuable tool for stakeholder engagement and alignment (Essman, 2022). In the context of an online climate knowledge platform, a ToC can clarify how platform activities—such as content curation, user engagement, or knowledge brokering—are expected to lead to tangible outcomes, guide ongoing development, and ensure coherence between the platform's operations and its intended contribution to just and effective climate adaptation strategies.

For example, the GCP employs a ToC to visualize how its farmer-centric strategy—across global and local scales—results in a sequence of intermediate outcomes and processes that ultimately contribute to the improved livelihoods of smallholder farmers (Ul Haq, 2024). In contrast, Palavicino et al. (2023) presents a 'Transformative ToC' developed through structured co-design processes with stakeholders in three EIT Climate-KIC projects focused on nature-based solutions, landscape planning, and sustainable mobility in Europe. This participatory approach to ToC development emphasized knowledge brokering, stakeholder dialogue, and co-learning, which were then used to shape the MEL frameworks in ways that reflected shared understanding and actionable insights.

To further inform ToC-based MEL, Boon et al. (2022) propose a comprehensive definition of a successful climate adaptation service that foregrounds users and emphasizes trust, relevance, and actionable knowledge. According to this definition, an effective adaptation service must be "relevant, credible, and accessible to users, acknowledge uncertainty, be communicated in user-specific formats, and be timely for user needs." Moreover, such services must be co-developed by users and producers, facilitate trust-building, enhance user capacity, and ultimately support improved adaptation decision-making.

Achieving this vision requires MEL approaches that extend beyond conventional "usability" metrics to embrace a more holistic understanding of knowledge. This includes recognition of the social, political, and epistemic dimensions of knowledge production and use. Recent developments in knowledge management theory reflect this shift. Cummings et al. (2019) outline five generations of KM, culminating in collaborative, systems-based learning approaches. Building on this, Boyes et al. (2023) introduce a sixth generation focused on the decolonization of knowledge, which emphasizes epistemic justice, the recognition of Indigenous and Local Knowledge (ILK), and a commitment to pluralistic, inclusive approaches to knowledge co-creation (Fig. 2).

These considerations are particularly salient in the context of climate change, where Western scientific paradigms have long dominated the definition of what constitutes "valid" or "trusted" knowledge (Shawoo & Thornton, 2019; Funk & Guthadjaka, 2020). The potential misalignment between such paradigms and the knowledge needs of diverse users underscores the importance of developing platforms that are responsive to varied contexts and values. This entails designing services that are not only technically sound but also sensitive to cultural perspectives, power dynamics, and user-specific formats (Boon et al., 2022).

This study draws upon these evolving KM principles (Boyes et al., 2023) to assess how the weADAPT platform—and its associated practices—can be better tailored to meet diverse user needs, bridge knowledge gaps, and support timely, just, and effective decision-making in climate adaptation (Hammill et al., 2013; EEA, 2015; Bauer & Smith, 2015).

1.4. Objectives

This study engages with the weADAPT community to critically assess whether existing knowledge management (KM) processes can be enhanced to more effectively support and accelerate climate action. While meeting basic KM standards—such as ensuring information is accessible, relevant, and up to date—is essential, this research places particular emphasis on understanding and responding to user needs. In doing so, it aims to explore the platform's core impact by drawing on insights from a user survey and a series of semi-structured interviews.

The research further seeks to identify potential pathways through which weADAPT can contribute to desired adaptation outcomes and impacts. These pathways are articulated through the development of a platform-specific Theory of Change (ToC) and an accompanying monitoring framework designed to guide and evaluate progress over time.

The study is guided by the following research questions:

1. Who are the users of the weADAPT platform? (Section 3.1)
2. What are the outcomes and impacts of using the platform? (Section 3.2)
3. What KM activities support pathways to achieving these outcomes and impacts? (Section 3.3)
4. How do these KM activities help refine weADAPT's Theory of Change? (Section 3.4.1)
5. How can outcomes and impacts be effectively monitored going forward? (Section 3.4.2)

The remainder of the paper is structured as follows: Section 2 details the methods used to assess platform usability, user engagement, and impact pathways, through the implementation and analysis of a survey and interviews using weADAPT as the case study. Section 3 presents the key findings, including user demographics and motivations, reported outcomes and impacts, six core KM objectives and activities, an updated Theory of Change, and a proposed monitoring framework. Section 4 discusses how these findings have informed the ongoing development of the platform, contributed to the broader literature on climate knowledge platforms, and highlighted areas for future research. Section 5 concludes the paper.

2. Methodology

This study uses key questions identified as vital in MEL approaches to assess the effectiveness of adaptation activities posed by Pringle (2011). This approach has been applied to assess a knowledge platform's alignment with core KM criteria, related to usability and usage ("Are we doing things right?"), meeting user needs and values and achieving outcomes ("Are we doing the right things?"), and verifying these findings through a survey and interviews ("Can we verify that we know what the right things are?"). This approach provided insights into improving functionality, guiding the upgrade process, refining KM practices, and identifying indicators for a MEL framework.

This paper uses the weADAPT platform as a case study to examine how evaluating knowledge management (KM) effectiveness—particularly through the lens of "measuring what we value"—can support progress toward platform objectives and broader climate adaptation goals.

2.1. Case study – the weADAPT knowledge platform

Launched by SEI in 2007, weADAPT is one of the world's leading and longest-running user-led platforms and networks for climate change adaptation (CCA). weADAPT's mission is to foster an inclusive online community that **Learn** from one another, **Share** experiences, and **Connect** with peers. The platform's ethos includes amplifying the voices of those most vulnerable to climate change, facilitating just and equitable knowledge exchange, and helping users learn from each other about the barriers and enablers to climate adaptation solutions.

It brings together a dynamic, global community of more than 9,000 users and nearly 5,000 organizations, all involved with CCA research, policy and practice. Originally developed from a basic wiki page, for sharing experience and knowledge on adaptation, weADAPT has continuously evolved in direct response to user feedback. The platform's users include researchers, practitioners, planners, advisors, policymakers, NGOs, businesses, and individuals.

A systematic and semi-structured approach to knowledge exchange aims to accelerate the transferability of lessons learned. This enables the weADAPT audience to quickly and easily explore, compare and assess the thousands of projects around the world that face similar challenges and are implementing potential solutions. The platform provides access to credible, relevant, high-quality information generated by its user community. The upgraded platform (launched January 2024) includes a range of features to support access from a broad audience including from marginalized groups and "hard to reach" areas, such as: low-energy and low-bandwidth options; an enhanced, searchable global map of case studies; bookmarking/read later options; interactivity between users such as "following" and "liking"; advanced tagging[3]; and, the ability to translate content into more than 100 languages.

The platform aims are also scaled out through weADAPT microsites,[4] which are customized websites created for projects or initiatives that require their own brand identity. Microsites are built on weADAPT architecture, and they thus remain connected to weADAPT content and community. As a result, content need not be restricted by project funding cycles, a prevailing challenge with new websites, because information from these microsites remains available to the weADAPT community beyond the lifetime of any project, ensuring knowledge legacy.

In 2022, marking over fifteen years of operation, the weADAPT team developed a baseline Theory of Change (ToC) (Fig. 3) to articulate the platform's intended impacts and the pathways through which these might be achieved. The ToC was designed to visualise the relationships

[3] Tagging refers to the assignment of keywords to content to better describe it.

[4] https://weadapt.org/microsites/.

Use case 1 - Learn: A programme manager at the Environmental Management Trust in Zimbabwe highlighted the use of weADAPT's synthesized materials in developing the capacity of local actors most vulnerable to the risks of climate change. Information on weADAPT informed an initiative to train lead farmers and improve learning on how to implement conservation and climate-smart agriculture measures – such as mulching, organic farming, diversifying crops, and planting drought-resilient crops – and how to transfer these lessons among the wider farming community: *"We train on average, let's say about 20 lead farmers … each farmer now will go and run some demonstration plots and in the demonstration plot now our field officers, together with the government officers, they go and call the other 25 farmers to come and learn."* Further raising awareness, they share the weADAPT material through social media networks: *"We have what we call 'the livelihoods and food security specialist group' [on LinkedIn] where we meet and…we also share the information from weADAPT on livelihoods."*

Use case 2 - Share: A researcher based in Christchurch, New Zealand, discussed using weADAPT's case studies from different areas of the world and the platform's neutral language and tone to help provide information, establish links with local policymakers, and raise awareness among local community groups. Case studies focusing on coastal adaptation were shared in deputations to local councils to showcase the different ways in which other cities are tackling sea-level rise, and to broaden ideas about how New Zealand can address these risks going forwards: *"They'll give you ten minutes to address them…these are people making decisions, and confirmation bias is something [that weADAPT] case studies are a good way ... to start cracking open some of that."* Seeking to support shifts in ways of thinking about climate change risks and adaptation, the researcher also explored case studies at a community scale: *"I would like to think that what we do is empower communities, not to…bury their heads and say it's going to be fine…It's really good to have case studies that show how you could do it".*

Use case 3 - Connect: A practitioner in rural northern Ghana discovered Y-ADAPT training (a climate change adaptation youth engagement curriculum) through the weADAPT platform and was able to connect with the training developers (Red Cross/Red Crescent Climate Centre) to develop adaptation projects to empower youth to devise action plans and become champions for change: *"I came across Y-ADAPT…and it took me to the [weADAPT] platform…and so I shared the link with my colleagues and said I think I find this interesting…and then I had to write to the Red Cross to say that we found this…but we want to have a discussion and see how we go about it."* This new partnership led the practitioner's community organization to tailor the training material to his local context, and to kickstart a range of projects, such as protecting local water sources, planting trees near schools, and educating local youth on waste segregation.

Fig. 1. The "Learn, Share, Connect" mission of weADAPT: example use cases from Zimbabwe, New Zealand, and Ghana.

between the platform's core audience, activities, outputs, outcomes, and long-term impacts, while also making explicit the assumptions underpinning these connections. It was developed in response to increased awareness of the persistent barriers users face in accessing and applying climate knowledge—barriers that ultimately constrain learning and the scaling of effective adaptation action. Key challenges identified through previous surveys and user feedback included information overload, unstructured knowledge sharing, language issues, limited internet connectivity, a lack of context-specific or relevant content, and insufficient user capacity to engage with available information and tools.

The ToC helped establish a clearer development pathway for the platform, linking targeted knowledge management (KM) activities to specific user needs and adaptation priorities. These activities (Fig. 3) aim to address the aforementioned barriers through improved content curation, platform accessibility, user support and training, and engagement mechanisms. Importantly, the ToC reflects weADAPT's foundational emphasis on interaction between users and knowledge producers, as well as on building trust and user capacity – elements more recently identified as central to Boon et al. (2024) definition of effective adaptation services. These principles are embedded in the ToC's envisioned outcomes and impacts and are central to the platform's ongoing evolution.

