TRANSFORMATIVE RESEARCH ASSESSMENT

Integrating Societal Impacts into Evaluation Frameworks

TOWARDS TRANSFORMATIONS WORKING GROUP – SOCIETAL IMPACTS

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List of Acronyms

Abbreviation	Full Name
ANVUR	National Agency for the Evaluation of Universities and Research Institutes (Italy)
ASIRPA	Analysis of Societal Impacts of Public Agricultural Research
CIRAD	French Agricultural Research Centre for International Development
CGIAR	Consultative Group on International Agricultural Research
CoARA	Coalition for Advancing Research Assessment
CSA	Coordinating and Support Action
ECIU	European Consortium of Innovative Universities
ERC	European Research Council
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Development Agency)
HE RIA, IA	Horizon Europe Research and Innovation Action, Innovation Action
IDRC	International Development Research Centre
ImpresS	Impact of Research in the South
INRAE	French National Research Institute for Agriculture, Food and Environment
LeNa Shape	Research with Societal Responsibility
MAA	Multi-Actor Approach
NWA	Dutch National Research Agenda
NSF	National Science Foundation (USA)
NWO	Dutch Research Council
OECD	Organisation for Economic Co-operation and Development
PVM	Public Value Mapping
REF	Research Excellence Framework (UK)
RESI	Research Enabling Social Impact
RISI	Research Infrastructure for Science and Innovation Policy Studies
RQ+	Research Quality Plus
RRI	Responsible Research and Innovation
SDGs	Sustainable Development Goals
SIAMPI	Societal Impact Assessment for Research and Innovation
SSTC	Swiss Science and Technology Council
STRINGS	Steering Research and Innovation for Global Goals
UKRI	UK Research and Innovation
VQR	Valutazione della Qualità della Ricerca
WG	Working Group

Executive Summary

Contemporary global crises – from climate change and social inequality to pandemics and growing threats to science's societal standing – demand research that not only advances knowledge but also contributes meaningfully to addressing intertwined societal challenges. While publications and citations remain valuable metrics of academic contribution when used responsibly, they alone cannot capture the full value of research for society. This White Paper urges for embedding societal impact as a core dimension of research evaluation and assessment, culture, and funding, providing clear principles and role-specific recommendations to guide reform. We aim to offer actionable guidance and enable meaningful conversations with decision-makers at organisational, national, and international levels.

Developed by the Societal Impact Subgroup of CoARA's "Towards Transformations" Working Group, this Paper draws on contributions from 20+ members across disciplines and geographies. It offers a pluralistic understanding of both scientific and societal impacts, emphasising that research generates value in diverse, non-linear pathways, and often through co-created processes. These pathways encompass agenda-setting, funding and project design, research and engagement activities, scientific dissemination, stakeholder dialogue, and practical or cultural changes that inform policy and practice. They involve researchers, policymakers, the private sector, and societal knowledge partners (e.g. farmers, consumers, patient groups).

The White Paper is primarily directed at funders, universities, and research-performing organisations that lead the design and reform of assessments. It also serves researchers, policymakers, civil society, and industry partners who engage in or are affected by impact-oriented assessment.

We clarify how we use key terms and boundaries related to societal impact assessment in Chapter 2. **Assessment** refers to system-level judgments tied to decisions (e.g. hiring, promotion, funding), while **evaluation** encompasses the systematic gathering and analysis of evidence to support both learning and accountability. Notably, these terms are often used in an intertwined manner, and seeking clarification for the purpose of this White Paper. **Impact** concerns evidenced contributions to societal improvements, acknowledging shared causality and time lags. In Chapter 3, we present tools and methods that are already in use or have been trialled by funders and research organisations, supported by a growing evidence base. We provided several tools and method examples that are commonly used in Europe.

This Paper proposes six principles (Chapter 4) to guide the integration and assessment of societal impacts across research systems. (1) **Prioritise societal relevance** without compromising academic

freedom; (2) **Embrace pluralism** in defining and evaluating impacts; (3) **Plan for impacts from the start**, recognising indirect and cumulative pathways; (4) **Co-create impacts** with stakeholders across all stages of research; (5) **Assess both benefits and risks**, including unintended consequences; and (6) **Balance accountability with learning**, using both summative and formative approaches.

Translating this framework into practice requires coordinated action across the research system. The points below summarise concrete steps that different actors can take. Steps are cross-referenced to Chapter 4 using R-numbers.

- **Funders** should design calls that combine scientific excellence and societal relevance, support co-creation, and require evidence proportionate to the project's size, risk, and stage (for example, brief outcome notes rather than long case files). They should also enable and fund early engagement or co-design (for example, small inception budgets and flexible start-up phases) and invest in evaluator capability (training on judging relevance, TD/ID quality, context-sensitivity; diverse panels) (see R1-R3).
- **Research organisations** must integrate a focus on societal impacts into their hiring, promotion, and support structures, establish intermediary or broker roles, and recognise engagement time by providing protected time for engagement, partnership building, co-design, reflective learning, and light-touch evidence collection, alongside clear incentives (see R4-R6).
- **Researchers** should engage stakeholders throughout the research process, identify pathways to use from the outset, document contributions with brief outcome notes or portfolios, and use open practices where appropriate for traceability and reuse (see R7-R8).
    - **Early-career researchers** should receive mentorship, training, recognition, and realistic expectations, with impact literacy introduced early so ECRs are not disadvantaged by legacy incentives (see R9).
    - **Senior researchers** can champion institutional change (e.g. hiring/promotion criteria), mentor others, and use peer learning to navigate tensions between legacy systems and new assessment norms (see R10).
- **Businesses**, including for-profit and social enterprises, can drive societal impact by partnering and co-funding research, co-setting targets or roadmaps, and offering ECR placements, while upholding transparency and independence (see R11).
- **Civil society and policymakers** should co-define research agendas, validate findings, and ensure that outcomes address real societal needs through open consultation and partnership, while creating environments that facilitate uptake and sustained dialogue (see R12).

We use the term **'transformation' to describe** deep, systemic, and durable shifts in structures, practices, cultures, and resource flows. To make societal impact a common and responsible practice, the research system must be intentionally restructured around three enablers: (1) **build impact evaluation capabilities** through training, tools, and shared understanding within and beyond academia; (2) **strengthen research ecosystems** by aligning funding, institutional practices, and support roles that foster cross-sector collaboration and provide the right incentives for researchers to

engage meaningfully in these efforts; (3) **embrace iteration** by facilitating regular exchanges and dialogues among researchers, stakeholders, and evaluators, investing in evaluator training, creating safe spaces for experimentation, and treating impacts as a dynamic, context-sensitive process.

Lasting change in and through research must be staged and coordinated. First, lay the groundwork by mapping current assessment and evaluation practices, and reviewing funding and organisational policies against impact-oriented principles and proportionate evidence expectations. Next, build alignment and capacity across funders, institutions, and research teams by reforming incentives and recognition, establishing enabling roles (e.g. impact officers, knowledge brokers), and providing training in impact literacy, evaluator capability, facilitation, and reflective practice, supported by peer learning networks and communities of practice. Finally, embed new norms by updating funding and institutional rules and routines, recognising societal relevance as a criterion of excellence, and fostering a culture of shared responsibility among actors in the research system through regular cross-actor dialogue and adaptive learning-oriented evaluation.

CoARA's Societal Impact Subgroup, which in total has over 60 members, is advancing this agenda, with short-term plans (until early 2026) to map existing practices, curate examples and templates, share lessons, and support working groups in applying these insights to their thematic priorities. Collaborative networks and communities of practice are central to scaling change across institutions and countries.

Chapter 1. Rethinking Research Value: Why Societal Impact Matters

The changing landscape of research assessments

Aligned with the mission of the Coalition for Advancing Research Assessment (CoARA) to reform how research is assessed, this White Paper proposes ways to improve current assessment and evaluation systems so that they recognise and support the diverse contributions that research makes to society. To ensure clarity, we distinguish between **assessment (**formal, decision-oriented judgments for funding, hiring, or promotion) **and evaluation** (the systematic gathering of evidence to support learning and accountability). Evaluation *informs* assessment, but the two are not interchangeable.

We aim to strengthen the role of societal impacts in research assessment by offering a shared perspective on what impacts entail and encouraging more inclusive, transparent, and context-sensitive conventions for valuing research. We use 'impacts' to refer to the evidenced contributions of research to societal improvements, beyond academia. The White Paper is primarily written for research funders, universities, and research-performing organisations that lead assessment design and reform. It also serves researchers, policymakers, civil society, and industry partners who engage in or are affected by impact-oriented assessment.

There is a growing consensus that research evaluation must move beyond narrow, output-based metrics to better reflect the relevance of research (i.e. its suitability for societal purposes and potential applications), reach, and responsibility in addressing societal needs. Societal impacts should be considered alongside traditional measures of academic performance. Achieving this balance will require both research assessment and evaluation reforms, as well as significant shifts in institutional cultures, incentive structures, and support systems.

Societal impact assessments are not intended to replace currently dominant metrics such as publications, citations, or patents, which remain essential when applied responsibly and in context. Rather, they offer a complementary lens to understand how rigorous research contributes to broader social, environmental, economic, and political progress and well-being. Importantly, this angle recognises that societal impacts can emerge from a wide range of disciplinary approaches and may often be better framed through interdisciplinary and transdisciplinary (TD) perspectives. Using “research” rather than “science” acknowledges contributions across fields and emphasises collaboration across disciplines and with societal partners in achieving meaningful societal changes.

Furthermore, while promoting societal impact, it is essential to safeguard academic freedom and epistemic diversity. Impact frameworks should not impose a single normative definition of ‘value for society’, but rather create spaces where fundamental, critical, or disruptive research is recognised as a legitimate contribution.

Research in times of crisis: why societal relevance is urgent

The scale and complexity of contemporary global crises drive the urgency of rethinking how we evaluate research. The COVID-19 pandemic, escalating climate change, and persistent social inequalities have converged into a “perfect storm” of social, environmental, and political disruption. These are further compounded by rising geopolitical instability, including ongoing wars, the growing polarisation of human societies, and shifting patterns in global trade and economic interdependence. Many communities, especially marginalised or minority groups, face disproportionate risks and

systemic discrimination. The spread of misinformation and disinformation, along with declining trust in institutions, further complicates evidence-informed decision-making, underscoring the importance of open and transparent research practices. These realities underscore the need for research to advance knowledge and contribute meaningfully to the development of equitable and sustainable solutions (Ciarli (ed.), 2022; Reale et al., 2018; Steffen et al., 2015).

The role of higher education and research institutions in responding to these crises has been widely acknowledged. A recent UNESCO Expert Group called for universities to proactively address the world's most pressing problems through partnerships and societal engagement (Parr et al., 2022). Examples of this engagement are evident in research that contributes to climate action, influences policy debates, and supports community-based solutions. Yet, the Steering Research and Innovation for Global Goals (STRINGS) report shows that more is needed to align research with social progress as defined by the Sustainable Development Goals (Ciarli (ed.), 2022; also see "Do the Science on Sustainability Now," 2022; "Rich Countries Must Align Science Funding with the SDGs," 2023; "We Must Act Now to Save Sustainability," 2023).

Such global insights are often complemented by essential local and regional contributions, including support for small and medium-sized enterprises and the protection of livelihoods. These examples align with the rationale behind transformative, mission-driven innovation policies (e.g. Edler et al., 2025; Mazzucato, 2018), which aim to steer research and innovation toward explicit societal goals through defined objectives and timeframes. While multi-actor collaboration is an important feature, the core motivation behind mission-oriented approaches lies in addressing systemic challenges and market failure by mobilising collective action where individual actors alone would not invest. Although many mission-oriented agendas have historically emphasised economic outcomes, i.e. economic growth, societal value encompasses much more than economic returns. It includes non-market and intangible benefits such as social equity, cultural transformation, and ecological stewardship (Bozeman & Sarewitz, 2005; Nelson, 2011; Nowotny et al., 2003).

Debates about research "directionality" (Ely & Oxley, 2014; Stirling, 2008, 2024) underscore that research responds to societal needs and actively shapes them by influencing policy agendas, technological trajectories, and public values. In this context, academic communities play a vital role in proposing alternative paradigms, expanding the space of possible solutions, and supporting deliberation on overcoming complex societal challenges, such as climate change and social inequality. This approach ensures that research contributes holistically to societal transformations (deep, systemic and durable shifts in structures, practices, cultures, and resource flows), engaging in both market-driven mechanisms and public values and actions, thus enabling knowledge systems that are open, inclusive, anticipatory, and responsive.