2.2. User engagement – are we doing things right?

Like other platforms, weADAPT regularly records platform analytics on the number of user visits, length of sessions (engagement with content), referrals, downloads, etc. Whilst ticking off basic engagement statistics or "intermediate success variables" (Boon et al., 2022), ensuring "we are doing things right" (Pringle, 2011), such measures are not enough. They rarely provide the richness of detail required to understand *how* information is being used, for what societal outcomes (Karcher et al., 2021), and the ultimate impact and value the platform provides – whether "we are doing the right things" in the first place. Engaging more deeply with users through the survey and interviews was crucial to understanding the platform's impact, including any "intangible" outcomes, and ensuring it was "measuring what is valued" by both users and the weADAPT team (Hargreaves & Shirley, 2009). As such, the research team conducted a two-phase study focused on identifying barriers to accessing and using adaptation knowledge. The first phase involved a user survey designed to gather broad insights into users' experiences, including challenges encountered when engaging with the platform (2021, Appendix 1a).

2.3. Outcomes – are we doing the right things?

To assess the outcomes central to weADAPT's mission over its 15-

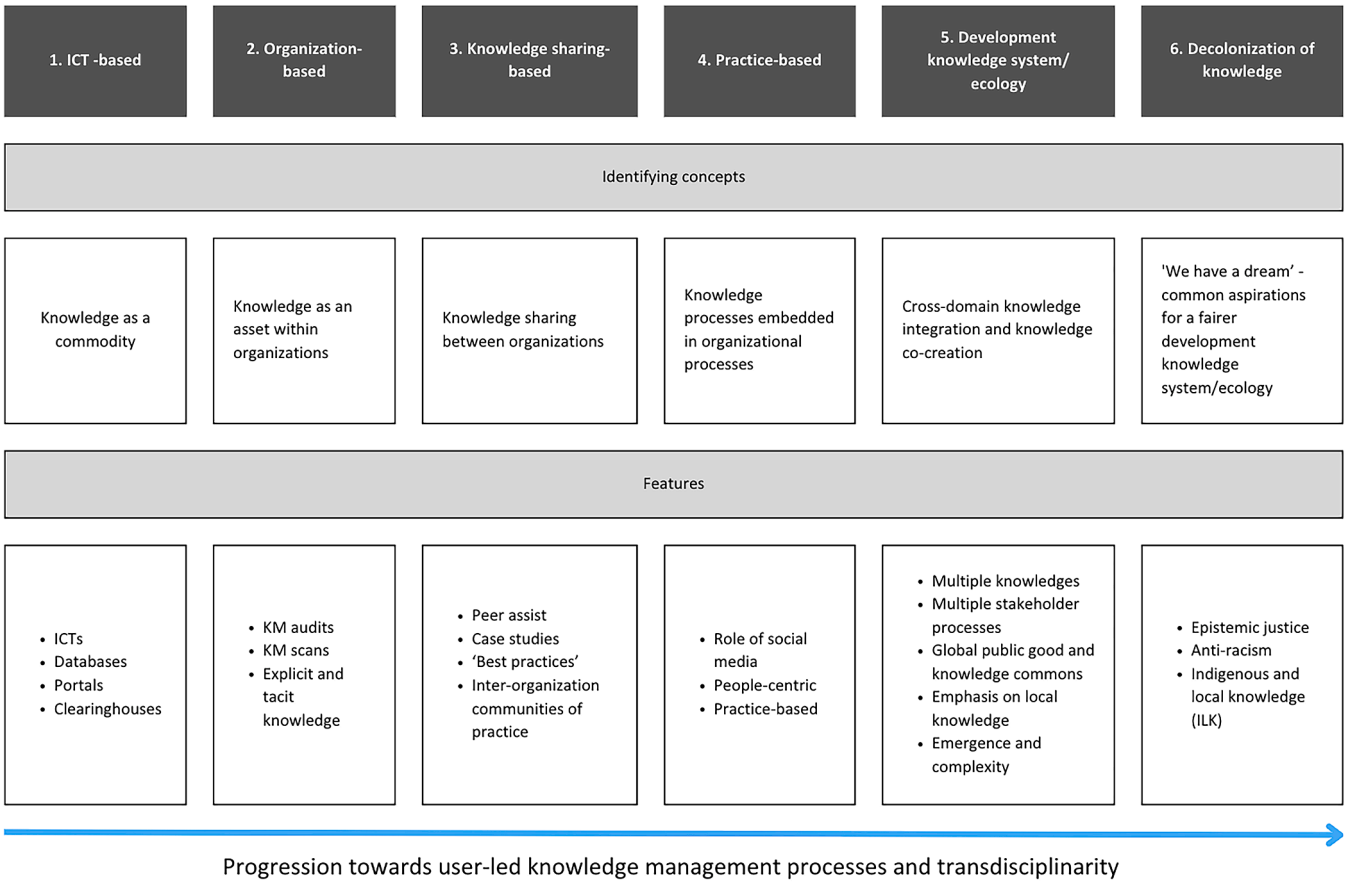

Fig. 2. Six generations of KM (.
Source: authors, adapted from Cummings et al., 2019; Boyes et al., 2023)

year history – outlined in its baseline ToC – and to explore platform impacts in greater depth, a second phase involved a series of in-depth interviews with a purposive sample of survey respondents (July 2022-Feb 2023, Appendix 1b). Interviewees were selected based on their responses to the open-ended survey question: "In what ways has weADAPT supported your adaptation work?" This approach ensured that participants had meaningful engagement with the platform and could speak to its influence on their adaptation-related activities.

Interview data were analyzed inductively using qualitative data analysis software to ensure transparency and reproducibility in the coding and interpretation process (Smit, 2002; Friese et al., 2018. The analysis focused on respondents' roles (e.g., practitioners, educators, consultants, boundary actors) and the outcomes they attributed to their engagement with weADAPT. Transcripts were coded thematically, with initial codes clustered and refined through an iterative process until data saturation was reached. The final coding structure comprised seven main thematic categories and 36 sub-codes, which were validated by the research team and defined systematically (Appendix 2, Table 1). This structured approach enabled a nuanced understanding of how different users experience and derive value from the platform, informing both its evaluation and future development priorities.

2.4. Impact – how do we know what the right things are?

To further test the robustness and relative importance of the codes derived from the interviews, two further open-ended survey question responses were analyzed, focusing on the platform's impact and attributes respectively: 'How has weADAPT helped your work' (160 responses, excluding interviewees) and 'Why you would recommend weADAPT to a colleague' (147 responses, excluding interviewees). To avoid double counting and to ensure that the code frequency represented unique respondents, the team excluded interviewees' responses and applied each code only once per relevant survey response.

The interviews and open-ended survey responses were then analyzed to better understand and evaluate the uptake, outcomes, and impact of weADAPT. The analysis focused on insights stemming from the following category codes: *outcomes of weADAPT*, *factors limiting its potential impact*, and *feedback* on *the platform (both positive and constructive)*. Key themes, topics, outcomes and motivations in using the platform were identified from the sub-codes, allowing them to be connected to existing and aspirational KM activities (Appendix 2, Table 1)[5] and MEL elements (Section 3.4). Analysis of the coding exercise led to identification and validation with the KM team of several core Learn-Share-Connect aims (see Section 2.1) and activities that support the outcomes documented in the survey and interview results (Section 3.2).

3. Results – Moving from "useful" to "usable" information

This section presents the survey and interview results. These findings highlight KM gaps and potential shifts in priorities, informing a more refined theory of change (Section 3.4.1) and MEL framework (Section 3.4.2). The team sent the survey to 5523 weADAPT newsletter subscribers and received 379 responses, yielding a response rate of almost 7 %. The survey provided information on the demography and role of

[5] Some survey responses to these questions lacked mention of positive outcomes/impacts due to short answers or less opportunity to expand. Though this was sometimes evident in other answers, only 'direct' rather than 'inferred' coding was applied to these two questions.

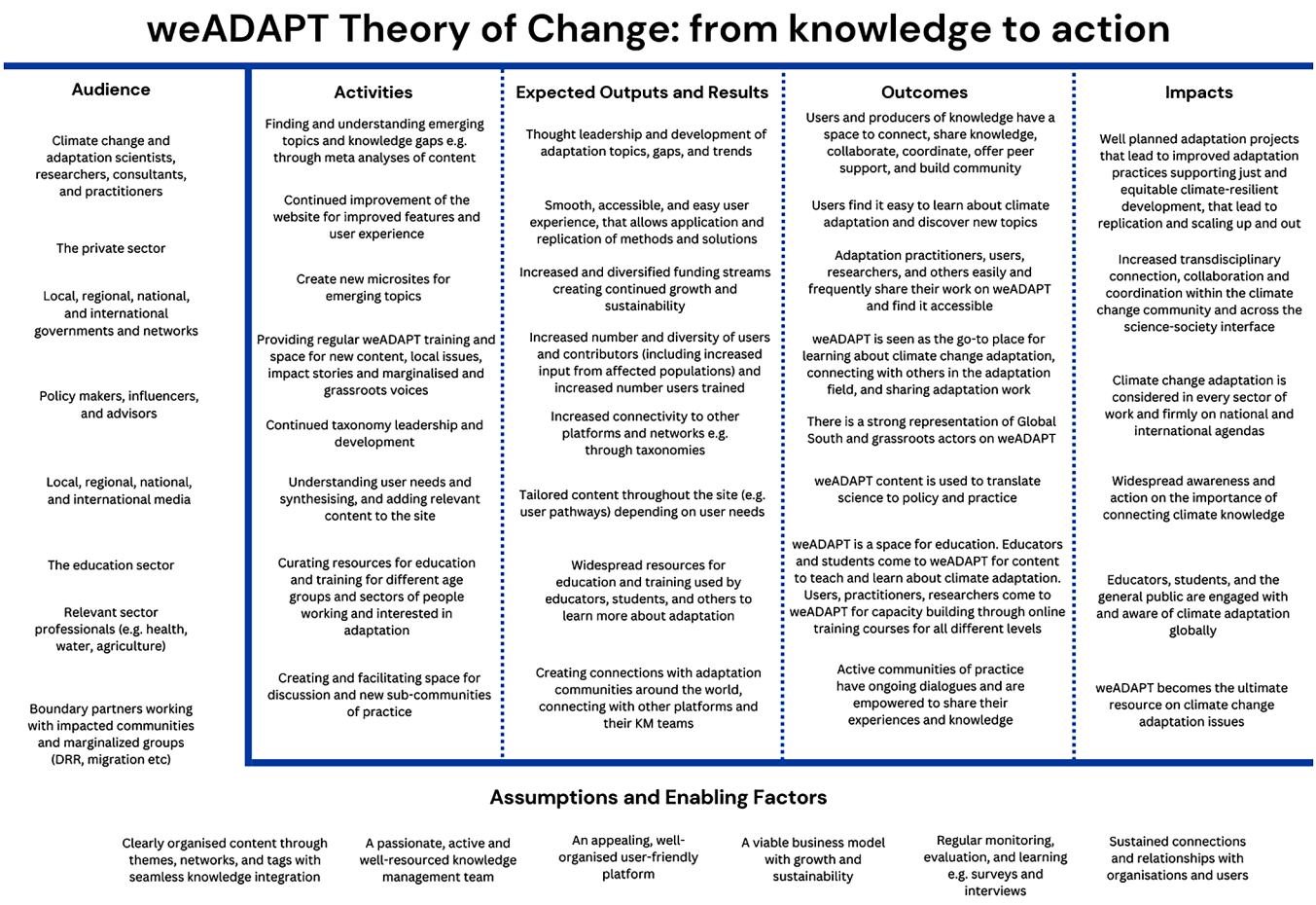

Fig. 3. Baseline weADAPT Theory of Change.

weADAPT users, how the platform is used, how it supports adaptation work, and how it can be improved. Twenty-one selected survey respondents then participated in focussed interviews with the research team.

3.1. User engagement

Survey respondents represented engagement in 83 countries from Africa (60 %), Asia and the Pacific (58 %), Europe (24 %), South America and the Caribbean (14 %), North America (8 %), Australia and New Zealand (3 %) and polar regions (1 %) highlighting the platform's broad geographic reach[6] and connection to 'hard-to-reach' areas. Interviewees were based in Africa (10), Asia (7), the Middle East (2), Eastern Europe (1) and Oceania (1) (Fig. 4).

Survey respondents represented a variety of roles spanning NGOs, consultancies, universities, government ministries, research institutions, civil society organizations, advisory services, international organizations, private enterprises, community-based organizations, meteorological organizations and think tanks (Fig. 5). Interviews were working in a variety of sectors: water (9); agriculture and food security (13); disaster management (12); forests (5); women/gender (3); semi-arid regions (3); youth (2); waste management (2); vulnerability (2); energy (1); finance/economics (2); islands (1); refugees (1); and urban areas (1).

Engagement[7] with the platform varied with 4 % of respondents participating for more than 10 years, 15 % for over 5 years, 47 % for 2–5 years, and 34 % for less than a year (Fig. 6).

The overwhelming majority of respondents[8] (96 %) reported that weADAPT had improved or informed their adaptation work in some way. These outcomes and potential impact areas are explained in more detail below.

3.2. Outcomes and impact

3.2.1. Raising awareness

weADAPT usage increased climate change awareness and learning among youth and adults in a variety of sectors and contexts. "Raising awareness" was the most common outcome mentioned in both interview (52 %, Fig. 7) and survey responses (47 % of 160).

> *"weADAPT case studies are a good way to start addressing confirmation biases and to raise awareness about climate change at the community and family level… so that […the impact of climate change…] becomes part of family thinking and community thinking. So it's not a horrible shock" (Survey respondent, researcher, New Zealand, 2022)*
> *'It keeps me updated on current affairs regarding adaptation" (Survey respondent, government employee, Kenya, 2021)*

The broad geographic coverage of weADAPT's content was also seen as a key benefit (33 % interviewees), reflecting appreciation of the potential to exchange lessons learned and engage in peer-to-peer learning. Some survey respondents cited case studies on the weADAPT map as its most useful feature (9 %). Respondents reported being inspired by

[6] Recognizing that survey respondents could select multiple regions in which they work.
[7] 332 respondents.
[8] 261 respondents.

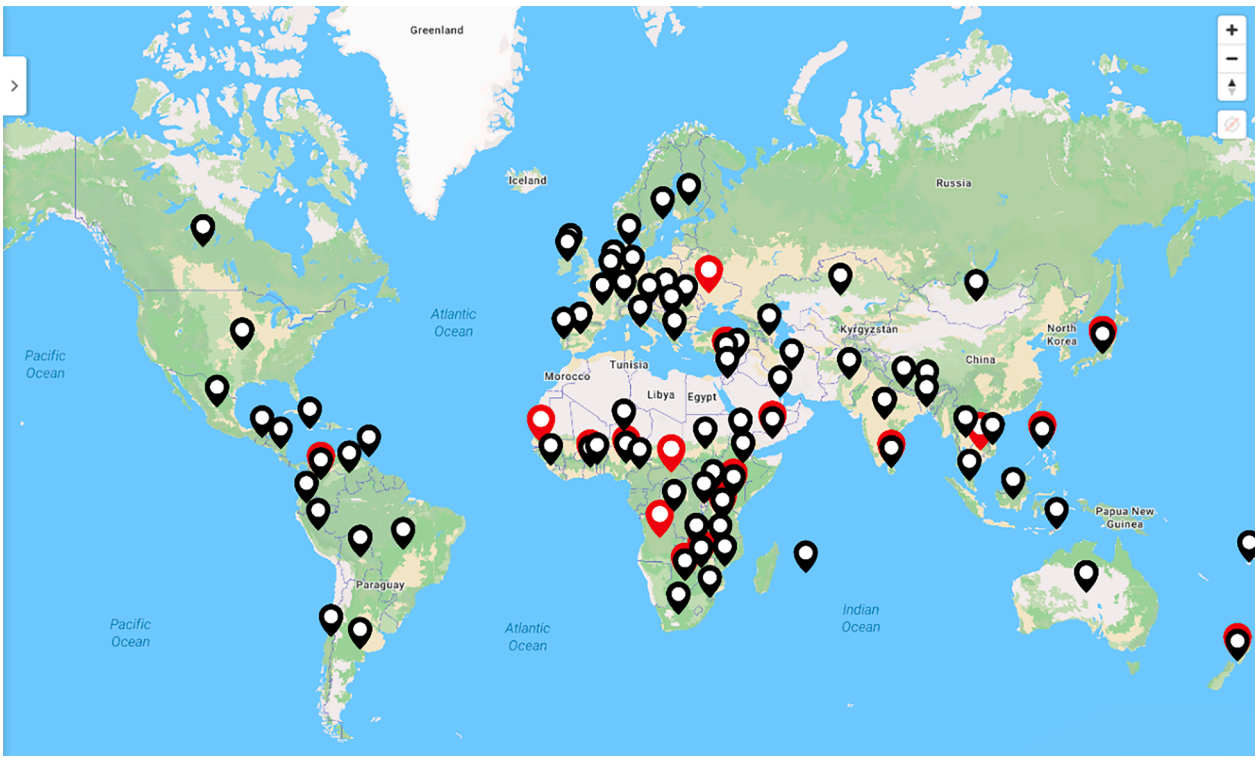

Fig. 4. Geographic distribution of weADAPT survey respondents (379, one black pin per country represented) and interviewees (21, red pins).

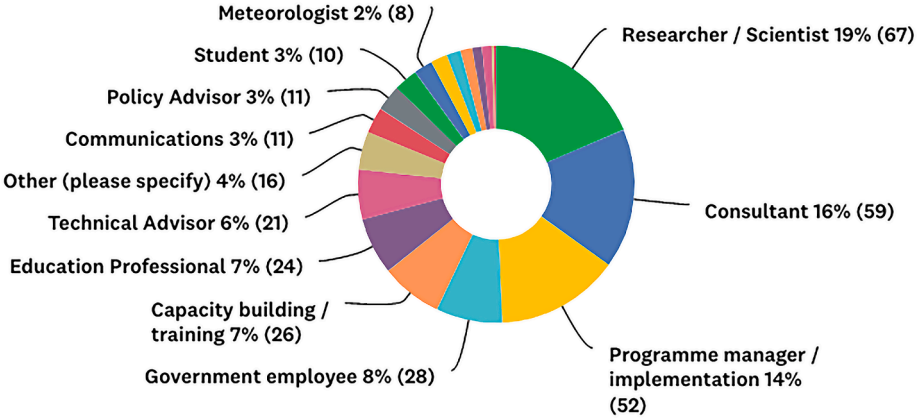

Fig. 5. The main professional role of respondents.

projects on the platform from different regions which they tailored to suit their local context (38 % interviewees, 4 % survey responses).

> *"…we use many articles that are mentioned in the website and the platform and exactly in this assignment that we did [on adaptation cost-effectiveness] …in South of Angola and north of Namibia because as you know these countries have, specifically this area, didn't have many information, so using this website …[…]… some articles were very useful for us to find the information and to build our analysis." (Interviewee, NGO, consultant, Angola, 2022)*

Seen as an informative and useful content-learning resource (62 % interviewees and 54 % of 147 survey responses, Fig. 8), weADAPT users also shared the newsletter and content across their own and external organizations, across multiple social media channels, to promote adaptation practices more widely, as well as downloading it to print for local communities.

> *"[The newsletter is] very useful and sometimes we print [it] and keep it in the library for visitors to reach." (Interviewee, trainer, humanitarian organization, Nigeria, 2022).*
> *"I usually immediately pass [the newsletter] on to other people in the team…… I work with about 40 or 50 people in those different countries…. so, I usually share stuff …there are a couple of times when the link from the [...] newsletter, [...] I used it to share it on Messenger and WhatsApp." (Interviewee, technical advisor, international institute, Philippines, 2022).*

3.2.2. Supporting capacity development

Interviewees valued weADAPT for its simplicity and ease of use (19 %), its "understandable language" (14 %), and its focus on "real-life", practical cases (48 %) (Fig. 8). This was reflected in how weADAPT was used to communicate and break down adaptation concepts and issues with decision-makers and local communities (24 % interviewees, 6 % survey responses) (Fig. 7). Surprisingly, many had also used weADAPT

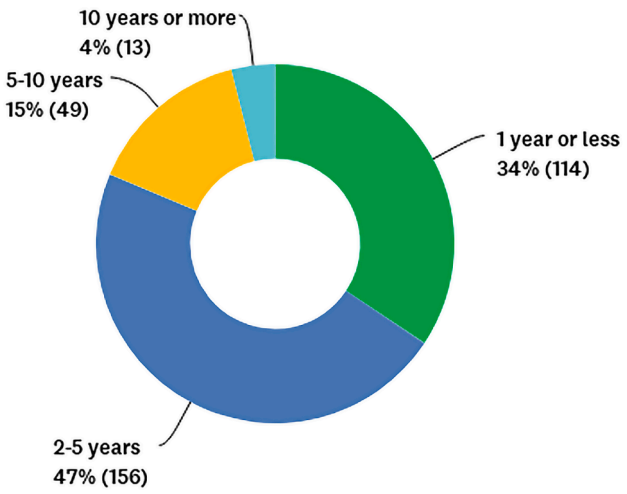

Fig. 6. The number of years respondents have engaged with the weADAPT platform.

for training a wide range of stakeholders – local communities, farmers, students, youth, women and girls, and internally displaced people – in settings like high schools, summer camps, youth engagement boot camps and train-the-trainer workshops (19 % interviewees, 5 % survey responses). E.g., training 'lead farmers' to further disseminate and adapt knowledge within local communities, or empowering youth to protect community resources by becoming advocates for initiatives like creating a community forest through fire belt areas, safeguarding local water sources, planting trees, and promoting waste segregation.