However, calls for societal relevance must also take into account unresolved tensions between research autonomy and responsibility. Questions remain about how researchers can co-develop impactful solutions while critically assessing policy blind spots, and how research can inform democratic processes without being seen as advocacy, especially when public funders may have limited independence from political policy agendas (Woolston, 2023). Balancing public engagement with academic independence and freedom, particularly under institutional and political pressure, is a crucial challenge in designing responsible and transformative research assessments. Therefore, societal impact assessment systems and funding programmes must allow space for research that

interrogates and reframes pressing societal questions, rather than solely producing solutions that may introduce new problems (e.g. Macamo & Neubert, 2014). Open science practices can help in this regard by strengthening transparency, reproducibility, and equitable access to knowledge, thereby fostering public trust.

What This White Paper Offers

This White Paper emerges from recognising that societal impact assessments are both necessary and complex. It responds to growing demands from funders, institutions, policymakers, and civil society to understand whether and how research addresses societal needs. At the same time, it acknowledges the risks of oversimplification, bureaucratic burden, and potential trade-offs with academic freedom and researcher autonomy.

This White Paper does not propose one-size-fits-all solutions. The Paper is structured around three chapters:

- Chapter 2 examines how societal impacts are defined, the complexities involved in evaluating them, and the key challenges that research systems face.
- Chapter 3 maps the current state of play: how funders, institutions, and researchers have designed frameworks, tools, and organisational strategies to embed impacts in practice.
- Chapter 4 offers guiding principles, propositions, and enabling conditions for more inclusive, credible, and responsible approaches to societal impact assessment.

By combining analytical insights and empirical evidence from multiple contexts, this White Paper seeks to support the CoARA community and the broader research ecosystem, evolving towards a more holistic and impact-oriented understanding of research value. We acknowledge that much of the cited evidence and practice reflects European contexts; further iterations will broaden regional perspectives.

The Societal Impact Subgroup, under the “Towards Transformation” Working Group of CoARA, developed this White Paper with contributions from 20+ members representing diverse disciplines, institutions, and countries, all of whom bring experience and expertise in research evaluation and societal impact assessment. This breadth of perspective strengthens the subgroup’s collective understanding of both the conceptual and practical challenges in the field.

Alignment with the Transdisciplinarity and Applied/Practice-Based Research subgroups

This white paper has been developed in close alignment with the Transdisciplinarity and Applied/Practice-Based Research subgroups of the Towards Transformation Working Group. Together, our three outputs form a coherent set of companion pieces that promote co-creation with communities and users, partnership with practice, proportional assessment that balances accountability and learning, and clearer shared guidance for funders and research organisations on how to support and assess societal impact. Their outputs are scheduled for publication in 2026.

Chapter 2. Defining and Assessing Societal Impacts: Current Understandings and Challenges

Research Produces Value in Multiple Ways: Defining Societal Impacts

Research produces value beyond academic output. It contributes to solving societal challenges, advancing public understanding, establishing new networks, and informing decisions that shape lives and ecosystems. Yet, capturing this breadth within assessment and evaluation systems remains a complex task.

This White Paper adheres to the principles of pluralism, recognising the many ways research contributes to improving the quality of life while respecting planetary boundaries (e.g. Stirling, 2011). We examine how research generates positive societal impacts and how assessment systems can reflect better contributions across economic, social, political, cultural, and intellectual domains.

We employ a pluralistic understanding of "societal impacts", referring to both positive and negative changes arising from research processes or outcomes that extend beyond academia, with an implicit focus on benefits for society (Bornmann, 2013; Muhonen et al., 2020; Reed et al., 2021). These changes may occur in various areas, including the economy, public policy, services, health, the environment, culture, or overall quality of life. Impacts often emerge through co-creation with diverse stakeholders and can contribute to addressing global challenges such as the Sustainable Development Goals (SDGs). By co-creation, we mean an iterative, equitable collaboration between researchers and societal partners to shape questions, methods, interpretation, and uptake. Co-creation is a core practice within TD, but it can also occur outside of TD projects. Additionally, we refer to societal knowledge partners to emphasise two-way expertise and agency beyond the label "users" (including communities, practitioners, public authorities, civil society, and business). Where we use "stakeholders" or "users," read them as shorthand for this broader term.

The value of research lies not only in discoveries or outputs, but also in how it interacts with society. The relationships between research, policy, and the public are complex and dynamic, rarely reducible to a linear knowledge transfer process. A more collaborative understanding of impacts highlights how research contributes to societal change through iterative learning, partnership, and shared agency.

One of the central challenges in assessing societal impacts is the lack of a unified definition. While the term is widely used, it is often interpreted differently by funders, institutions, and policymakers, which can sometimes lead to confusion or inconsistent expectations. Multiple frameworks, such as the UK Research Excellence Framework (REF), the U.S. National Science Foundation (NSF) Broader Impacts, and the European Commission's Horizon Europe Key Impact Pathways, offer complementary definitions of societal impact. We highlight these as widely used, policy-influential examples (see **Box 1** for recognised definitions and collaborative study insights). While varying in terminology and emphasis, they consistently position research and innovation as tools for addressing societal needs and improving collective well-being, rather than generating knowledge solely for economic growth.

Across these frameworks, two core elements frequently emerge. First, an orientation toward societal benefits, whereby research is expected to produce concrete improvements in areas such as public health, the environment, and social justice. Second, the recognition that stakeholders have a legitimate role in defining what counts as impact. In many frameworks, goals and outcomes are shaped through public dialogue, representative decision-making, and shared visions such as the SDGs or human rights principles (Soler-Gallart & Flecha, 2022).

Box 1. Societal impacts: diverse recognised definitions and collaborative study insights

"Societal impacts" have been defined in various ways by organisations and funding bodies, each highlighting different priorities. CoARA's Societal Impact Subgroup also conducted a collaborative study to explore the members' perspectives, clarifying these variations and identifying common ground.

Recognized definitions

Multiple organisations and funders emphasise different facets of "societal impacts." For example, the UK Research Excellence Framework (REF) describes it as an "effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia" (Tilley et al., 2018). In the United States, the National Science Foundation (NSF) stresses "the potential to benefit society and contribute to the achievement of specific, desired societal outcomes," (National Science Foundation, 2024) while Horizon Europe frames impacts around "actual improvements resulting from applying knowledge to specific goals, such as the United Nations Sustainable Development Goals" (Flecha et al., 2018). In addition, Reed et al., (2021) define research impact as the demonstrable or perceived benefits to people, organisations, or society, human or non-human, present or future, that can be plausibly linked to research. Despite variations, these definitions converge on the view that research and innovation matter not only for advancing knowledge and economic activity but also for addressing societal challenges and enhancing well-being.

Collaborative study insights

A reflective study by CoARA's Societal Impact Subgroup revealed three complementary viewpoints on how societal impacts are defined, perceived, and evaluated. The first calls for comprehensive, context-dependent considerations, including both intended and unintended consequences. The second prioritises transformative change through stakeholder collaboration, highlighting the need for active co-production and alignment with broader societal objectives (including the SDGs). The third underscores equity, uptake, and public engagement, stressing social justice, accessibility, and continuous dialogue with non-academic communities. Despite differing emphases, all three perspectives converge on the idea that societal impacts extend beyond academic achievements alone and require inclusive, context-specific approaches.

We highlight that societal impact cannot be reduced to a single definition or metric set. It requires a transparent and proportionate use of evidence of societal improvements while safeguarding academic freedom. This stance underpins our call to embrace pluralism and to balance accountability with learning (see Principles 2 & 6, with 1 in Chapter 4).

Unpacking the Complexity of Assessing Societal Impacts

Across the globe, research stakeholders face increasing expectations to demonstrate how their work contributes to addressing urgent societal needs. These expectations serve accountability, learning, and strategic steering and should be met with proportionate approaches that minimise burden. These pressures stem from shifting policy agendas, rising public demand for accountability, and growing recognition that "excellent science" alone does not guarantee transformative change. Yet, translating research into tangible societal impacts is rarely straightforward. Multiple actors, non-linear processes, and unforeseen consequences complicate the journey from discovery to impact, making it challenging to define, follow, evaluate, and compare outcomes systematically. Assessment, therefore, needs to strike a balance between accountability and learning, drawing on evaluation evidence while avoiding an excessive burden.

Efforts to evaluate the societal impacts of research have gained prominence over the past two decades, inspired in part by the concept of the "new production of knowledge" (Gibbons et al., 1994). Nevertheless, a persistent gap remains between the intention to assess research contributions to impact and the availability of reliable systems that incentivise researchers to engage in meaningful impact evaluation.

Pioneering national initiatives have introduced societal impact into research assessment frameworks. For instance, the Netherlands was among the first to include societal relevance in evaluation protocols in the early 1990s (KNAW, VSNU, and NWO, 2009; J. B. Spaapen et al., 2007). The United Kingdom formally incorporated societal impact into its Research Excellence Framework (REF) in 2014. Australia formally incorporated societal impact into its Engagement and Impact assessment in 2018 (Australia Research Council, 2019). Other research organisations, such as CIRAD (the French agricultural research centre for development), INRAE (the French National Research Institute for Agriculture, Food and Environment), and CGIAR (formerly the Consultative Group on International Agricultural Research), have placed societal impact at the heart of their institutional missions. Most notably, IDRC, the Canadian International Development Research Centre, has developed Research Quality + (RQ+), a holistic evaluation toolkit designed to assess the multidimensional impacts of research from the outset (Ofir et al., 2016). Its application suggests that there is no trade-off between research rigour and its utility in addressing local problems, but also indicates that, to maximise impact, research needs to be "close" to the challenges it seeks to address (McLean & Sen, 2019). Meanwhile, many countries have incorporated societal impact considerations into their assessment procedures, with some adopting the "demonstrable impact" approach and others focusing more on "process and activities" (for an overview of 11 European countries, see (Ochsner & Bulaitis, 2023). These diverse pathways underscore that there is no single model; design should be sensitive to disciplinary and regional contexts.

Despite these advancements, challenges persist. Woolston (2023) has argued that assessing the impacts of research involves navigating significant ambiguity and methodological complexity. While many agree on the need to evaluate societal contributions, there is concern that overly standardised approaches may encourage a focus on "low-hanging fruit," neglecting long-term or systemic change, or shifting the administrative burden onto already overstretched researchers. Yet, there are strong reasons to persist while proposing a conceptual approach that aims to add value without creating excessive administrative burdens (see Derrick et al., 2018; Ochsner, 2024).

Building on the foundational concepts, there remains a need to unpack further the complexity of assessing societal impacts. This includes examining the key challenges and identifying potential pathways that can guide researchers, funders, and institutions in developing more effective and context-sensitive evaluation approaches. The following sections delve more deeply into these challenges and explore methodological, institutional, and conceptual pathways for developing more nuanced, inclusive, and responsible evaluation practices.

Because change unfolds through indirect, cumulative pathways, planning must begin early and focus on credible contributions rather than strict attribution. This logic anchors our principles in planning for impact from the outset and ensures that evidence is proportionate and learning-oriented (see Principles 3 & 6, Chapter 4).

Clarifying the concept of societal impact

Assessing societal impact remains complex. A persistent challenge lies in the lack of a unified definition of "societal impact." The term is used across policy, funding, and institutional contexts, but often with overlapping or divergent meanings. In some cases, policy uptake or research transfer, such as the citation of research in legislation or strategy documents, is sometimes interpreted as impact but only constitutes societal impact when it contributes to outcomes (e.g. reduced emissions, enhanced adaptive capacity). However, such references do not guarantee that the research has led to measurable improvements. For instance, a climate study cited in law (a political impact) qualifies as societal impact only if it contributes to outcomes such as reduced emissions or enhanced adaptive capacity.

The production of impact also involves multiple steps and actors. Broader societal impacts often rely on the foundation of robust science, followed by uptake from those with the capacity to implement changes, such as local governments, NGOs, or professional bodies. Without this uptake, even well-designed research may remain disconnected from societal impact. It is therefore helpful to view impact as a sequenced pathway, involving the generation of knowledge, its translation into practice, and its eventual influence on systems and behaviours.