> *We prepare a lot of educational materials in regional languages. For (the) last 15 months or so our interventions have been interrupted because of the pandemic! Your information helps us to design awareness raising materials." (Survey respondent, technical advisor, NGO, India, 2021)*

3.2.3. Learning from other cases – policy, planning, and implementation

Responses showed that weADAPT is not only valuable in raising awareness and developing capacity, but also for helping users transition towards knowledge of adaptation options, their planning, appraisal and implementation, particularly in regions where there are data gaps. This outcome was ranked highest in how weADAPT supports survey respondents' CCA work (80 % of 243 respondents, Appendix 2, Table 1). Respondents also ranked "knowledge of adaptation options" highest when asked how weADAPT supported their CCA work, with 94 % stating it "added to their existing knowledge".

Respondents used weADAPT to: inform publications, such as reports, project documents, research papers, proposals, literature reviews, and analytic assessments (38 % interviewees, 11 % survey responses); plan and implement adaptation projects (33 % interviewees, 17 % survey responses); and bridge science and policy, e.g. informing a chapter on vulnerability and adaptation in Sri Lanka's Third National Communication on Climate Change (10 % interviewees, 1 % survey responses, Fig. 7). weADAPT's potential to shape and inspire research and project implementation is further supported by its reputation as a leading adaptation platform (29 % interviewees) with content seen as timely, relevant (24 % interviewees), and unbiased in nature (14 % interviewees). A majority of survey respondents (93 %) would recommend weADAPT to a colleague.

> *"Case studies illustrating the application of a method/tool enables me to share with the communities I serve who can relate to the communities weADAPT highlights" (Survey respondent, planner, Canada, 2021)*
> *"I love the map and how they show the different case studies that are in the platform, so that helped me a lot to understand like social, ecological background of the projects" (Interview respondent, PhD researcher, Colombia, 2022)*

3.2.4. Fostering new connections and knowledge exchange

Nearly three-quarters of survey respondents (70 % of 248) had networked with others on weADAPT and 74 % reported that it helped form new partnerships or projects. Many interviewees (43 %) also used the platform to connect directly and indirectly with users or organizations (Fig. 7). weADAPT was noted for helping members find relevant organizations and experts; create new knowledge sharing networks (e.g., climate adaptation related social media groups) and establish successful project partnerships. Its networking features were highlighted as fostering an interactive, community-driven experience (5 %

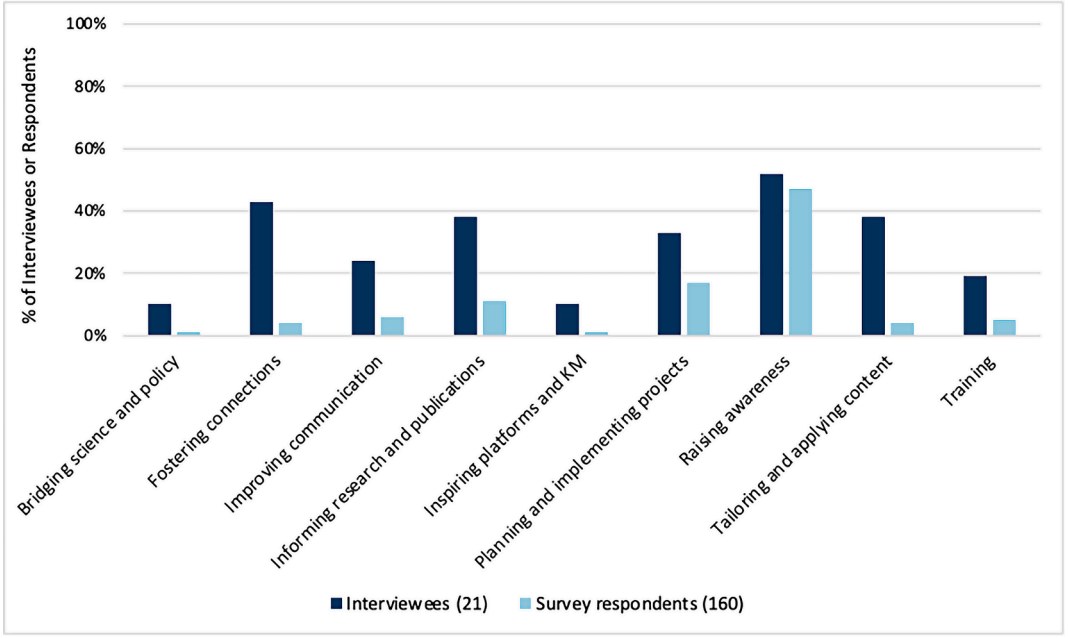

Fig. 7. The outcomes and impacts supported by the weADAPT platform that were mentioned by interviewees (21) and survey respondents (160) when asked: "How has weADAPT helped your adaptation work?" (Q19).

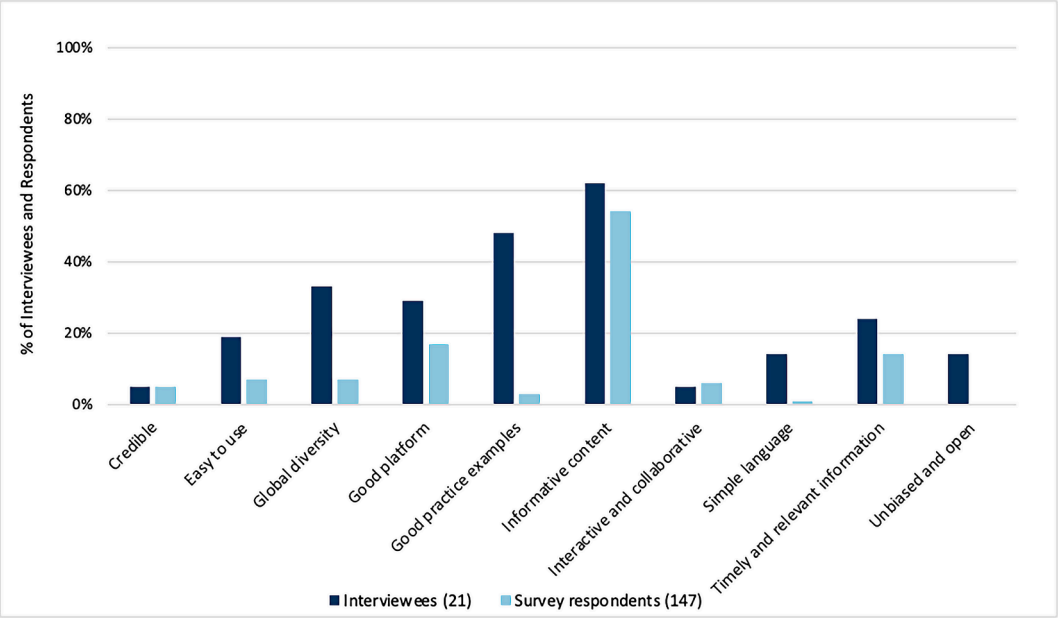

Fig. 8. The positive attributes of the weADAPT platform that were mentioned by interviewees (21) and survey respondents (147) when asked: "Why would you recommend weADAPT to a colleague?" (Q28).

interviewees) (Fig. 8). Three-quarters of survey respondents agreed or strongly agreed with the statement that weADAPT brings together all the relevant actors within the field of adaptation.

> *" A Community Climate Change Adaptation Assessment […] was to be done in five countries of the Lake Victoria district, which are Rwanda, Burundi, Tanzania, Kenya and Uganda […] we needed at least one organization working on climate change in each country […] So [weADAPT is] how I came across to find all these organizations working on climate change and we partnered to carry out this assessment." (Interviewee, programme manager, Central African Republic, 2022)*

Lastly, it is noteworthy that interviews and feedback from other knowledge managers (pers. comm.) provide evidence that weADAPT has regularly inspired the creation of new knowledge exchange platforms and contributed to the improvement of existing ones.

3.3. Interpretation of results in relation to KM activities

Analysis of results and verification through consultation with the weADAPT team revealed success of the platform in addressing its Learn-Share-Connect KM aims and potential activities that are contributing to the platform's outcomes (Fig. 9). These align very closely with the criteria of a successful climate service (Boon et al., 2024) (Fig. 10) and have help distill six key knowledge management activities—improving usability, inclusivity, trust, transferability, connectivity, and adherence to FAIR principles—as critical for supporting platform effectiveness.

3.3.1. Usability – through translation, tailoring, syntheses and capacity development

The results show that simplicity in weADAPT content has been key to translate it into usable material for different audiences. The diverse objectives of these audiences include contributing to policy inputs, supporting training and capacity development initiatives, and

weADAPT pillars	LEARN		SHARE		CONNECT	
KM aims & activities Outcomes	Usability	Inclusivity	Trust	Transferability	Connectivity	FAIR
Raising awareness	✓	✓		✓		
Developing capacity	✓	✓	✓	✓	✓	
Policy, planning, & implementation	✓	✓	✓	✓	✓	✓
Fostering new connections & knowledge exchange			✓		✓	

Fig. 9. Mapping of six core KM aims and activities against weADAPT platform outcomes (results in using the platform).

weADAPT pillars	LEARN		SHARE		CONNECT	
KM aims & activities Boon's criteria	Usability	Inclusivity	Trust	Transferability	Connectivity	FAIR
What a successful climate service delivers						
Accessible	✓	✓	✓	✓	✓	✓
Relevant	✓	✓	✓	✓	✓	✓
Credible	✓	✓	✓	✓		
Acknowledges uncertainty	✓		✓	✓		
User-specific formats	✓	✓	✓	✓		✓
Timely	✓		✓	✓		
How it is co-developed						
Tailored interaction	✓	✓	✓	✓		✓
Trust building	✓	✓	✓	✓		
Capacity development for using the service	✓	✓	✓	✓		✓
Capacity development for understanding the issue	✓	✓	✓	✓	✓	

Fig. 10. How aims and activities support Boon et al.'s definition of a successful climate service (2024).

transferring practical applications of solutions from one location to another. Interviews showed that 'tailoring' by the KM team helps to break down communication barriers and develop capacity of a wide range of stakeholders (from local to national), who often experience, understand and discuss climate change and adaptation impacts using different concepts, metrics, values and beliefs.

> *"It's no problem to explain to scientists this [climate change] issue […] But how to explain it to policymakers? I don't have the skills, and I was trying to find these skills […] I use weADAPT to find the language and the skills to communicate scientific information to policymakers……..it's normal for [scientists] to work with uncertainty with the probabilities, but for politicians they prefer certainty. They need everything by next election." (Interviewee, research institute consultant, Ukraine, 2022)*
>
> *"[I]t's the learning opportunity from your website, the terminologies and terms and language that's useful for us that don't have enough time or don't make enough time to catch up with it." (Interviewee, technical advisor, Philippines, 2022)*

3.3.2. Inclusivity – Through just and equitable sharing of multiple knowledges

The KM team supports cross-community learning by sharing content from varied knowledge sources. The "community" aspect, enabling users from diverse regions to identify shared challenges and novel potential solutions from others' experiences, was cited as important. A significant number of users cited access to multiple case studies and knowledge as a key motivation for using the platform, emphasizing the value of learning from indigenous and local knowledge practices. The platform's efforts in empowering marginalized and Indigenous communities to define and disseminate their knowledge is highly valued.

> *"There is a sense of affinity and therefore folks are better able to see themselves in the work and move forward strategically and appropriately, incorporating the essence of the guidance provided in the case studies. We need to see (ourselves) in order to be." (Interviewee, researcher, New Zealand, 2022)*

3.3.3. Trust – through collaborative KM processes

A key goal of the KM team is to retain impartiality in the type and substance of content shared. weADAPT users raised the importance of the platform's neutral tone and lack of bias, aspects that have been underexplored in previous evaluations of online climate adaptation platforms. Interviewees valued the platform for presenting diverse perspectives and materials from a wide range of topics and stakeholders without a specific agenda, thereby strengthening the connection between science and policy and what is perceived as "trusted" knowledge.

> *"Your credibility is often determined not by what you say, but what you share about what others say. So sometimes […] it's useful to back up what you're saying with that. So, it's in these in-house workshops that some of*

these [weADAPT] materials are being used." (Interviewee, technical advisor, Philippines, 2022)

3.3.4. Transferability – Through sharing multi-scale, multi-sectoral cases place-based knowledge

Practical, weADAPT case studies, visualized on a map, were considered valuable for learning. Users noted that these examples, rather than more theoretical ones, helped clarify complex concepts and methodologies. They highlighted the unequal experience of climate change across regions and groups and the inspirational learning that is possible from innovation in other regions to address local information gaps. Users are encouraged by the KM team to semi-standardize how they share content to enhance transferability, and weADAPT case studies and articles were appreciated by users for facilitating structured learning, analysis, and comparison. The platform's geo-referencing of case studies further allowed users to refine and personalize their searches through advanced filters.

"We use weADAPT case studies to show local government how local areas [in other countries] have adapted or how they have participated in processes to resolve issues, [and] we use them as examples, because people are always looking for practical examples." (Interviewee, research institute, consultant, Cambodia, 2022)

As an example, a high school teacher in Tanzania, applied ideas shared by other weADAPT users on afforestation, forestation and organic farming to develop new adaptation projects in his village, including tree planting and engaging his community and students. Inspired by adaptation projects shared on weADAPT from regions facing similar climate risks, he later expanded his efforts to include aquaculture.

3.3.5. Connectivity – cross-fertilization of knowledge, users, and networks

Modular knowledge spaces (theme, networks, microsites, newsletters) are designed by the KM team to encourage connectivity to content, organizations and user contacts by alerting users when content (articles, case studies, events) is published in a theme they have registered an interest in; and cross-fertilization of content when Editors, are 'alerted' to published content, that is 'related' to a theme they manage or the newsletter is published and shared across multiple external mailing lists and social media channels. This has facilitated users to form new connections with contributors and organizations.

"I used weADAPT to find some partners on project implementation. It was [successful] because we developed a partnership." (Interviewee, programme manager, Central African Republic, 2022)

"Sometimes we explore most of the organizations around the globe that are related with weADAPT and we follow [through] to their site through weADAPT, this we've done several times." (Interviewee, researcher, Nigeria, 2022)

3.3.6. FAIR and decolonized search and discovery

Internet connectivity can be a barrier to users in low-income countries, a common concern for knowledge managers. To address this, the platform aims to provide low-bandwidth options where possible. Interestingly, several respondents and interviewees highlighted the value of being able to download and print weADAPT's newsletter for offline reading, particularly when internet or electricity access is limited. The newsletter was frequently shared in this printed format within community centres, libraries, and schools (see quote under 4.1.1).

From a practical, user engagement perspective, the results demonstrated the value of short user journeys, simplified or synthesized documents, language translation features, easy navigation, the downloadable newsletter, and interactive tools such as the map and discussion forums.

3.4. Measuring what is valued

Based on the outcomes and potential impact areas identified (Section 3.2) a new ToC (Fig. 11) was developed to ensure weADAPT is monitoring and measuring progress towards the outcomes that users value, moving beyond standard metrics. A more complex and reflective approach in the new ToC helps enhance existing KM aims and activities (Section 3.3) and moving forward, enables weADAPT and other platforms to conduct more meaningful impact evaluations.

3.4.1. A new Theory of change

The refined ToC (Fig. 11) builds on the baseline ToC (Fig. 3) by making user needs, capacities, and enabling factors for achieving outcomes more explicit, as identified through the survey and interviews. For example, interviews revealed that boundary partners should now include organizations working with marginalized groups, such as small-scale farmers, students, youth groups, women and girls, and internally displaced people. New impact pathways in the TOC (Fig. 11) encompass the newly defined audiences from the survey and interviews, the KM aims and activities identified by the KM team, and how these align with intermediate outputs and outcomes, making them easier to track to better support long-term impact. The resulting ToC thus supports the development of a monitoring framework (Section 3.4.2) with indicators that measure the nuances of valued outcomes.

Intermediate outputs and outcomes (outer light blue ring in Fig. 11) resulting from weADAPT KM activities (far left column, Fig. 11) include: the creation of **diversified** content across topics, sectors, geographies and demographics; **bridging** disciplines and communities; **empowering** community engagement; producing **transferable,** timely, high quality, neutral and relevant content; establishing weADAPT as a **trusted** resource for CCA learning and sharing; increased **connectivity** and **interoperability** with other platforms and networks; **educating** through capacity development; and, supporting community **leadership.** Results indicate that the platform's ultimate impact depends on core KM activities (left of Fig. 11), leading to valuable intermediate outcomes (inner dark blue circle, Fig. 14), identified through surveys and interviews. The ultimate goal is to achieve key impacts (right column, Fig. 11) that are critical for scaling up and accelerating climate resilient action: widespread awareness about climate change; capacity development for diverse stakeholders across a range of sectors and learning levels; increased collaboration and coordination across the science-society-policy interface; and, well planned, just and equitable adaptation projects fostering climate-resilient development. Developing indicators to track these elements within a monitoring framework is essential to ensure progress toward these goals.

Ongoing monitoring through tools like surveys (short survey pop-ups in addition to in-depth user consultations) and tracking published outputs (e.g., on Google Scholar), is crucial to identify emerging needs and adjust content accordingly. However, interviews remain key to understanding how online platforms inform climate change adaptation projects, particularly in community-led projects which often have limited documentation on results and outcomes.

3.4.2. A monitoring framework

To monitor and measure outcomes and impacts that have been shown to be valuable to users (Section 4.1), and track progress towards the updated ToC (Fig. 11), a set of indicators has been proposed (Appendix 3). Standard website analytics alone are insufficient for understanding platform use, so additional indicators are necessary. Some of these indicators can be easily collected through regular software services, such as search engine or social media platform analytics, while others require deeper consideration and inclusion during platform development and design.

This advanced set of curated analytics may include 'proxy' indicators, where outcomes are not easily measurable directly, and thus cannot always be captured automatically, requiring manual effort.

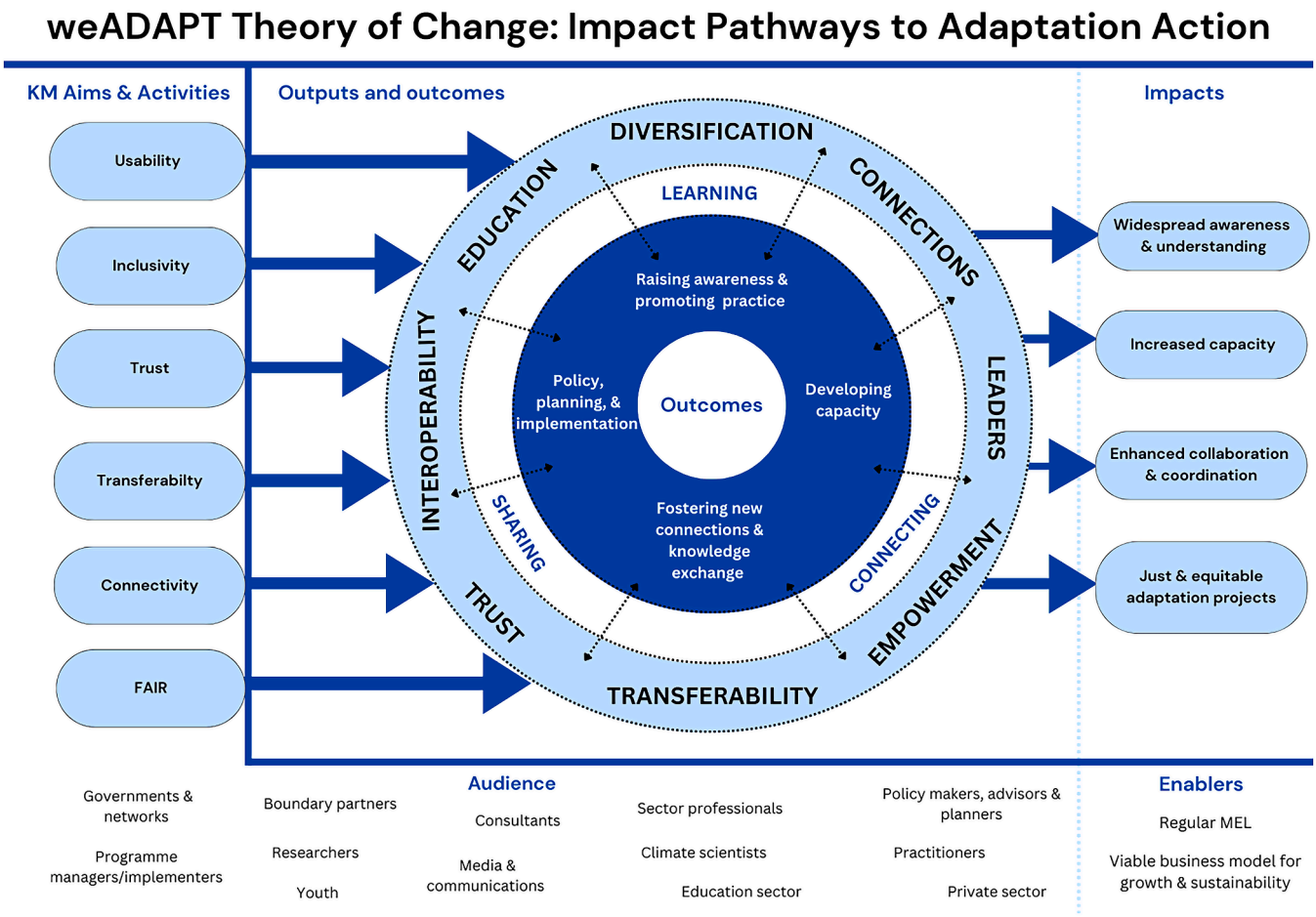

Fig. 11. Updated theory of change – new users, KM activities and outcomes identified from the survey and interviews, resulting in knowledge to action impact pathways.