Dissemination and 'transfer' are other frequently misunderstood proxies. Public sharing of research through articles, policy briefs, conferences with policymakers and (social) media coverage may increase visibility, but does not by itself constitute impact. Societal impact occurs when research findings are utilised or applied in a way that leads to tangible societal change, whether in public health, education, environmental sustainability, or other domains. These effects can be positive or negative and often involve complex trade-offs. For example, green technology might reduce greenhouse gas emissions, but unequal access to it can reinforce inequalities (e.g. see Agan & Balcilar, 2022; Vaishnav, 2023), or an artificial intelligence tool might streamline decision-making while perpetuating racial or gender bias (e.g. see (Leavy, 2018; Van Assen et al., 2024; Yi & Turner, 2024). Accordingly, evaluations should encourage balanced reporting of both benefits and risks.

Common models of knowledge dissemination often assume a linear trajectory; they can underplay stakeholder engagement and contextual factors in complex or contested domains. This logic, reflected in frameworks such as translational or implementation science (e.g. (Bauer

& Kirchner, 2020), has been influential in structuring research funding and evaluation practices. Yet, these models have been critiqued for underestimating the importance of stakeholder engagement, particularly in complex or contested policy domains (Muhonen et al., 2020).

In parallel, more interactive and iterative models of research-society engagement are increasingly observed. These include co-creation approaches, collaborative governance frameworks, and relational models such as the triple helix or quadruple helix, where academia, government, and industry, as well as civil society, interact dynamically. These approaches reflect the reality that research impacts often result from dialogue, mutual learning, and embedding research in broader societal systems.

This evolving understanding of impact also highlights the normative dimensions in assessing and evaluating societal impacts. Impact concerns *what* changes and *whose* values define desirable outcomes (equity, inclusion, participation). Factors such as equity, inclusion, and participation are increasingly recognised as relevant to how impact is produced, experienced, and judged. Additionally, impact is not only about positive outcomes, but also about recognising negative consequences that may emerge, whether broadly or for specific actors or sectors.

In this context, assessment systems are being challenged to account for the delayed, long-term, multi-actor, multi-scalar, and non-linear nature of societal impacts. These complexities continue to shape current discussions about how impact is observed and understood, particularly regarding attribution, stakeholder roles, and the temporal dynamics of change.

Embedding impact from the start: pathways and processes

Societal impact is more likely to materialise when planned and designed from the outset of a research endeavour, rather than added as an afterthought. This approach involves developing clear impact pathways and strategic roadmaps that outline how research can contribute to societal change, as well as the steps and actors involved (**Figure 1**).

Impact-oriented planning often involves identifying short-term, medium-term, and long-term goals, as well as specific actors, such as future users, beneficiaries, or policymakers, who are expected to apply or respond to the research findings. Additionally, it considers the current or future obstacles and opportunities that these actors may encounter in their response. Making these pathways explicit can help ensure that research is aligned with real-world needs and opportunities for uptake.

To support this process, researchers and institutions may utilise evaluation indicators to track progress at the end of a project and at intermediate stages, where stakeholder feedback is most crucial. These indicators can reflect incremental changes among specific actors, such as the formation of new partnerships, shifts in public awareness, or early policy engagement. In complex contexts, where causality is rarely linear, such intermediate outcomes provide valuable signals of progress and direction. Yet, impacts often emerge as long-term consequences of these changes, and therefore, considering long time periods.

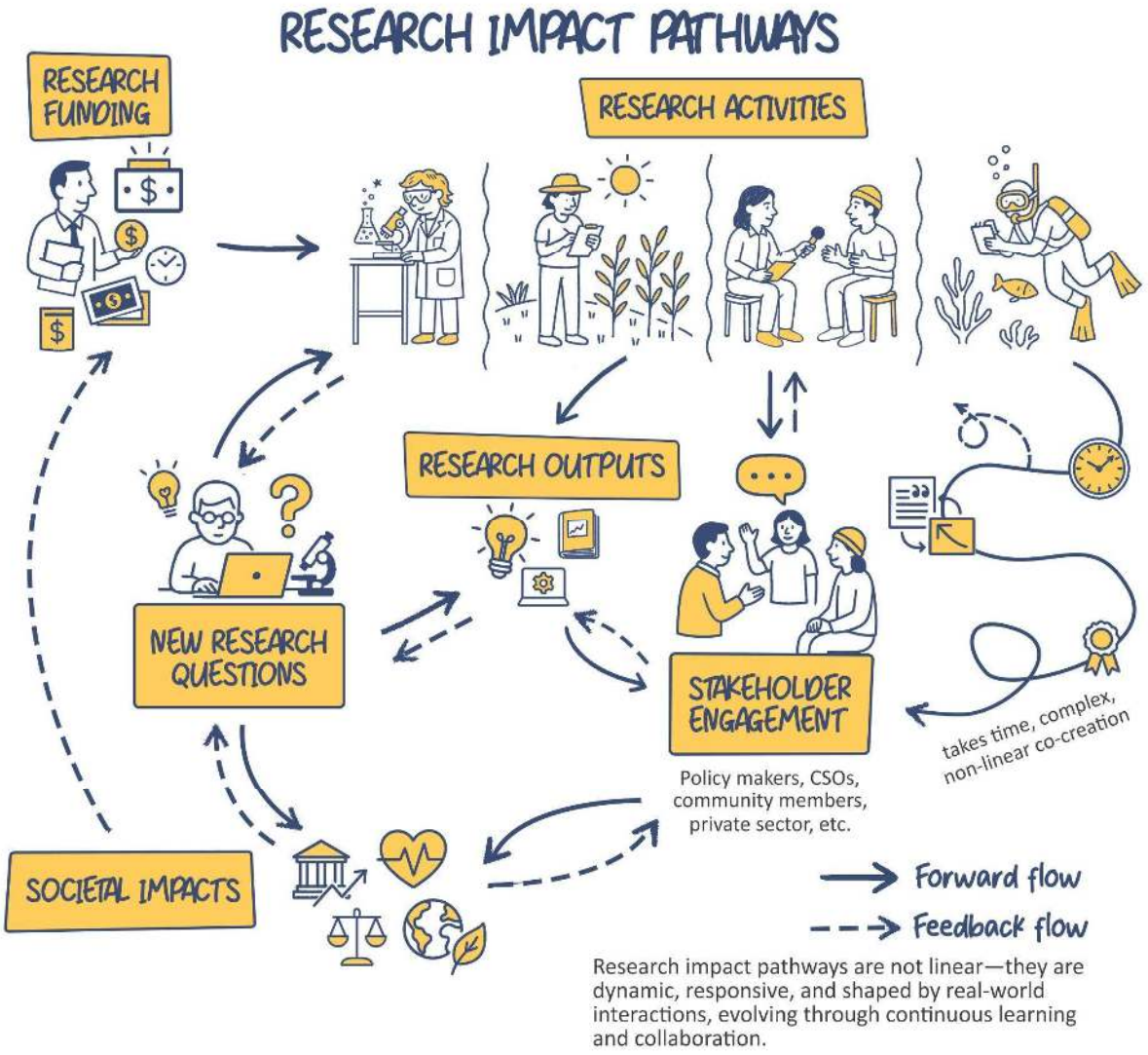

Figure 1. Research impact pathways: from ideas to societal impacts. The schematic illustrates how research can lead to societal impacts through dynamic, non-linear, and iterative processes. Solid arrows represent forward flows (planned progression), while dashed arrows indicate feedback loops that reflect learning, adaptation, or refinement. It is not intended as a fixed or universal sequence; impact pathways vary by context, and often involve hybrid, overlapping steps shaped by stakeholder interaction and co-creation. Making societal impacts visible fosters trust among citizens and policymakers, closing the circle with increased support from research funders. Source: own elaboration visualised by Estradivari.

This approach recognises that impacts often arise from interactions among multiple actors, factors, and disciplines, making it difficult to attribute a single societal shift solely to one research intervention or specific research actor. For instance, an agricultural innovation may not achieve societal impact solely through a lab breakthrough. Rather, impacts emerge when farmers test and adapt new techniques, policymakers provide supportive infrastructure or incentives, and local communities adopt and sustain practices over time.

Moreover, societal impact is not only measured through pre-defined indicators. It also involves recognising the long-term and evolving nature of impact pathways. In these domains, various methodologies, sectors, and impact logics intersect, making it less meaningful to attribute impact to a single source (Oliver et al., 2021). Because change unfolds through indirect, cumulative pathways, planning must begin early and focus on credible contributions rather than strict attribution. Impact is therefore best understood as the result of contributions from multiple actors working collectively within complex systems, under specific conditions. This logic underpins our approach: to embed impact considerations from the start (see Principle 3, Chapter 4) and maintain a proportionate and learning-oriented approach throughout (see Principle 6, Chapter 4). Doing so increases the likelihood that research remains responsive and relevant to changing societal contexts, leading to meaningful, lasting, and socially robust outcomes.

Co-creation as a necessary step to societal impact

Co-creation refers to the active and sustained involvement of stakeholders, such as policymakers, industry partners, civil society organisations, and citizens, throughout the research process. This collaborative approach helps align research objectives with real-world societal needs, fosters trust, spurs innovation, and enhances the relevance and legitimacy of research outcomes (Soler-Gallart & Flecha, 2022). Early and consistent engagement between researchers and stakeholders has been shown to support broader uptake of findings and increase the likelihood that research contributes meaningfully to societal change.

This approach facilitates uptake and democratises science, ensuring research outcomes are relevant and ethically grounded (Stilgoe et al., 2017). In some cases, citizens may help identify or document impacts, for example, through social media engagement or participation in project evaluations, providing insights into how knowledge is co-created (Pulido et al., 2018).

Reflecting this importance, the European Commission's Horizon Europe identifies "Engaging EU Citizens" as a key element of its Key Impact Pathways, treating co-creation as a short-term indicator of future societal impact (Flecha et al., 2018). Such engagement builds legitimacy, accelerates innovation by incorporating diverse perspectives, and increases the likelihood that research outcomes will inform policies and benefit society more equitably. Furthermore, some funding lines under Horizon Europe explicitly include the so-called "Multi-Actor Approach" (MAA[1]) among the eligibility criteria of project proposals. Broader frameworks such as RRI and models like the quadruple helix and Challenge-Based Research (European Consortium of Innovative Universities (ECIU), 2022) also highlight the ethical and institutional value of co-creation. These models promote inclusivity and ethical responsibility in research by encouraging

[1] The multi-actor approach is a form of interactive, transdisciplinary Responsible Research and Innovation (RRI) that seeks to make the research and innovation (R&I) process more co-creative and inclusive. By doing so, it ensures that outcomes are more co-owned, reliable, demand-driven, and relevant to society. Additionally, it aims to widely share these outcomes and facilitate their practical use. This approach goes beyond simply disseminating project results or consulting with a stakeholder board. A multi-actor project ensures the genuine and meaningful involvement of a diverse group of actors in co-creation, in alignment with the project's objectives (European Commission, 2025c).

partnerships between researchers, communities, governments, and the private sector, thereby enhancing the uptake of findings and democratising science to ensure its relevance and fairness (Arnstein, 1969; OECD, 2018; Stilgoe et al., 2017).

The relevance of co-creation is particularly evident in addressing complex societal issues, such as climate change, global health, or food insecurity, which often transcend the boundaries of a single discipline or sector. Transdisciplinary approaches are usually necessary to integrate diverse forms of knowledge and address multifaceted problems. By drawing on multiple epistemologies, backgrounds, and multi-actor perspectives (Bornmann, 2013; Davids et al., 2024), co-creation fosters a more holistic understanding and enables the development of innovative and socially robust solutions.

Acknowledging the collective dimension, cumulativeness, and interconnectedness

The production of scientific knowledge occurs through a complex process (Latour, 1987). It involves addressing knowledge frontiers, engaging in discourse, confronting falsifications and failures, and synthesising insights from multiple sources. Research findings gain status as scientific knowledge only when replicated, challenged, and confirmed through independent studies. As the societal challenges research seeks to address become more complex, so does the number of actors, disciplines, and institutions contributing to this knowledge generation and validation.