Examples of such indicators and proxy indicators for measuring progress towards the updated ToC are described below and listed in Tables 1–6 of Appendix 3.

4.3.2.1. Monitoring usability of knowledge. The results highlight that the simplicity and usability of weADAPT content are highly valued, leading to key outcomes (Section 3.3.1). This is achieved through the use of straightforward terminology, language translation, user-relevant formats (e.g., podcasts, webinars, blogs, case studies), syntheses, and capacity development (training modules and courses). For example, understanding which formats are most viewed (Table 1:1; 1:12), the countries from which the platform is accessed (Table 1:10), and the languages used (Table 1:6) can help prioritize content publishing strategies.

Capacity development emerged as a core outcome, measurable by monitoring the use and popularity of training modules, "topic 101 introduction" articles (Table 1:2), the number of new courses added (Table 1:8), and the trainings offered on using weADAPT itself (Table 1:9). To support the use and accessibility of technical language, the platform is developing a common "climate taxonomy" based on IPCC and UNDRR standards (Bharwani et al., *forthcoming*). This taxonomy includes definitions, synonyms, and scope notes to clarify how concepts may differ across disciplines. The use of this taxonomy can be tracked by assessing how frequently its concepts, synonyms, and scope notes are accessed (Table 1:13).

4.3.2.2. Monitoring recognition and inclusivity of multiple knowledge types. On weADAPT, progress toward representing multiple knowledge types can be monitored through indicators such as the number and types of registered organizations (e.g., community, Indigenous, or youth-based) (Table 2:1; 2:2; 2:3), content authored across different knowledge types (Table 2:13), the balance between practitioner and academic knowledge (Table 2:8), the availability of content in various languages (Table 2:10) and formats (Table 2:11), and the cultural, geographical, and disciplinary diversity of contributors, editors, members, and champions (Table 2:4; 2:6).

The use and interpretation of language is crucial for accurately representing diverse knowledge systems. As mentioned, indicators could track the inclusion of synonyms or alternative labels where concepts may be interpreted or applied slightly differently by various communities (Table 2:5) and disciplines. This also addresses concerns raised in interviews regarding translation software's limitations in accurately conveying meaning for some languages and dialects. Additionally, download analytics for the weADAPT newsletter, frequently mentioned in surveys and interviews, can provide insights into how often the newsletter is downloaded and potentially shared offline with local communities (Table 2:13).

4.3.2.3. Monitoring trust and collaborative KM processes. Maintaining the trust in and relevance of weADAPT content highlighted in the survey and interviews, depends on connecting with emerging, relevant CCA topics and networks (Table 3:12), and ensuring that newly recruited editors are actively involved in peer-reviewing content for quality and diversity (Table 3:8). While citation analytics (Table 3:2) are a traditional measure of research impact, knowledge platforms can also use proxy indicators to gauge trust in shared content.

These include not only the number of downloads (Table 3:1) or bookmarked content (Table 3:7), but also an analysis of content creators' and users' roles (e.g. practitioners, academics, planners, engineers etc.), organizational affiliations (e.g. local or international NGOs and CBOs, research institutes, government agencies, private sector, school, universities etc.), and disciplinary backgrounds (Table 3:11). Additionally, tracking 'unique opens' (Table 3:9) and download analytics for the weADAPT newsletter, social media shares (Table 3:4) and forwards (Table 3:10) helps evaluate how widely content is disseminated within organizations and networks.

A new metric of 'trust' and 'engagement' will be introduced on the platform in the future, tracking user badges as indicators of involvement. For example, users may earn badges like "Active Community Member" (engaged in more than five themes or networks), "Passionate Learner" (downloading or reading five articles), or "Avid Explorer" (spending significant time on the platform). This will provide a tangible measure of user engagement and contribution to the platform's growth.

4.3.2.4. Monitoring transferable, place-based knowledge sharing. To maintain the transferability and effectiveness of shared case studies, it is crucial to monitor the number of case studies contributed (Table 4:1), viewed (Table 4:2), engaged with (Table 4:3), and 'bookmarked' (Table 4:4). Additionally, tracking the diversity of scales (Table 4:10), sectors (Table 5:11), and risks (Table 4:12) covered by these case studies is important. To ensure inclusivity and comprehensive coverage, it is also necessary to monitor the geographic locations of cases shared (Table 4:5), their contributors (Table 4:6), and the languages in which they are written and accessed (Table 4:9) to determine if language barriers affect access and usage.

4.3.2.5. Monitoring connectivity and cross-fertilization between knowledge, users, and networks. The platform has successfully fostered connections among users and organizations facilitating new partnerships and the cross-fertilization of content facilitating learning across different communities. Fortunately, several indicators can track interaction beyond standard analytics that are commonly measured (e.g. new users (Table 5:21), organizations (Table 1:18), themes/networks (Table 5:14), or comments (Table 5:20)). For instance, users can "follow" (Table 1:5) and "message" (Table 5:7) others to encourage collaboration. The extent to which organizations share content (Table 5:1) across themes/networks (Table 5:2) can serve as proxy indicators of activity and knowledge exchange, as users are notified when followed members publish new content.

The frequency with which the same content appears in different themes and networks (Table 5:4) can reflect the visibility of knowledge across disciplines. The number of completed personal profiles (Table 5:13), required for content publication, indicates engaged users. Furthermore, the creation of new networks, themes (Table 5:14), or microsites (Table 5:15) signals emerging trends and promotes content amplification.

Tagging, through keywords to categorize content (Table 5:3), plays a vital role in linking content and organizations both internally and across platforms. Consistent tagging enhances MEL processes by enabling the visualization of content connections (e.g., Figs. 3 and 4), identifying knowledge gaps, and tracking trending topics (Table 5:19). Tagging also supports the standardization of terms and concepts (and a shared taxonomy), improving content discoverability, interoperability, and connectivity across platforms.

4.3.2.6. Monitoring FAIR and decolonized KM. Interviews revealed geographical and cultural gaps in weADAPT's content (Table 6:12), which need to be monitored, alongside challenges in documenting projects due to limited resources (capacity and funding). These gaps may hinder the representation of diverse voices and perspectives in the platform.

Platforms can track progress towards FAIR and decolonized knowledge representation by measuring content access through low-bandwidth features (Table 6:4), the top 5 languages the website is accessed in (Table 6:2), and the use of novel tags or synonyms (Table 6:10) to represent different knowledge systems and language types. The latter enhances shared understanding and supports connectivity within the platform, as well as potential interoperability with external platforms.

To further improve technological accessibility, weADAPT has implemented a green design (Table 6:4) that reduces energy consumption and supports low-bandwidth access, benefiting users in remote areas. The platform's accessibility is also enhanced by the use of color, fonts, contrast, and images for users with visual impairments.

4. Discussion

The value of information is subjective and thus can be evaluated in different ways by different actors (Dilling & Lemos, 2011; Karcher et al., 2021). Therefore, understanding a platform's intended and actual users, and their unique needs and capacities (Cash et al., 2003; EEA, 2015; Boon et al., 2024), has been essential in evaluating the effectiveness of weADAPT's KM practices (see the updated audience list in Fig. 11). To assess the socio-economic impact of climate adaptation initiatives and strengthen the links between science, policy, and practice (Visman et al., 2022; Arteaga et al., 2023), regular user engagement – though resource intensive – offers valuable insights that can inform MEL processes. This study's findings contribute to advancing the field of KM offering guidance to knowledge managers of platforms like weADAPT, to better understand and respond to user needs, by developing ToCs and tailored MEL processes.

This research explored the transition from useful to usable knowledge by examining the uptake, outcomes, and impacts of weADAPT through a ToC. The results showed that users found the platform valuable in four key areas: 1) raising awareness, 2) developing capacity, 3) supporting policy, planning, and implementation, and 4) fostering new connections and knowledge exchange. Enabling factors emerging to support these outcomes have been organized into six key KM aims and activities: 1) increasing usability through translation, tailoring, syntheses and capacity development; 2) enhancing inclusivity through just and equitable sharing of multiple knowledges; 3) building trust through collaborative KM processes; 4) creating transferability through sharing multi-scale, multi-sectoral cases place-based knowledge; 5) improving connectivity through cross-fertilization of knowledge, users, and networks; and 6) promoting FAIR and decolonized search and discovery. Insights from users allowed us to refine the baseline ToC, revealing KM activities and user outcomes that strengthen the connection between KM and impact pathways. The ToC identifies barriers faced by the weADAPT community in accessing and applying knowledge and outlines key KM activities to address these challenges. It also clarifies the outcomes and impacts that are achieved, valued, and should be targeted. To operationalize this ToC, a set of indicators has been proposed to track progress towards desired outcomes and impacts.

In the case of weADAPT, many of the KM activities that could support user outcomes align closely with the priorities already identified for platform improvement, e.g. improving collaboration spaces; presenting geo-referenced case studies more effectively; promoting better content search and discoverability; enhancing the user interface; and expanding the content to include both failures and successes, alongside 'good practice' information. However, this research underscores the importance of developing indicators that extend beyond standard website analytics (e.g., visits, citations, downloads) to capture the diverse and unique ways in which platforms and their content are used. By complementing basic analytics with indicators derived from regular user engagement, platforms can better assess what holds value and challenge assumptions about the inherent value of traditional metrics (Hargreaves & Shirley, 2009). Over time, the resources needed for such efforts can

become more efficient, as the right questions to ask and the key elements to monitor become clearer.

4.1. Usability of knowledge

Simplicity and accessibility in language (Hammill et al., 2013; EEA, 2015) and terminology (Barrott et al., 2020), alongside the organization, format, tailoring, translation, synthesis, and diversity of content (EEA, 2015; Clar and Steurer, 2018; Mattern et al., 2018; Laudien et al., 2019; Bauer & Smith, 2015), are critical for bridging the knowledge to action gap and enhancing the 'usability' and usefulness of platforms (Lemos et al., 2012; Palutikof et al., 2019b). In Mitchell et al. (2016) study, weADAPT stood out as the only one of 64 online adaptation databases that allowed for user contributions, a feature that, while enhancing user experience, requires substantial curation and effort. A core weADAPT KM strategy is to present content in a synthesized, jargon-free, and digestible format, ensuring accessibility for non-specialists or beginners. To sustain this outcome, the weADAPT KM team collaborates with users to co-develop syntheses on relevant topics, engages with new networks to share important learning and capacity development resources (e.g., thematic courses), and creates glossaries that link scientific concepts to policy and practice, offering definitions and notes on terminology scope for different user communities (Barrott et al., 2020; Bharwani et al., in review).

4.2. Inclusive, just and equitable knowledge sharing

The weADAPT platform prioritizes equitable inclusion and access to diverse knowledge types, sharing Indigenous, local, and academic perspectives, ensuring they are all equally visible. Since its launch in 2007, the platform has given community-based organizations the same visibility as international entities. By centering Indigenous and traditional knowledge alongside scientific discourse, weADAPT promotes epistemic justice and addresses the devaluation of certain knowledge systems (Boyes et al., 2023; Shawoo & Thornton, 2019).

This holistic, transdisciplinary approach to knowledge co-creation reflects the evolution of KM (Cummings et al., 2019). In 2021, a systematic assessment of weADAPT contributors, editors and content identified gaps, guiding an open recruitment process that diversified the editorial team and enhanced platform inclusivity. This approach ensures diverse knowledge representation is integrated into KM and MEL processes, fostering stronger connections with marginalized communities and reducing contradictions in content (Leitch et al., 2019; Swart et al., 2017).

4.3. Building trust and credibility

Interviews and surveys highlighted the interconnections between credible, legitimate, and relevant knowledge (Cash et al., 2003), emphasizing the importance of content quality in weADAPT's KM process. Trustworthiness, linked to authenticity (Hammill et al., 2013) and scientific accuracy (Sanderson et al., 2016), is key to user engagement on online platforms (Laudien et al., 2019). weADAPT's content is perceived as timely, relevant, and high-quality, trusted for both scientific accuracy and authentic climate change narratives. This trust is reflected in its use for research and policy documents, reinforcing its reputation in both scientific and policy circles (Sanderson et al., 2016). This echoes the findings of the European Climate-ADAPT platform evaluation, where "research" and "informing the policy process using policy documents" were the most cited uses of Climate-ADAPT information (Mattern et al., 2018). On weADAPT, this trust both supports and is a product of an iterative co-development process between the KM team, contributors, and editors, fostering a sense of shared responsibility and respect. Active member participation helps build a community where attitudes toward research and climate change are continually reflected upon and improved (Boyes et al., 2023).

4.4. Transferable learning

Understanding the context in which knowledge is produced is essential (Cummings et al., 2019), and weADAPT makes this clear by attributing sources, organizations, and authors. Studies on effective knowledge platforms also highlight the value of a tailored geographic distribution and resolution of information (e.g., localized, yet global) (Hammill et al., 2013; Mattern et al., 2018; Laudien et al., 2019). Feedback from both the survey and interviews reinforced the importance of good practice examples in maximizing learning opportunities (Clar and Steurer, 2018; Mattern et al., 2018; Laudien et al., 2019); however, it also put emphasis on the importance of sharing content in semi-structured formats for easier "transferability". This strikes a balance between the view that context-specific information is more useful than overly general content (Hammill et al., 2013; EEA, 2015; Palutikof et al., 2019b), with some degree of structure enabling comparability and scalability. weADAPT's semi-structured content format facilitates easy comparison of risks, methods, enablers, barriers, and key messages across sectors. This enhances the "transferability" and "reusability" (Wilkinson et al., 2016) of the platform's syntheses, ideally reducing the burden on users to tailor case study lessons for their specific contexts.

4.5. Knowledge, user, and network connectivity

Boundary agents and online knowledge brokers play a key role in connecting and sharing knowledge within communities of practice (Dilling & Lemos, 2011; Laudien et al., 2019; Palutikof et al., 2019b). The weADAPT platform does this by offering dynamic, modular online spaces to foster knowledge integration (Laudien et al., 2019), supporting offline engagement through content downloads and newsletters (Hammill et al., 2013), enabling networking via messaging and forums (EEA, 2015), and providing training sessions to build user capacity (Palutikof et al., 2019b). The platform is well-known in the scientific community, with high Google Scholar visibility and is noted as one of the most highly 'connected' platforms with the greatest number of other websites linking to it (Sanderson et al., 2016).

To further enhance the connectivity and interoperability of climate information, recent platform upgrades have introduced new design elements. These include efforts to identify and integrate emerging CCA topics, such as locally-led adaptation, just adaptation, and youth-driven climate initiatives. Content is now tagged across multiple themes and networks to improve connections. KM activities that focus on reducing knowledge siloes and fragmentation (e.g., user alerts), while promoting decentralization, co-development, and stronger linkages between users and content (both internal and external), are essential for the platform's future growth. These efforts aim to mitigate the overwhelming volume of online information resulting from 'portal proliferation' (Barnard, 2011).

4.6. FAIR, decolonization of knowledge

Promoting FAIR and decolonized KM requires the inclusion of Indigenous knowledge and organizations without a bias in Global North perspectives. A key challenge lies in reconciling the value placed on academic peer-reviewed versus local and Indigenous knowledge. In line with CARE principles (emphasizing Collective Benefit, Authority to Control, Responsibility, and Ethics) for Indigenous Data Governance (Carroll et al., 2020), weADAPT's editorial process seeks to emphasize equity, accessibility, and rebalanced Global South and North representation to support decolonization.

weADAPT knowledge managers and editors co-develop accurate, digestible content, with users, aiming to transform knowledge creation and sharing, challenge historical power structures (Orlove et al., 2023), and empower Indigenous and minority groups as stewards and self-determining users of their data and knowledge. A shift from democratization to true decolonization by reshaping how knowledge is created,

organized, and disseminated in contexts shaped by historic power imbalances (Brandner and Cummings, 2017; Orlove et al., 2023) is essential for sustained use, ownership of legacy of knowledge.

In line with FAIR principles (Wilkinson et al., 2016), weADAPT enhances user experience by improving content connectivity, offering short interaction pathways, and providing modular shared spaces (EEA, 2015; Mattern et al., 2018; Laudien et al., 2019; Palutikof et al., 2019a; Jevne et al., 2023). The platform personalizes content delivery through notifications (based on user interests shared during registration), and metadata tagging (e.g. helping group IPCC reports by publication cycle).

However, the lack of standardized taxonomies in climate adaptation platforms limits content interoperability (Barrott et al., 2020; Bharwani et al., in review). Developing a taxonomy for weADAPT, with defined cultural semantics, will reduce redundancy, improve translation accuracy, and support interoperability with other content and platforms.

Recognizing weADAPT's limitations and gaps, as identified through the survey and interviews and acknowledging that there is no universal approach to co-producing and managing knowledge (Wang et al., 2018; Boyes et al., 2023), the platform will continue to monitor the geographic and cultural diversity of its content, engaging new editors and networks as needed. Platform visits and engagement have increased year on year, with notable increases in Central, North, and West Africa; South, Southeast, Central and West Asia; and Eastern Europe.

5. Conclusion

This paper reveals how the weADAPT platform is utilized by its users, shedding light on outcomes and moving towards the impacts that users value most for a just, sustainable and well adapted present and future. Through insights gathered from a user survey and interviews, key KM aims and activities were identified, which contribute to supporting these valued outcomes. These findings also guided the platform in revising its ToC, and in establishing a monitoring framework to effectively track progress toward achieving desired outcomes and impacts. The integration of user feedback has played a crucial role in enhancing the platform's strategy and ensuring that its activities align with the needs of its audience.

The advancement of knowledge management (KM) in creating, discovering, and accessing content is crucial, especially in fields like climate change adaptation (CCA). However, there is a pressing need for organizations to ensure that the wealth of existing knowledge is utilized effectively rather than contributing to redundant or duplicate content. Despite the abundance of CCA knowledge, much of it remains difficult to access, leading to confusion and frustration among potential users. Knowledge is often presented in ways that are not user-friendly, not tailored to specific audiences, or not easily transferable across contexts. This status quo results in missed opportunities for sharing lessons learned and applying them in relevant ways.

To address these gaps, there is a growing need for enhanced climate literacy, improved risk perception, and faster, evidence-based decision-making and actions. Achieving these goals requires stronger capacity-building efforts and more robust information-sharing mechanisms. Knowledge platforms, climate services, and community-driven approaches play a significant role in facilitating this process. As the urgency of climate action grows, understanding how knowledge platforms meet the needs of their audiences and support informed decision-making through evolving ToCs and supporting monitoring frameworks is essential for driving meaningful change.

This is a challenging but necessary task for all knowledge platforms supporting CCA. The need for high quality, credible information, ensuring that diverse audiences, including vulnerable communities, can use and trust the information they access is only becoming more urgent. The production of information – and, increasingly, misinformation and disinformation – is also accelerating, now even more rapidly due to the uptake of artificial intelligence alongside the proliferation of platforms and content online. The landscape makes clear that to accelerate climate action globally and locally requires more equitable, credible, trusted, and user-friendly digital information for all.

CRediT authorship contribution statement

S. Bharwani: Writing – review & editing, Writing – original draft, Visualization, Supervision, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **K. Williamson:** Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Data curation, Conceptualization. **R. Butterfield:** Writing – review & editing, Writing – original draft.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.cliser.2025.100574.

Data availability

The data that has been used is confidential.

References

Arteaga, E., Nalau, J., Biesbroek, R., Howes, M., 2023. Unpacking the theory-practice gap in climate adaptation. Clim. Risk Manag. 42, 100567. https://doi.org/10.1016/j.crm.2023.100567.

Barnard, G., 2011. Seeking a cure for portal proliferation syndrome. Climate and Development Knowledge. Network. https://cdkn.org/2011/06/portal-proliferation-syndrome/?loclang=en_gb.

Barrott, J., Bharwani, S., Brandon, K., 2020. Transforming knowledge management for climate action: a road map for accelerated discovery and learning. PLACARD project. Lisbon, FC.ID.

Bauer, F., Smith, J., 2015. The Climate Knowledge Brokers Manifesto. Renewable Energy and Energy Efficiency Partnership, Vienna http://www.climateknowledgebrokers.net/manifesto/.

Bharwani, S., Barrott, J., Costello, R., Lokers, R., Foddering, R. (2019). The PLACARD Connectivity Hub: A New 'Search and Discovery' Tool for CCA and DRR. PLACARD Tool: https://connectivity-hub.weadapt.org.

Bharwani, S., Williamson, K. & Wangrat, A. Scaling and accelerating knowledge interoperability for climate action through the Climate Connectivity Hub and Taxonomy, *in review*, Climatic Change.

Boon, E., Wright, S.J., Biesbroek, R., Goosen, H., Ludwig, F., 2022. Successful climate services for adaptation: what we know, don't know and need to know. Clim. Serv. 27, 100314. https://doi.org/10.1016/j.cliser.2022.100314.

Boon, E., Meijering, J.V., Biesbroek, R., Ludwig, F., 2024. Defining successful climate services for adaptation with experts. Environ Sci. Policy 152, 103641. https://doi.org/10.1016/j.envsci.2023.103641.

Boyes, B., Cummings, S., Habtemariam, F.T., Kemboi, G., 2023. 'We have a dream': proposing decolonization of knowledge as a sixth generation of knowledge management for sustainable development. Knowl. Manag. Dev. J. 17 (1/2), 17–41. https://www.km4djournal.org/index.php/km4dj/article/view/548.