Importantly, science does not operate in a vacuum: it unfolds within a broader societal context shaped by technological infrastructures, cultural norms, organisational dynamics, political ideologies, and research assessment systems (e.g. (Gedutis et al., 2023; Kulczycki, 2023). These factors influence how research is produced and how findings are communicated, taken up, and applied. As a result, impacts rarely flow on a simple, one-way path from researchers to society. Rather, they emerge from ongoing, dynamic interactions between researcher communities, stakeholders, and the evolving environments in which knowledge is generated and used.

While particular research projects may lead directly to observable societal impacts, it is equally important to recognise that all research, whether successful, inconclusive, or exploratory, contributes to a larger ecosystem of knowledge. Even studies without immediate applications may lay the groundwork for future breakthroughs, policy changes, or societal shifts. Research Enabling Social Impact (RESI) highlights the cumulative and interconnected contributions across basic and applied research (Flecha et al., 2015). Under this perspective, impact is not solely the result of isolated, outcome-driven projects but rather the product of collaborative, sustained engagement across time, disciplines, and communities. This orientation supports evaluation approaches that recognise routine, incremental contributions, as well as exceptional cases.

By highlighting the collective and systemic dimensions, evaluation can foreground the role of failed or inconclusive studies, interdisciplinary contributions, and the broader research ecosystem in enabling meaningful societal change. This framing expands the notion of impact beyond short-term, measurable outputs to include the indirect and enabling contributions that

support long-term transformation. Evaluations should therefore make space for learning-oriented narratives alongside indicators.

Recognising and addressing negative or unintended consequences

Discussions of societal impacts often emphasise the positive contributions of research, such as improvements in health, environmental protection, or social equity. However, research can also lead to negative or unintended consequences. Amidst this context, there is also growing recognition across all disciplines that responsible research must also examine and account for the consequences and ethical dimensions of its outputs, for example, in fields such as geoengineering and genome editing (Lutz et al., 2025).

Such outcomes may emerge despite good intentions or scientific rigour. Technological or medical advancements may raise ethical dilemmas, reinforce harmful biases, or exacerbate existing inequalities. Similarly, well-intended environmental interventions may unintentionally disrupt ecosystems or displace communities.

A comprehensive understanding of societal impacts requires consideration of both its beneficial and detrimental dimensions, including how such effects are anticipated, accepted, or contested. When evaluation systems focus exclusively on positive contributions, they risk offering an unbalanced or overly optimistic picture of research outcomes. In contrast, explicitly acknowledging the possibility of harm promotes greater transparency, accountability, and ethical awareness in research design and assessment. For instance, informed reflection on trade-offs between different impact dimensions and how research outputs might shift power dynamics, either by challenging dominant positions or reinforcing them, can strengthen a project's capacity to anticipate and mitigate foreseeable negative consequences.

Negative or unintended consequences may arise from multiple factors, including the application of research in inappropriate contexts, uneven access to new technologies, or a misalignment between research outputs and the needs of stakeholders. Including these dimensions in assessment frameworks enables a more accurate and responsible evaluation of research contributions.

Addressing this complexity can also improve the quality and inclusivity of research practices. By considering potential risks and side effects early on, researchers can refine their methods, engage affected communities more meaningfully, and build strategies for mitigation. This, in turn, strengthens the legitimacy of research processes and the resilience of the solutions they aim to support. However, it is essential to acknowledge that levels of understanding or knowledge about specific impacts vary. There may be substantial knowledge and established evidence for some potential impacts or risks, while for others, uncertainty remains high and many aspects may be unknown.

Collecting and documenting evidence

Collecting robust evidence of societal impacts remains a significant challenge for researchers and institutions. Although evaluation of societal impact is increasingly recognised as necessary

for accountability, learning, and strategic planning, the process is often complex, resource-intensive, and time-consuming. It typically requires diverse data sources and indicators, as well as the capacity to trace long-term or indirect outcomes, elements that many academic frameworks were not originally designed to accommodate.

This challenge is magnified by inconsistent expectations from politicians, policymakers, funders and stakeholders regarding what constitutes valid evidence. Often, the absence of shared standards or guidance leads to administrative strain. It limits the ability of researchers and institutions to fully utilise impact assessment in support of future planning or advocacy.

This issue is further exacerbated by the constraints of project-based funding, which rarely extends to post- and follow-up project activities. Since societal impacts often unfold over longer timeframes, limited or non-existent funding for follow-up efforts hampers the capacity to track, understand, or enhance those impacts.

To address these gaps, a growing number of tools and approaches have been developed to support the documentation and evaluation of research outputs and their downstream outcomes, rather than simply collecting generic "societal impact" data. These include open-access impact repositories, structured impact case studies (e.g. ECIU, 2025), and automated analytics. For example, some tools track citations of research in policy or government documents, while others analyse user-generated content or cross-sector collaborations as indicators of public engagement.

Crucially, a suite of research infrastructures has been specifically designed to study research and innovation policy. The European Research Infrastructure for Science and Innovation Studies (RISIS), for example, offers extensive datasets and services relevant for impact assessment, ranging from bibliometrics and patent data to project databases and policy evaluation registries (RISIS, 2025), that underpin both quantitative and qualitative analyses. These infrastructures help users understand research outcomes and the complex channels through which outcomes emerge. Open science practices (e.g. data sharing, preprints) can also enhance traceability and reuse of evidence.

Such tools serve multiple purposes: they can simplify the evaluation process, support internal reflection, enhance the visibility of researchers, and help align academic work with societal priorities. Universities also face growing calls to demonstrate their broader societal contributions through research and teaching, public engagement, and extension services. As expectations evolve, evidence collection is becoming central not only to research evaluation but also to institutional reputation and legitimacy. However, using such tools also entails potential biases, similar to those in bibliometric research. For example, an intervention addressing a specific issue in a small community in a non-English-speaking country will likely be underrepresented in such databases compared to a similar intervention in an English-speaking context.

One particularly key challenge concerns early career researchers (ECRs). Many ECRs operate within academic systems that continue to prioritise publication metrics and journal prestige over evidence of societal impacts. While some publishers now encourage explicit statements on societal impacts or require information about research relevance, most institutional

promotion and assessment systems have not fully adapted. As a result, ECRs often face difficult trade-offs between motivation to make a difference and traditional career progression.

Limited institutional support further compounds these challenges. A lack of training in impact tracking, insufficient data infrastructure, and the absence of dedicated staff to assist with documentation can leave researchers, especially those at early career stages, without the tools to effectively demonstrate impact.

The literature on societal impact evaluation identifies several challenges in demonstrating the societal impacts of research projects. Commonly noted issues include: a focus on tangible products rather than broader societal outcomes (e.g. Bulaitis, 2020; Sivertsen & Meijer, 2020; Swiss Science and Technology Council, 2013); the emergence of negative or unintended consequences, referred to as "grimpact", as highlighted by Derrick et al. (2018), Frodeman (2017), and Sivertsen & Langfeldt (2025); an overemphasis on external impact mechanisms at the expense of evaluating processes intrinsic to the research itself (Sivertsen & Meijer, 2020); and inflated or unrealistic impact promises, which risk eroding long-term public trust (Holbrook & Frodeman, 2011).

A particularly well-recognised challenge is the issue of attribution, given that science is inherently collaborative and impact emerges through distributed networks. Scholars identify four sub-issues related to attribution: (1) the intrinsic complexity of attributing credit within collaborative systems; (2) difficulties establishing causality, often due to reliance on observational data; (3) misalignment between internationally produced research and locally generated impacts; and (4) time lags, as significant societal change often emerges only after considerable time has passed (Sivertsen & Meijer, 2020).

In response to these limitations, empirical and methodological advances have begun to enhance the robustness of impact evaluation when assessing complex interventions and their associated societal impacts. Theory-based process tracing, quasi-experimental designs, and logic modelling offer rigorous approaches. Moreover, recent theoretical work has emphasised the distinction between "normal" and "extraordinary" impact, highlighting the value of everyday research–society interactions rather than focusing solely on exceptional outcomes (Sivertsen & Meijer, 2020).

Nonetheless, this evolving landscape presents opportunities. When researchers are supported in tracking and communicating the societal relevance of their work, it can reinforce their motivation, build broader support for their efforts, and contribute to a shift in research culture that values multiple forms of excellence. Enhanced visibility of impact may also lead to increased funding, cross-sector collaboration, and greater alignment between academic inquiry and public benefit. Crucially, small but consistent improvements in evidence practices can compound into system-level change.

Complexity, Responsibility, and the Way Forward

In conclusion, assessing societal impact is a complex and multifaceted process. While persistent challenges remain in defining, capturing, and evidencing impacts, there is growing recognition of their

importance across policy, funding, and academic spheres. Societal impact is no longer a peripheral concern; it is becoming a core dimension of how research is valued and held accountable.

This shift presents an opportunity to rethink and move toward more inclusive, context-sensitive, and responsible forms of research evaluation that acknowledge complexity, support collaboration, and reflect the diversity of societal needs and knowledge systems. By emphasising contribution (not only attribution), proportionate evidence, and learning-oriented approaches aligned with CoARA commitments, research systems can better harness the transformative potential of research and ensure that they contribute meaningfully to a more sustainable and equitable future in an ever-evolving world.

Contexts, values, and power shape both relevance and use; co-creation and appropriate open practices help adapt to these conditions. Hence, our focus on working with societal knowledge partners while respecting diversity in approaches (see Principles 4 & 2, Chapter 4).

Chapter 3. Design Funding Schemes and Impact Assessment Approaches

This chapter moves from the 'what' and 'why' of societal impact to the 'how'. It provides a practical overview of current approaches and theoretical frameworks for embedding impact into research systems, focusing on three key dimensions: (1) research funding design showing how calls, priorities, and awarding processes can embed societal impact goals; (2) tools and methods for evaluation, reviewing established and emerging techniques for capturing multi-dimensional impacts; and (3) fostering a culture of impact, highlighting institutional incentives and infrastructural support that promote impact-driven research (**Figure 2**). The findings presented here connect to Chapter 4 and inform the principles and practical recommendations.

Research Funding Design for Societal Impact

Designing research funding programmes for societal impact involves six critical stages, drawing on literature and funding practices from multiple systems (e.g. (Azoulay & Li, 2022; SARIMA, 2020; Schneider et al., 2019): i) conceptualisation; ii) setting macro objectives; iii) defining specific priorities; iv) defining design variables; v) assessing proposals; and vi) awarding and monitoring grants. Although these stages are presented sequentially, feedback loops often occur between them. We briefly review them in order.

i) Conceptual models for impact-oriented funding

Funders operate, explicitly or implicitly, within conceptual frameworks that shape what kind of impact is valued. The literature often identifies three types of research impact generation: (1) scientific impact, (2) innovation development, and (3) societal impact (European Commission, 2018). Building on these, we can identify three distinct frameworks used to measure research inputs, outputs, outcomes, and their interactions (European Commission. Directorate General for Research and Innovation., 2022).

1. The **Scientometric Framework** focuses on bibliometric indicators such as publications, citations, and patents for research inputs and outputs. It prioritises knowledge production, scientific excellence, and research efficiency (e.g. Abramo & D'Angelo, 2014; Jacob & Lefgren, 2011; Lee & Bozeman, 2005). Useful for academic influence, but insufficient alone as a proxy for societal relevance.
2. The **Innovation Framework** examines how knowledge drives technological advancements, entrepreneurship, and productivity (e.g. Bhattacharya & Packalen, 2020; Bloom et al., 2020; Cunningham et al., 2016; Sampat & Shadlen, 2021).
3. The **Societal Impact Framework** highlights contributions beyond academia, including improved living conditions, policy influence, public health, and environmental sustainability (e.g. (Bornmann, 2013; Bracken et al., 2015; Ciarli & Ràfols, 2019).

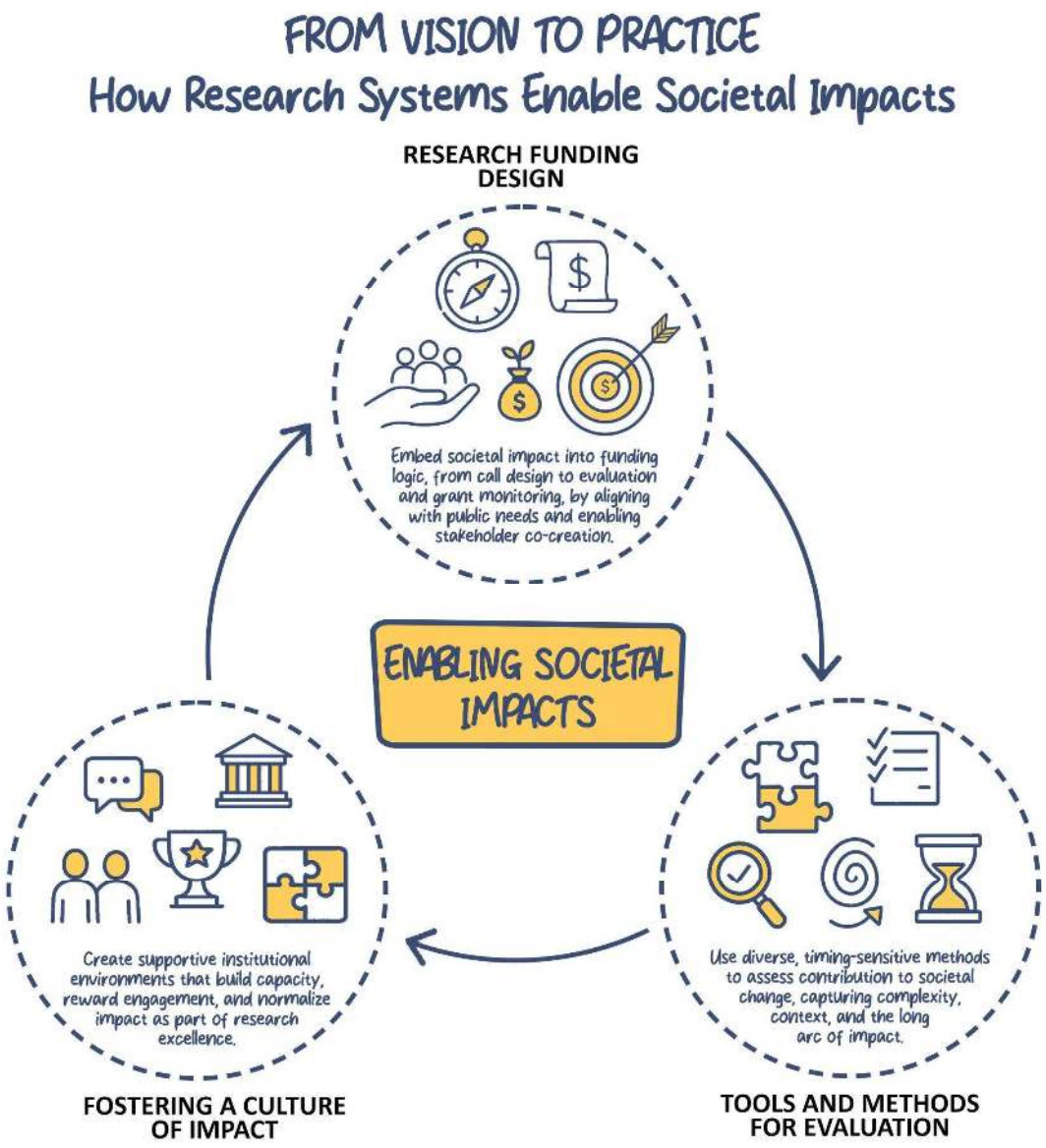

Figure 2. Enabling societal impacts through research systems. This infographic illustrates how interconnected elements, research funding design, tools and methods for evaluations, and fostering a culture of impact, work together to support impactful, real-world research benefits or outcomes. Source: own elaboration with visualisation by Estradivari.

It is essential to recognise that each framework has a significant impact on funding priorities, research design, and evaluation methodologies. For instance, a predominantly scientometric focus can incentivise high-impact journal publications at the expense of direct societal relevance. Conversely, frameworks that emphasise societal impact encourage stakeholder engagement, diverse output formats (e.g. policy briefs, community reports), and research addressing real-world problems. Some recent science policy movements, including those aligned with CoARA, advocate for a more integrated approach that combines scientific excellence with consideration of societal relevance.

Public funders also consider different conceptual models that link the funded research to academic, social, or both types of impact. Examples include:

- The **Logical Model** (Godin, 2007) depicts a linear path from research inputs (e.g. funding, human resources) and activities to outputs (e.g. publications, patents, innovations), outcomes (e.g. collaborations), and impacts (e.g. societal benefits). While this model offers clarity, it may struggle to capture iterative, non-linear processes characterising research processes and how different stakeholders may benefit from them.
- The **Portfolio Approach** (Wallace & Ràfols, 2015) emphasises funding diverse research directions to mitigate risk, explore multiple perspectives, and address complex issues.
- **Science as Public Value** (Bozeman & Sarewitz, 2005) aligns research directly with societal values and public use, underscoring accountability and responsiveness to public interest (e.g. the social contract).
- The **Demand-Supply Alignment Model** (Sarewitz & Pielke, 2007) emphasises the importance of aligning research priorities with societal demands, often through the active involvement of users and stakeholders in both design and implementation.

In practice, funders blend these models. The choice and operationalisation of a given model tend to shape the call and selection processes, influencing how researchers design their work in relation to potential societal benefits.

ii) Setting macro-objectives

Establishing clear macro-objectives guides, funding prioritisation, and monitoring across a programme's lifecycle. These objectives articulate the broader purposes that funded research is expected to serve and influence all subsequent decisions about project selection, evaluation, and monitoring. Many funding programmes organise their macro-objectives around two broad pillars[2]:

- **Advancing scientific excellence:** Prioritising the generation of new knowledge, disciplinary breakthroughs, and maximising research excellence within academic systems (e.g. ERC). This remains essential for sustaining vibrant research ecosystems and for enabling long-term innovation.
- **Fostering societal impacts:** Encouraging research that addresses pressing societal challenges, enhances well-being, supports sustainable development, and informs evidence-based decision-making (e.g. mission-oriented funding). This reflects an increasing demand for research to demonstrate relevance beyond academic communities.

Many funders now strive to balance these two pillars, recognising the potential synergies between scientific excellence and societal progress. For instance, some funders explicitly define macro-objectives centred on specific societal missions (e.g. climate action, social equity), while

[2] As in the rest of the Paper, we focus here on research funding, but we are aware that there are programs specifically targeting technological advance and uptake.

others maintain broad calls that allow researchers to self-identify potential impacts in collaboration with stakeholders (Lepori et al., 2023).

Ultimately, a clear and transparent articulation of macro-objectives strengthens the coherence of funding programmes. It provides researchers with a better understanding of expectations and supports the development of proposals that combine excellence in research with tangible contributions to societal progress.

iii) Defining specific priorities

After setting the broad macro-objectives, the next step in research funding design involves defining specific priorities. These priorities translate overarching goals into more targeted investment areas, providing clearer guidance to applicants, reviewers, and programme managers. They determine which research types are supported and how research activities are expected to address societal challenges.

Funding programmes that advance scientific excellence may involve selecting strategic research thematic areas and emerging disciplines (e.g. sustainable development, astrophysics), identifying early-stage versus established research levels, or defining appropriate project scales. Meanwhile, defining priorities requires a more nuanced approach for programmes emphasising societal impacts. It involves identifying key societal issues or transformation goals, specifying the kinds of changes that research is expected to contribute to, and outlining the potential pathways to achieving these impacts. When societal benefits are emphasised, early engagement with stakeholders and potential beneficiaries, such as policymakers, practitioners, industry actors, or community representatives, becomes essential for identifying relevant, credible, and feasible priorities. This can help ensure that research questions are scientifically interesting, socially meaningful, and capable of informing action.

The process of setting specific priorities can follow different approaches:

- **Top-down approaches,** typically driven by funders or policymakers, are common for mission-driven or thematic calls (e.g. energy transitions, pandemic readiness) that align with policy agendas or societal needs.
- **Bottom-up approaches** encourage researchers to define priorities, often fostering exploratory and curiosity-driven research without predefined societal targets.
- **Hybrid approaches** combine elements of both, providing strategic framing while leaving flexibility for researchers to propose novel pathways (for example, the so-called “open topics” under Horizon Europe, giving applicants more freedom in proposing innovative solutions within specific thematic areas).

iv) Key design variables

Beyond setting macro-objectives and specific priorities, the design of research funding programmes must carefully consider a set of cross-cutting variables that influence scientific excellence and social impact results. These variables determine how research activities are

framed, conducted, and connected to societal benefits. Thoughtful attention to these factors can significantly enhance the potential for funded research to generate meaningful impacts.

The following variables are particularly critical:

- **Time horizon**. The expected timeframe for realising societal impacts is a significant design consideration, influencing the duration of funding cycles, the potential and frequency of evaluation activities, and the types of impacts assessed. Short-term funding cycles may encourage projects that deliver immediate results or applications often with predictable outcomes, but can limit researchers' ability to address complex, long-term challenges. Longer funding programmes that explore new combinations of knowledge may be better positioned to lead scientific excellence (Heinze, 2008) and societal impacts (National Research Foundation, 2020; Schneider et al., 2019). In addition to the research timeframe, funders must recognise that many real-world impacts unfold longer than typical project cycles. Therefore, they should articulate the timing and mechanisms through which a project is expected to contribute after funding ends, identifying which changes are likely to be observable during the project lifespan, and which may only emerge in the longer term. For example, UK Research and Innovation (UKRI) has implemented a post-funding monitoring exercise to address this.
- **Level of the research system targeted.** Research funding can be directed at different system levels: individual researchers, research groups, organisational collaborations, or broader research programmes. While funding individual researchers encourages specialisation or limits knowledge creation (Leahey, 2016) due to the increasing complexity of scientific research (Milojević, 2015), larger collaborations of specialised researchers (Hunter & Leahey, 2008) across disciplines (Falk-Krzesinski et al., 2011) are essential for tackling complex challenges. The choice of levels shapes not only project management (e.g. potential collaborations, knowledge-sharing mechanisms) but also the nature of potential societal connections.
- **Risk and serendipity**. The degree of uncertainty funders are willing to accept is a defining feature of funding design. Programmes with low-risk potential often prioritise predictable, incremental advancements, whereas those that embrace higher risk may encourage transformative research that challenges existing paradigms. Balancing support for higher-risk, exploratory research and more predictable, outcome-oriented projects remains a design challenge, particularly when considering the roles of serendipity and uncertainty in scientific progress (Azoulay & Li, 2022; Franzoni et al., 2022).
- **Collaboration and interactions.** Promoting collaboration across disciplines, sectors, and geographies is a recognised way to enhance societal relevance. However, collaboration does not guarantee greater impact. In response, some funding programmes now specify clear criteria for assessing inter- and transdisciplinary quality and provide reviewer training to recognise genuine knowledge integration. High-quality collaboration can increase the likelihood that research addresses complex societal needs in a more integrated manner.
- **Beneficiaries and societal partners.** Clearly identifying intended beneficiaries and partners (e.g. local governments, NGOs, industry) from the outset can help define expected

outcomes while shaping evaluation criteria. Engaging potential users early, such as through the Multi-Actor Approach (MAA), which involves practitioners and end-users in the consortium from the proposal stage, improves relevance and uptake. Dedicated seed/bridging funds for co-design (now common among several European funders) help make this feasible. This is becoming a best practice for resourcing early engagement. Research co-design, often associated with a higher likelihood of societal impact, requires a dedicated "co-design phase" at the beginning of a project. However, many funding mechanisms do not support this phase, with a few exceptions, such as the GIZ MeerWissen initiative, the MAA approach under the European Commission, and the NWA or the Dutch National Research Agenda programmes by NWO, the Dutch Research Council. Several European funders are now piloting pre-proposal co-design support, such as the Swiss National Science Foundation (SNSF), the Austrian Science Fund (FWF), and Nordic programmes, signalling good practice for resourcing early engagement.

v) Assessing proposals

Proposal assessment is critical in determining which research projects align with a funding programme's macro-objectives and specific priorities. Peer review remains the dominant approach for evaluating proposals, with emphasis typically placed on the quality of research design, the credentials of the team, the feasibility of the proposed work, and the proposal's alignment with the programme's expected impact pathways and stakeholder needs.

However, peer review processes face several documented limitations. Differentiating among proposals of similar scientific merit can be difficult (e.g. Graves et al., 2011; Jerrim & Vries, 2023; Pier et al., 2018), and decisions may be influenced by biases related to discipline, geography, institutional affiliation, or gender (Ayoubi et al., 2021; Boudreau et al., 2016; Ginther et al., 2011). Several scientific funding schemes and organisations struggle to evaluate interdisciplinary proposals, as review panels and funding lines are often organised along disciplinary boundaries. Furthermore, peer review has traditionally prioritised academic excellence over societal relevance, which may limit the recognition of proposals that incorporate strong engagement strategies or aim to deliver broader societal benefits through unconventional outputs.