Brandner, A. and Cummings, S. (2017). Agenda Knowledge for Development Strengthening Agenda 2030 and the Sustainable Development Goals. Third. Knowledge for Development Partnership, Gersthofer Strasse 162, 1180 Vienna, Austria. https://www.k4dp.org/wp-content/uploads/2020/08/k4dp_agenda-knowledge-for-development_3rd.pdf.

Brown, M., 2020. Unpacking the theory of change. Stanf. Soc. Innov. Rev. 18 (4), 44–50. https://doi.org/10.48558/N0V8-KR42.

Carroll, S.R., Garba, I., Figueroa-Rodríguez, O.L., Holbrook, J., Lovett, R., et al., 2020. The CARE principles for indigenous data governance. Data Sci. J. 19, 43. https://doi.org/10.5334/dsj-2020-043.

Cash, D., Clark, W.C., Alcock, F., Dickson, N., Eckley, N., Jager, J., 2003. Salience, credibility, legitimacy and boundaries: linking research, assessment and decision making. SSRN Electron. J. https://doi.org/10.2139/ssrn.372280.

Clar, C., Steurer, R., 2018. Why popular support tools on climate change adaptation have difficulties in reaching local policy-makers: qualitative insights from the UK and Germany. Environ. Policy Gov. 28 (3), 172–182. https://doi.org/10.1002/eet.1802.

Cummings, S., Kiwanuka, S., Gillman, H., Regeer, B., 2019. The future of knowledge brokering: perspectives from a generational framework of knowledge management for international development. Inf. Dev. 35 (5), 781–794. https://doi.org/10.1177/0266666918800174.

Dekens, J., Harvey, B., 2024. Integrating learning into the National Adaptation Plan process (NAP Global Network technical report). Int. Inst. Sustain. Dev. https://www.iisd.org/publications/report/integrating-learning-national-adaptation-plan-process.

Dilling, L., Lemos, M.C., 2011. Creating usable science: opportunities and constraints for climate knowledge use and their implications for science policy. Glob. Environ. Chang. 21 (2), 680–689. https://doi.org/10.1016/j.gloenvcha.2010.11.006.

EEA (2015). Overview of Climate Change Adaptation Platforms in Europe. 5. European Environment Agency. https://www.eea.europa.eu/publications/overview-of-climate-change-adaptation/file.

Essman, T. (2022) Theories of Climate Change Adaptation. How will we manage a changing environment? Adapting to Climate Change, March 2022.

Friese, S., Soratto, J. and Pires, D. (2018). Carrying out a Computer-Aided Thematic Content Analysis with ATLAS.Ti. 18–02. Max Planck Institute for the Study of Religious and Ethnic Diversity, Göttingen.

Funk, J., Guthadjaka, K., 2020. Indigenous authorship on open and digital platforms: social justice processes and potential. J. Interact. Media Educ. 2020 (1), 6. https://doi.org/10.5334/jime.560.

Hammill, A., Harvey, B., Echeverría, D., 2013. Knowledge for action: an analysis of the use of online climate knowledge brokering platforms. Special Issue: Knowl. Manage. Clim. Change 9 (1).

Hargreaves, A., Shirley, D., 2009. The Fourth Way: The Inspiring Future for Educational Change. Corwin Press, Thousand Oaks, California.

IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, pp. 1-34, doi: 10.59327/IPCC/AR6-9789291691647.001.

Jevne, F.L., Hauge, Å.L., Thomassen, M.K., 2023. User evaluation of a national web portal for climate change adaptation – A qualitative case study of the Knowledge Bank. Clim. Serv. 30, 100367. https://doi.org/10.1016/j.cliser.2023.100367.

Karcher, D.B., Cvitanovic, C., Colvin, R.M., Van Putten, Reed, M.S., 2021. Is this what success looks like? Mismatches between the aims, claims, and evidence used to demonstrate impact from knowledge exchange processes at the interface of environmental science and policy. Environmental Science & Policy 125, 202–218. https://doi.org/10.1016/j.envsci.2021.08.012.

Laudien, R., Boon, E., Goosen, H., Van Nieuwaal, K., 2019. The Dutch adaptation web portal: seven lessons learnt from a co-production point of view. Clim. Change 153 (4), 509–521. https://doi.org/10.1007/s10584-018-2179-1.

Leitch, A.M., Palutikof, J.P., Rissik, D., Boulter, S.L., Tonmoy, F.N., Webb, S., Vidaurre, A.C.P., Campbell, M.C., 2019. Co-development of a climate change decision support framework through engagement with stakeholders. Climatic Change 153 (4), 587–605. https://doi.org/10.1007/s10584-019-02401-0.

Lemos, M.C., Kirchhoff, C.J., Ramprasad, V., 2012. Narrowing the climate information usability gap. Nature Climate Change 2 (11), 789–794. https://doi.org/10.1038/nclimate1614.

Mattern, K., Giannini, V., Downing, C., Gomes, A., Ramieri, E., et al., 2018. Sharing adaptation knowledge across europe: evidence for the evaluation of climate-ADAPT. ETC/CCA 2018. https://doi.org/10.25424/CMCC/EVIDENCE_CLIMATE-ADAPT_EVALUATION_2018.

Mitchell, C.L., Burch, S.L., Driscoll, P.A., 2016. (Mis)communicating climate change? Why online adaptation databases may fail to catalyze adaptation action. WIREs Clim. Change 7 (4), 600–613. https://doi.org/10.1002/wcc.401.

Orlove, B., Sherpa, P., Dawson, N., Adelekan, I., Alangui, W., et al., 2023. Placing diverse knowledge systems at the core of transformative climate research. Ambio 52 (9), 1431–1447. https://doi.org/10.1007/s13280-023-01857-w.

Palavicino, C.A., Matti, C., Brodnik, C., 2023. Co-creation for transformative innovation policy: an implementation case for projects structured as portfolio of knowledge services. Evid. Policy 19 (2), 323–339. https://doi.org/10.1332/174426421X16711051078462.

Palutikof, J.P., Rissik, D., Webb, S., Tonmoy, F.N., Boulter, S.L., Leitch, A.M., Perez Vidaurre, A.C., Campbell, M.J., 2019a. CoastAdapt: an adaptation decision support framework for Australia's coastal managers. Clim. Change 153 (4), 491–507. https://doi.org/10.1007/s10584-018-2200-8.

Palutikof, J.P., Street, R.B., Gardiner, E.P., 2019b. Looking to the future: guidelines for decision support as adaptation practice matures. Clim. Change 153 (4), 643–655. https://doi.org/10.1007/s10584-019-02404-x.

Pringle, P., 2011. AdaptME: Adaptation Monitoring and Evaluation. UKCIP, Oxford, UK.

Pringle, P. and Thomas A. (2019) Climate Adaptation and Theory of Change: Making it Work for You. A Practical Guide for Small Island Developing Stages (SIDS). Climate Analytics, Berlin. https://climateanalytics.org/media/theory_of_change_briefing_note.pdf.

Restemeyer, B., Boogaard, F.C., 2020. Potentials and pitfalls of mapping nature-based solutions with the online citizen science platform climateScan. Land 10 (1), 5. https://doi.org/10.3390/land10010005.

Sanderson, H., Hilden, M., Russel, D., Dessai, S., 2016. Database support for adaptation to climate change: an assessment of web-based portals across scales: database support for adaptation. Integr. Environ. Assess. Manage. 12 (4), 627–631. https://doi.org/10.1002/ieam.1755.

Sarkki, S., Tinch, R., Niemelä, J., Heink, U., Waylen, K., et al., 2015. Adding 'iterativity' to the credibility, relevance, legitimacy: a novel scheme to highlight dynamic aspects of science–policy interfaces. Environ. Sci. Policy 54, 505–512. https://doi.org/10.1016/j.envsci.2015.02.016.

Shawoo, Z., Thornton, T.F., 2019. The UN local communities and Indigenous peoples' platform: a traditional ecological knowledge-based evaluation. WIREs Clim. Change 10 (3), e575.

Smit, B., 2002. Atlas.ti for qualitative data analysis: research paper. Perspect. Educ. 20 (3).

Street, R., Alterio, I., Hewitt, C., Golding, N., New, S., Mysiak, J., 2022. Enabling climate action: messages from ECCA2021 calling for re-imagining the provision and use of knowledge and information. Clim. Risk Manag. 36, 100428. https://doi.org/10.1016/j.crm.2022.100428.

Street, R.B., Barrott, J., Gault, J., O'Dwyer, B., van Nieuwaal, K., Hayman, V., 2021. Stepping up Knowledge Exchange between Climate Adaptation Platforms: Synthesis Report from the KE4CAP Project. University of Oxford, Oxford.

Swart, R.J., De Bruin, K., Dhenain, S., Dubois, G., Groot, A., Von Der Forst, E., 2017. Developing climate information portals with users: promises and pitfalls. Clim. Serv. 6, 12–22. https://doi.org/10.1016/j.cliser.2017.06.008.

Ul Haq, Nazir (2024). Global Coffee Platform. GCP Shares Updated Theory of Change. Retrieved 25 April 2025, from https://www.globalcoffeeplatform.org/latest/2024/gcp-shares-updated-theory-of-change.

Valters, C., 2015. Theories of Change Time for a Radical Approach to Learning in Development Craig Valters. ODI, London https://cdn.odi.org/media/documents/9835.pdf.

VanderMolen, K., Wall, T.U., Daudert, B., 2019. A Call for the Evaluation of Web-Based Climate Data and Analysis Tools. Bulletin of the American Meteorological Society 100 (2), 257–268. https://doi.org/10.1175/BAMS-D-18-0006.1.

Vincent, K., Conway, D., Dougill, A.J., Pardoe, J., Archer, E., et al., 2020. Re-balancing climate services to inform climate-resilient planning – A conceptual framework and illustrations from sub-Saharan Africa. Clim. Risk Manage. 29, 100242. https://doi.org/10.1016/j.crm.2020.100242.

Visman, E., Vincent, K., Steynor, A., Karani, I., Mwangi, E., 2022. Defining metrics for monitoring and evaluating the impact of co-production in climate services. Clim. Serv. 26, 100297. https://doi.org/10.1016/j.cliser.2022.100297.

Vogel, I., 2012. Review of the Use of 'Theory of Change' in International Development. DFID, London.

Wang, P., Zhu, F.-W., Song, H.-Y., Hou, J.-H., Zhang, J.-L., 2018. Visualizing the academic discipline of knowledge management. Sustainability 10 (3), 682. https://doi.org/10.3390/su10030682.

Wilkinson, M.D., Dumontier, M., Aalbersberg, I.J., Appleton, G., Axton, M., et al., 2016. The FAIR guiding principles for scientific data management and stewardship. Sci. Data 3 (1), 160018. https://doi.org/10.1038/sdata.2016.18.