In response to these challenges, various assessment strategies have emerged. Observed practices include:

- Evaluating scientific excellence and societal relevance simultaneously, either within a single review process or through separate panels, sometimes with weighted criteria depending on programme objectives (Hachigonta et al., 2021).
- Randomisation (lottery systems) to allocate funding among similarly ranked proposals (Fang & Casadevall, 2016).
- Assessment files (e.g. narrative CVs/portfolios) that consider the contributions of researchers to societal impact.

- The involvement of non-academic stakeholders in proposal review panels to assess relevance, feasibility, and potential benefit from a user perspective.
- Training for all reviewers (both academic and non-academic) on how to assess interdisciplinary research and plausible impact pathways, ensuring a common understanding of the criteria.

These evolving approaches reflect growing interest in aligning assessment practices with diverse expectations for what research should achieve.

vi) Awarding and monitoring grants

The final stage in funding design involves awarding grants and establishing mechanisms to track progress. While monitoring is typically based on evaluation of outcomes and processes, funders may also consider portfolio diversity, strategic priorities, and thematic balance in interim reviews. Award decisions should be transparent, with criteria and (where relevant) portfolio-balance considerations, e.g. risk profile, disciplines, geography, and stakeholder reach, made explicit.

Monitoring practices vary, but there is increasing emphasis on approaches beyond administrative checks. Many funders now seek to understand how research adapts to changing societal contexts, engages stakeholders, and evolves over time. Formative elements, such as check-in meetings, concise progress narratives, or milestone reflections, support learning and adaptation. Contribution-focused evidence (brief outcome logs, short "what changed or for whom" notes) and reviews help surface learning without excessive burden, and can include basic open-science checks (e.g. data or code availability where appropriate).

These practices reflect a broader trend toward supporting ongoing dialogue between funders and research teams, enabling more responsive and context-aware implementation of funded projects.

Tools and Methods for Assessing the Societal Impacts of Research

Evaluating how research contributes to societal value requires a diverse toolbox that matches the diverse aims of research funding design. Over the past two decades, many tools and methods have emerged across policy contexts and disciplines. Recent reviews (Joly & Matt, 2022; Pulido et al., 2018; Reed et al., 2021; Smit & Hessels, 2021) highlight that, while methods are plentiful, many have historically focused on STEM fields, with fewer tailored to the societal dimensions of arts, humanities, and social sciences.

Importantly, as no universally accepted framework for evaluating societal impact has emerged, diverse methods are employed, reflecting variations in objectives, policy contexts, and disciplinary traditions. As Feller (2022) observes, "Societal impacts are a baggy term. So too is assessment." This diversity allows evaluations to be tailored to the nature and purpose of different programmes while posing challenges for comparability and standardisation across systems. Some scholars view this pluralism as a strength, noting that flexible, context-sensitive approaches are often better equipped

to reflect the complex and evolving ways research interacts with society. In practice, robust designs are usually mixed-method and theory-based, balancing indicators with contribution evidence and accounting for non-linear, long-term pathways.

The methods and frameworks presented here are illustrative, selected for their policy influence, evidence base, and adaptability. This is not an exhaustive list. The rationale for inclusion was to profile tools and methods that are (i) already used or trialled by funders and research organisations, (ii) transparent, (iii) feasible across diverse disciplines, and (iv) supported by a growing evidence base. The tools profiled were applied to disciplinary and transdisciplinary (TD) projects. Where TD is pursued, tools and methods should also recognise partner roles, equity, and knowledge integration.

Typologies of evaluation tools

Approaches for evaluating societal impact differ along several fundamental dimensions. These typologies help clarify what each method is designed to capture, when it is most appropriate, and how it responds to common challenges in assessing real-world research contributions.

Timing of evaluation

Evaluation of funded research can occur at different stages relative to the research process:

- ***Ex ante* impact evaluations** are carried out before research begins, typically as part of strategic design or programme planning. They articulate plausible pathways to societal impacts, identify potential stakeholders, and clarify expected contributions. They also surface risks early.
- **In itinere (real-time) impact evaluations** are conducted during the research process, enabling teams to reflect, adjust, and respond to changing conditions. This type of evaluation can help projects navigate emerging opportunities or concerns, such as stakeholder feedback or ethical considerations.
- ***Ex post* impact evaluations** occur after the project (or set of projects) is completed and aim to document or characterise the societal changes the research has contributed to. These may be used to assess outcomes against original objectives or inform future programme design.

Each timing addresses different goals, from planning and steering to accountability and learning, and is suited to varying points in the research lifecycle. In practice, programmes often combine these stages.

Purpose and function of evaluation

The primary purpose of evaluating societal impacts shapes its design and implementation. Reed et al. (2021) distinguish two broad categories:

- **Summative evaluations** aim to document achieved impacts, demonstrate value for accountability purposes (e.g. meeting funder targets, producing final metrics), and inform future funding or policy decisions.
- **Formative evaluations** focus on ongoing monitoring, learning, adaptation, and taking epistemic responsibility for generating impact.

Beyond these, evaluations may also serve broader system-level functions (Molas-Gallart, 2012):

- **Collective and mutual learning:** Evaluation processes can help research communities, funders, and stakeholders reflect collectively on challenges and successes, improving future practice.
- **Accountability:** External evaluations provide evidence of performance, value for money, efficiency, and effectiveness to governments, funders, and the broader society.
- **Distributive functions:** Evaluations help determine the allocation of resources, for example, by informing ex ante programme design and priority setting.

In increasingly challenge-oriented research landscapes, such as those addressing the SDGs, societal impact evaluation also serves as a steering function. It helps direct research and innovation activities toward transformative goals and supports navigation through long, uncertain, and complex pathways to societal benefits (Matt et al., 2023).

Causal logic: attribution versus contribution

A key methodological distinction concerns how evaluations interpret the relationship between research and societal change:

- **Attribution approaches** aim to establish direct causal links between research activities and observed societal changes, typically employing quantitative methods to measure the impacts resulting from interventions. However, they may oversimplify the complex, multi-causal nature of societal processes and suffer problems deriving from the time lag between research activities/outputs and observed impacts.
- **Contribution approaches** recognise that impacts emerge from the interactions of multiple actors, influencing factors, and evolving contexts. Rather than isolating direct causality, contribution analysis seeks to understand how research has meaningfully influenced societal change as part of broader systems, acknowledging the contribution of other factors to impacts.

Contribution analysis is often better suited to interdisciplinary, collaborative, or long-term research evaluations, where impacts result from distributed agency, feedback loops, and multi-causal influences. It aligns with impact pathway thinking, where research is one of many forces that help shape outcomes over time. Attribution and contribution can be complementary when used proportionately. That is, when the method matches the decision need, maturity of effects, and scale/risk of the investment: use tighter attribution designs for bounded, near-term questions with plausible counterfactuals (e.g. uptake of a specific tool in a pilot), and use

contribution-oriented approaches for complex, multi-actor change unfolding over longer horizons (e.g. policy shifts), combining methods as needed.

Methodological diversity and theoretical foundations

Recent academic reviews have examined and compared societal impact evaluation approaches in greater depth. Joly & Matt (2022), Reed et al. (2021), and Smit & Hessels (2021) highlight different ways to classify evaluation methods based on underlying assumptions and conceptual frameworks. These include distinctions related to the types and roles of knowledge actors, the mechanisms of interaction between science and society, how societal impacts are defined, and how scientific and societal values are understood in relation to one another.

Such typologies support a more reflective use of evaluation tools by clarifying the match between method and context. They also emphasise the importance of designing flexible, context-sensitive approaches that respond to the diverse and often non-linear nature of impact generation. Method selection concerns not only technical fit but also alignment with programme values and objectives.

Diversity of available methods

A wide range of methods and frameworks reflects the diversity of practices used to assess societal impact (**Table 1, Boxes 2, 3, 4, and 5**). The examples below are illustrative, selected for their policy influence and relevance to updates; they are not exhaustive. Examples include case-based and theory-driven approaches, such as ASIRPA and ImpresS, as well as other strategic planning tools, including the Theory of Change, and methods for tracing causal pathways, such as the Payback Framework and Contribution Mapping. Other models, such as Social Impact Assessment Methods for research and funding instruments through the study of Productive Interactions between science and society (SIAMPI) and Public to Value Mapping (PVM), highlight the roles of intermediaries, non-human actors, and iterative feedback loops within complex systems. Structured frameworks, such as the EU Key Impact Pathways, and large-scale repositories, like the UK REF Impact Case Studies, demonstrate how impact evaluation is embedded in national and international research policy landscapes. Method selection should make assumptions explicit and combine tools where needed to capture both processes and outcomes.

Together, these methods and tools demonstrate that, although no single standard exists, the field has developed a robust and adaptable toolkit. Each method has different strengths, and their suitability depends on factors such as the intended function of the evaluation, the complexity of the research domain, and the timeframe over which benefits are expected to emerge.

Box 2. Horizon Europe's Approach to Impact Pathways and the Societal Readiness Pilot

Horizon Europe, the European Union's main research and innovation programme (2021–2027), introduced an explicit requirement for applicants to design and document societal impact pathways from the outset (see European Commission, 2023, 2024, 2025a, 2025b; Flecha et al., 2018). Researchers must outline how their project activities are expected to lead to short-term outputs, medium-term outcomes, and long-term impacts across scientific, societal, and technological/economic domains. Proposals must include a narrative description of expected impacts, specify target groups, and identify clear indicators to monitor progress over time. This structured, pathway-based approach links design to ongoing evaluation, helping ensure that research investments translate into tangible benefits for citizens, the economy, and the environment.

Horizon Europe's Key Impact Pathways (KIPs) framework further strengthens this approach by organising monitoring around three major impact categories (scientific, societal, and technological/economic) and across three time horizons. Specific KIPs address societal issues such as supporting EU policy goals (KIP 4), delivering outcomes through targeted research and innovation (R&I) missions (KIP 5), and fostering uptake of innovation by society (KIP 6). By structuring project design and the evaluation of pathways, Horizon Europe operationalises the principle that research excellence and societal relevance are intertwined.

Furthermore, Horizon Europe launched a "societal readiness pilot," integrating a Societal Readiness approach through several pilot topics and a Coordinating and Support Action (CSA) for monitoring and evaluation under Work Programme 2025. This approach is grounded in Responsible Research and Innovation (RRI) principles, strongly emphasising interdisciplinarity and knowledge integration. Integrating Societal Readiness into R&I processes aims to address diverse societal needs and concerns, thereby increasing the potential for societal uptake and supporting transitions. According to the European Commission, Societal Readiness will contribute to more impactful R&I by encouraging researchers and innovators, from the earliest stages to the development phase, to align their trajectories with societally desired and needed goals (European Commission, 2025b).

Table 1. Overview of selected societal impact evaluation systems and methods. This table presents a range of recognised approaches to assess societal impact across research systems. It includes evaluation systems, such as national frameworks for institutional assessment, as well as evaluation methods or tools applied at the project or programme levels. These approaches vary in focus, from logic models and contribution analysis to participatory design and reflexive processes, illustrating the diversity of ways to conceptualise and evaluate research impact.

Method / Tool and Short Description	Type / Approach	Focus / Key Concepts
EVALUATION SYSTEMS *National or institutional-level frameworks used to assess research impact, often linked to funding, accountability, or strategic planning.*		
EU Key Impact Pathways (KIPs) *References: European Commission (2020);* ***Box 2***		
Structured framework from Horizon Europe using indicators to assess scientific, societal, and economic/technological impacts over time.	Indicator-based; Mixed; *Ex ante* to *ex post*	Impact typologies, co-creation, long-term benefits, measurable progress, citizens' uptake, alignment with missions
UK REF (The Research Excellence Framework Impact Case Studies) *References:Research Excellence Framework (2014, 2023);* ***Box 3***		
The UK's national assessment system requires evidence-based case studies to demonstrate the societal impacts of academic research.	Case study; Summative; *Ex post*	Evidence of impact, narrative framing, and accountability
VQR (Valutazione della Qualità della Ricerca) *Reference: https://www.anvur.it/en/research/research-evaluation-experts/vqr-2020-2024*		
Italy's national research assessment is conducted every five years by ANVUR to evaluate the quality and impact of research outputs from universities and public research institutions.	Mixed-method evaluation combining bibliometric analysis and peer review	Originality, methodological rigour, impact, funding allocation, institutional benchmarking, and continuous improvement.
EVALUATION METHODS/TOOLS		

Specific approaches, models, or toolkits used to assess impact at the project, programme, or institutional level.		
ASIRPA (Analysis of the Societal Impact of Research and Innovation) *References: Joly et al. (2015); Matt et al. (2023);* ***Box 4***		
Case-based method for mapping *ex post* societal impacts of public research in five dimensions (economic, social, policy, health, environmental). *Ex ante* and real-time assessment to steer research and innovation towards desired societal transformations	*Ex post* case study *Ex ante* and real-time anticipatory approach to navigate the future	Impact pathways, actor networks, contribution analysis, chronology, action plans, change descriptors
ImpresS (Impact of Research in the South) *References: Barret et al. (2017); Blundo-Canto et al. (2018); Faure et al. (2020);* ***Box 5***		
ImpresS *ex ante* and ImpresS *ex post* theory-driven approaches for impact-oriented planning and assessing research societal impacts, especially in agricultural R&D.	Mixed; Participatory; iterative; Contribution-based; Planning and evaluation	Impact pathways/theory of change, contribution analysis, strategic impact planning, indicators, and impact claims
SIAMPI (Societal Impact Assessment for Research and Innovation) *Reference: Spaapen & van Droodge (2011)*		
Focuses on "productive interactions" between researchers and stakeholders as proxies for impact.	Contribution-based; Qualitative; *Ex post* or *in itinere*	Stakeholder engagement, knowledge use, and non-linear impact pathways
Payback Framework *Reference: (Buxton & Hanney, 1996)*		
Traces linear pathways from research to outcomes, with five categories of payback: knowledge, research benefits, political and administrative benefits, health sector benefits, and broader economic benefits. Initially developed for health research evaluation.	Attribution-oriented; *Ex post*	Logic model, quantifiable outcomes, feedback loops
Contribution Mapping		

Reference: Kok & Schuit (2012)		
Maps actors, their activities, and alignment efforts, as well as production and knowledge extension; emphasises co-creation and contextual interaction.	Contribution-based; Qualitative	Actor roles, knowledge circulation, and co-production
RRI (Responsible Research and Innovation Tools) *References: Artheau et al. (2007); Stilgoe et al. (2013)*		
Toolbox to embed societal values and reflection into the research and innovation process	Reflexive, process-oriented	Inclusion, responsiveness, anticipation, reflexivity
PVM (Public Value Mapping) *Reference: (Bozeman, 2007)*		
A conceptual and evaluative tool to assess whether and how scientific research contributes to desired societal outcomes, focusing on public value rather than economic productivity.	Normative and explanatory framework using case studies and causal logic models	Public value theory, knowledge value collectives, churn model of innovation, S&T (Science and Technology) human capital, social outcomes, institutional ecosystems
LeNa Shape Impact Pathways (Sustainability management in non-university research organisations) *Reference: Pfeifer & Ferse (2024)*		
A participatory tool to help researchers integrate sustainability and social responsibility into their work through impact pathway planning and appraisal, using stakeholder engagement, indicators and adaptable workshop formats.	*Ex ante* and *ex post*, participatory workshops, contribution-based	Theory of Change, contextual/societal/transformational impacts, sustainability dimensions, impact literacy
Research Impact Pathway / Logic Models *References: Bornmann (2013); Reed et al. (2021)*		
Visualises links from research inputs to outcomes and societal impacts	Logic model/theory of change	Inputs, activities, outputs, outcomes, impacts

Matching tools to context

Selecting appropriate tools for evaluating societal impact is not a technical exercise alone. It requires careful alignment between the purpose of the evaluation, the complexity of the research, the societal context, and the expected timeframes and types of benefits. The diversity of methods and tools is a strength, allowing for tailoring to each setting and proportionate application based on project size and stage.

The appropriateness of a method depends on several factors:

- **Complexity and uncertainty:** When research interacts with dynamic systems and unpredictable pathways, rigid or narrow evaluation tools are unlikely to capture the whole picture. Where pathways are dynamic, contribution-oriented, pathway-based methods are more suitable, with assumptions and limitations stated upfront.
- **Time horizon:** The timing of impact realisation affects evaluation choices. Short-term evaluations may focus on near-term outcomes; long-term evaluations should account for incremental and distributed impacts, including brief post-project follow-ups where appropriate.
- **Purpose and use of the evaluation:** Structured, evidence-focused tools may be suitable when prioritising accountability or reporting. In contrast, formative, participatory methods are often used when the goal is ongoing learning or strategic steering of research in response to emerging needs.
- **Stakeholder involvement:** When research engages stakeholders in defining questions, applying results, or shaping outcomes, evaluation methods must reflect these relationships. Participatory or co-produced approaches surface contextual value and build trust, while documenting roles and potential power asymmetries.

In contexts where research is co-produced with stakeholders, evaluation methods may also support shared learning and collective sense-making. Co-creation and co-production approaches often require tools that facilitate joint progress assessment, inclusive interpretation of results, and mutual accountability. These may include real-time evaluation designs, flexible indicators, and participatory reflection sessions (Blundo-Canto et al., 2020). Mixed-method evaluations, which combine qualitative insights, stakeholder perspectives, and quantitative indicators, allow for richer and more credible accounts of societal benefits (Joly & Matt, 2022). In practice, evaluators often combine tools to capture both processes (*how change is enabled*) and outcomes (*what changed and for whom*).

Ultimately, effective evaluation depends less on identifying a single “best” method and more on making informed, reflective choices that align with the characteristics of the research, the evaluation questions that one wants to answer and the broader systems in which impacts are expected to occur, with transparent criteria for method selection and proportional evidence expectations.

Box 3. The UK REF Impact Case Studies

The UK's Research Excellence Framework (REF), first implemented in 2014 (https://2014.ref.ac.uk/) and renewed in 2021 (https://2021.ref.ac.uk/), integrates societal impact as a key component of research assessment and funding allocation for British higher education institutions. Under this system, universities submit structured Impact Case Studies, five-page narratives with supporting evidence, detailing how research activities led to changes beyond academia. Impacts are broadly defined, covering economic, cultural, social, environmental, and policy domains. Notably, societal impact accounts for around 25% of the overall REF funding allocation, creating strong incentives for researchers and institutions to engage in broader knowledge translation and public value creation. It has been estimated that one four-star submission, rated as world-leading in originality, significance, and rigour, can be worth approximately £250,000 per year (Kerridge, 2023).

With more than 6,700 case studies submitted in 2021, the REF has generated a unique repository of evidence-backed impact narratives, accessible to policymakers, funders, and the public (Stevenson et al., 2023). This transparency highlights how research excellence and societal relevance can reinforce each other: many highly rated impacts are linked to world-leading academic work. However, the approach also reveals tensions: it may favour impacts that are easier to document within short funding cycles and under-represented, slower or less visible contributions. Despite these limitations, the REF's case study model remains one of the most influential global benchmarks for embedding societal impact into research assessment.

Participatory and pathway-based approaches

As our understanding of societal impact has evolved, traditional evaluation methods alone are insufficient to capture the complex, distributed, and dynamic ways in which research interacts with society. Participatory and pathway-based approaches offer complementary strategies that better reflect the realities of impact generation (Joly & Matt, 2022; Smit & Hessels, 2021).

Participatory approaches involve engaging stakeholders, such as policymakers, practitioners, community groups, or private sector actors, not only as sources of information but as active partners in planning, producing, and evaluating research. Stakeholders help define what kinds of changes matter, how they emerge, and which benefits are meaningful in specific contexts. Co-creation approaches, such as Contribution Mapping (Kok & Schuit, 2012), ASIRPA (Joly et al., 2015), and ImpresS (Blundo-Canto et al., 2018; Faure et al., 2020), treat stakeholders as co-producers and co-analysts of knowledge and impact. This inclusion can enhance contextual relevance and credibility. Participation should be proportionate (to project size and risk) and transparent (roles, expectations, decision rules) with attention to power dynamics and expectation management (Blundo-Canto et al., 2020). Where possible, modest seed funds for co-design can enhance the quality of participation.

Pathway-based approaches view impact as dynamic and non-linear processes. Rather than focusing solely on results, they emphasise the sequences of actions, interactions, and evolving conditions that collectively contribute to societal benefits. Mapping or anticipating these

pathways clarifies intended contributions, mid-point indicators, and where stakeholder engagement or adjustment may be required (Boaz & Nutley, 2019). These approaches are often used to support reflection and learning, particularly in long-term or uncertain research contexts.

Planning for societal impacts also means planning for evidence: select feasible indicators/descriptors and co-define milestones with stakeholders. Approaches such as ASIRPA Real Time (Matt et al., 2023) illustrate how such logic can support more adaptive, participatory, and learning-oriented evaluation systems.

Box 4. ASIRPA: Understanding and Steering Societal Impacts

Developed by INRAE, the French National Research Institute for Agriculture, Food, and Environment, ASIRPA (Analysis of Societal Impacts of Public Agricultural Research) provides a structured ex post evaluation method for assessing the impacts of research. ASIRPA uses standardised case studies to map the societal impact-generating research process across five dimensions: economic, social, political, health, and environmental (Joly et al., 2015). It combines chronological analysis, impact pathways, and vectors of impacts to reconstruct how research outputs gradually contribute to societal changes. By focusing on evolving networks of actors, ASIRPA reveals that significant societal impacts often take decades to materialise, highlighting the long, non-linear journey from academic knowledge production to real-world outcomes.

ASIRPA's *ex post* experience has generated valuable learning for research organisations. By systematically analysing about 60 case studies, INRAE has demonstrated that the distribution of societal impacts is highly skewed: few research efforts yield significant impacts, but many smaller contributions collectively enable systemic change. ASIRPA also highlights that impacts emerge not only from direct technology transfer but also from broader forms of societal engagement, regulatory influence, and environmental improvements. Its robust methodological approach, grounded in innovation studies and actor-network theory, has made ASIRPA a reference model adopted by other actors such as the French Ministry of Agriculture and the European Commission's Joint Research Centre (JRC). In practice, ASIRPA case studies provide evaluation evidence that can inform organisational learning and, where relevant, formal assessment exercises.

Building on these foundations, ASIRPA-Real Time was developed to help researchers and programme managers plan and learn for impact during the research process. ASIRPA Real Time shifts from a retrospective evaluation to a formative, participatory evaluation method, focusing on anticipating desired societal transformations (Matt et al., 2023). Researchers collaboratively map future impact pathways, develop strategies and action plans, and reflect iteratively on obstacles and opportunities as projects evolve. This anticipatory and iterative approach enables greater reflexivity, steering research toward transformative goals while remaining adaptive to changing contexts. Early applications in areas such as pesticide-free agriculture missions, agroecological systems, and marine socio-ecosystems show that ASIRPA Real Time fosters systemic thinking, builds impact capabilities among researchers, and enhances innovative solutions co-created with stakeholders, with proportionate evidence expectations to avoid excessive reporting burdens.

In practice, evaluations focusing solely on accountability may maintain a separation between researchers, evaluators, and end-users. In contrast, participatory and co-produced approaches tend to blur these boundaries, fostering more integrated and collaborative evaluation processes. Recent reviews highlight a growing interest in evaluations that support mutual learning, capacity strengthening, and shared responsibility among actors (Joly & Matt, 2022; J. B. Spaapen, 2015). These developments suggest an expanding space for models that view evaluation as an iterative, communicative process embedded within broader societal and institutional change. Such models align with contribution-focused evaluation and CoARA commitments to recognise diverse outputs and processes.

This synthesis highlights that different purposes and stages require different tools. Indicators should be paired with evidence of contribution to reflect real pathways to change. This, therefore, leads us to embrace methodological pluralism and use proportionate, auditable evidence (see Principles 2 & 6, Chapter 4).

Building an Institutional Culture of Impact

While tools and methods for evaluating societal impact are essential, they cannot function effectively without an enabling institutional culture, including the development and strengthening of impact literacy at both the individual researcher and institutional levels (Bayley & Phipps, 2019). A sustainable impact system relies on mindset, practices, and structures that align research practices with societal benefits and institutional learning (Blundo-Canto et al., 2019). This cultural transformation extends beyond metrics; it reflects how institutions perceive the role of research in society and whether they foster the conditions for impact-oriented research to thrive.

Recent literature has emphasised the role of institutional postures and organisational strategies in fostering a “culture of impact”, defined as an institutional aspiration to design, plan, and implement research through the prism of the societal impacts it aims to generate (Ferré et al., 2025). The Bartlett Manual of Impact **(Box 6)** exemplifies how institutional values and operational guidance can converge to support researchers in navigating complex impact pathways. In such a "Culture of impact”, it is the idea that researchers and partners feel aligned with broader societal objectives and see themselves as contributors to societal transformation.

Building this culture requires adopting new shared values and practices, fostering continuous learning, and embedding the reflection on impact throughout the research lifecycle, from early design stages to long-term engagement and assessment (Blundo-Canto et al., 2019). This section presents key dimensions of this cultural shift, including the evolving orientation from metrics to mindsets, institutional enablers, illustrative change pathways, and emerging intermediation practices.

Box 5. ImpresS: Participatory Approaches to Trace and Anticipate Societal Impact contributions of research

Developed by CIRAD, the ImpresS (Impact of Research in the South) framework provides two participatory evaluation methods for evaluating the societal contribution of research (Blundo-Canto et al., 2018; Faure et al., 2020). The ImpresS *ex post* method assesses long-term impacts by reconstructing the pathways from research outputs to outcomes and broader societal change. It employs a case-study approach, contribution analysis, and participatory tools (e.g. stakeholder workshops, interviews, and focus groups) to analyse the innovation process and co-construct impact pathways. This approach has been applied in 13 case studies across Africa, Asia, and Latin America, highlighting research contributions in complex, multi-actor innovation processes.

The ImpresS *ex-ante* approach, on the other hand, supports research teams in designing plausible impact pathways and clarifying expected outcomes before or during implementation. It fosters a shared vision among partners, identifies key actors, and defines assumptions, risks, and indicators. Both methods emphasise systems thinking and stakeholder engagement to uncover diverse, often unexpected impacts, while strengthening evaluative learning. Participation should be proportionate to project size and context, enhancing the relevance, legitimacy, and usability of impact insights.

From metrics to mindsets

A culture of impact reflects a shift in posture, from compliance with established metrics to a broader understanding of how research can address societal challenges. It directly confronts the tension between an academic culture that often rewards individual competition and the collaborative, trust-based work required for societal engagement. It involves rethinking research purposes, expanding what is considered valuable, and questioning how knowledge is created, shared, and used. This transition also aligns with discussions on Responsible Research and Innovation, Open Science/Open Research, and the growing demand for transparency and relevance in academic work (OECD, 2018; Parr et al., 2022; Stilgoe et al., 2017).

Such a mindset shift entails recognising that impact is not linear and often emerges through dynamic interactions among researchers, stakeholders, and contextual factors, following complex and evolving pathways. Whether successful or inconclusive, research contributions add value to a broader system of knowledge that can, over time, enable significant breakthroughs (Flecha et al., 2015).

Notably, the culture of impact also challenges traditional distinctions between basic and applied research. Concepts like Research Enabling Social Impact (RESI) highlight how all forms of research can contribute to societal goals, directly or indirectly, through cumulative and interconnected processes (Flecha et al., 2015). This perspective calls for evaluation systems that move beyond short-term results and embrace longer temporal horizons, as well as diverse forms of value creation. Impact literacy, including shared skills to plan, evidence, and communicate contributions, supports this shift.

Box 6. The Bartlett Manual of Impact: An Institutional Guide to Operationalising Impact Practices

The Bartlett Manual of Impact (University of College London, 2024), developed by the Bartlett Faculty of the Built Environment at University College London, offers a highly practical resource for embedding societal impact thinking into academic practice. Rather than presenting a prescriptive or linear model, the manual provides flexible guidance, reflection tools, and real-world case studies that address common challenges researchers encounter when pursuing meaningful impacts, with an emphasis on proportionate, context-sensitive practice.

Drawing from extensive internal experience, the manual emphasises three core institutional principles for enabling impact: trust and care, power and equity, and reflection and learning. It provides researchers and institutions with actionable strategies for navigating uncertainty, building equitable partnerships, managing unintended consequences, and developing context-sensitive approaches to monitoring, evaluation, and scaling up initiatives. The Bartlett experience demonstrates how a high-level commitment can be effectively translated into operational support for academic staff, students, and external collaborators, thereby linking principles to everyday practices and evidence.

Developing this mindset requires supportive environments where impact is understood, discussed, and pursued collectively. Institutions must foster internal conversations about research purposes, enable experimentation, and reward collaboration across disciplines and sectors. Reflexivity, adaptability, and the ability to engage meaningfully with stakeholders become core competencies, not optional extras. Developing this mindset also requires dedicated funding resources to build and sustain permanent interaction spaces that support long-term efforts to shift institutional culture and practices.

While evaluation tools provide structure, these cultural dimensions shape how impact is perceived, pursued, and ultimately achieved. Therefore, recognising and investing in developing such a culture is essential to advancing transformative research systems.

Collaboration across research, policy, funding, and academic networks, as well as with broader communities and initiatives, can help reach a wide audience and foster cultural change. For example, working groups from the European Commission, initiatives under the ERA Policy Agenda, the annual European R&I Days, and the network of European University Alliances (all 65 of which collaborate on R&I through the FOREU4ALL community) contribute to this effort.

Enabling structures

Developing a culture of impact within research organisations requires the creation of supportive structures and mechanisms. These structures foster the integration of impact considerations throughout the research process and help institutionalise new practices, values, and behaviours.

Box 7. Organisational Change Case Snapshots

Developing a culture of impact within research institutions varies by context and is shaped by the organisation's history and mission. Experiences from institutions such as CIRAD, INRAE, and AGROSAVIA (Ferré et al., 2025) offer valuable insights into how societal impact-related reflections can be embedded in institutional practice.

These organisations built internal capacity by forming dedicated impact teams, adopting evaluation frameworks, and integrating impact thinking into research design. Leadership support, training, and institutional learning mechanisms, such as knowledge-sharing platforms, further reinforced this shift.

Successful organisational transitions balanced shared principles with flexibility, recognising the diverse nature of research and engagement. Change also extended beyond the institution, given enhanced collaborations with stakeholders to co-produce research pathways aligned with evolving needs and roles/expectations.

Common success factors included early stakeholder engagement, interdisciplinary dialogue, and systems to evaluate, monitor, and learn from impact evaluation exercises and related results. These cases demonstrate that fostering a culture of impact is possible and valuable, but it demands a long-term commitment, resources, and an openness to complexity (Ferré et al., 2025).

Research organisations that have embraced a culture of impact have invested in dedicated support systems to accompany researchers along their impact journeys (see **Box 7, Box 8**). This often includes establishing specialised units or teams with expertise and providing financial resources for societal impact evaluation, stakeholder engagement, and participatory methods. Such support systems are instrumental in enabling researchers to think through and design impact pathways from the early stages of projects, engage with stakeholders throughout the research cycle, and gather evidence of outcomes in real time (Blundo-Canto et al., 2019; Ferré et al., 2025; Matt et al., 2023).

In addition to technical support, institutions aiming to foster a culture of impact have adopted organisational strategies that promote cross-disciplinary collaborations, stakeholder co-creation, and adaptive learning processes. They have established spaces for dialogue among researchers, research managers, and non-academic stakeholders, creating conditions where societal relevance is discussed, anticipated, and integrated into research practices.

Capacity building is another essential enabler. Training programmes to improve researchers' understanding of societal impact, communication strategies, stakeholder mapping, and participatory methods are increasingly recognised as critical. These programmes help researchers better navigate the complexities of co-creating knowledge with societal partners and to design more inclusive and responsive research agendas (Douthwaite et al., 2017).

Moreover, communication from leadership plays a pivotal role. Clear institutional messaging that societal impact is a valued dimension of research excellence helps align incentives and expectations. Recognition mechanisms, such as awards for impactful research or explicit

consideration of impact in promotion and tenure processes, also reinforce the importance of societal contributions.

Importantly, enabling structures must allow for flexibility and context sensitivity. Impact pathways are rarely predictable, and institutions must be capable of adapting to changing societal needs, emerging opportunities, and evolving research landscapes. This requires moving beyond rigid evaluation templates toward more formative, participatory, and iterative assessment processes, supporting researchers in navigating uncertainty and learning from experience.

Recent work has highlighted several interconnected features that help translate institutional commitment into sustained practices. For example, Blundo-Canto et al. (2019) emphasise that fostering a culture of impact involves promoting inter- and transdisciplinary dialogue about the evolving roles and functions of research; ensuring adaptability to different needs and vocabularies to support the uptake of key principles; and strengthening internal communication strategies led by committed leadership. They also highlight the importance of reinforcing staff capacities to understand and characterise impact, allocating dedicated human and financial resources, establishing organisational mechanisms and spaces that support learning and the systematic capitalisation of lessons learned. Furthermore, institutional entrepreneurship, driven by the social position of key actors within organisations, can catalyse the transformation of these institutions into engaged, impact-oriented organisations by introducing new ideas, values, and beliefs (Reale, 2022).

Knowledge brokerage practices

As research increasingly engages with complex societal challenges, the role of knowledge brokerage in facilitating the flow of knowledge between research and society has become central. Knowledge brokers serve as independent, skilled intermediaries, connecting researchers, policymakers, practitioners, and communities to align research processes and outputs with real-world needs and priorities (Cvitanovic et al., 2025). They translate across languages, evidence standards, and timelines, and help make intended impact pathways explicit and feasible.

Knowledge brokerage practices recognise that societal impact rarely emerges through one-way dissemination of research findings. Instead, it often results from dynamic, iterative interactions between researchers and stakeholders, shaped by trust, dialogue, and mutual understanding. Brokers help navigate differences in language, values, timelines, and expectations between academic and non-academic communities, making research more accessible, actionable, and contextually relevant. They also support expectation-setting (e.g. roles, decision rules) and help address trust gaps, including instances where misinformation undermines evidence-based use.

Several approaches have illustrated the growing importance of brokerage roles in research ecosystems. These include support for participatory design processes, facilitation of co-creation spaces, and assistance in translating research outputs into forms usable by different stakeholders. In many cases, brokers are embedded within research organisations, serving as dedicated staff, liaison officers, or members of interdisciplinary project teams.

Box 8. Institutional Pathways to Advance Societal Impacts: Our Perspective

To deepen our understanding of how institutional pathways can strengthen societal impacts, we conducted a Q-methodology study with members of CoARA's Societal Impact Subgroup. Our findings reveal three key perspectives illuminating different approaches to embedding impact in research institutions.

> **Viewpoint #1. Long-term engagement and early collaboration**. This perspective underscores the importance of sustained partnerships and the early involvement of stakeholders in the research process. It highlights that integrating impact considerations, from project design through *ex-ante* evaluation and planning, ensures that societal engagement is not considered an afterthought. Dedicated funding for impact-focused activities, such as co-creation, is critical; proportionate seed/bridging resources make this feasible within the research design.
>
> **Viewpoint #2. Institutional integration and formal recognition**. Here, respondents emphasised the need for systematic institutional reforms. Embedding societal impact within strategic planning, assessment processes, and academic rewards creates an environment where researchers are recognised and incentivised for their societal contributions. This approach requires impact criteria to be formally integrated into grant assessment and funding applications, thereby making societal impact a core element of research excellence.
>
> **Viewpoint #3. Building impact through support and communication**. The third perspective focuses on the development of institutional infrastructure and capacity-building initiatives. Establishing dedicated support offices, impact officers, and accelerator programmes, coupled with impact literacy, can significantly enhance the accessibility and real-world relevance of research. This view also emphasises that, beyond formal evaluation mechanisms, continuous communication and knowledge exchange are crucial to fostering a resilient culture of impact (e.g. peer-learning spaces, open case repositories).

Despite their different emphasis, all three perspectives converge on the idea that societal impacts cannot be an afterthought. They advocate for a holistic and inclusive approach that aligns research cultures, policies, and incentives with societal needs. Institutions can bridge the gap between academic research and real-world benefits by fostering a shared understanding of these pathways. These insights provide empirical support for the broader strategies discussed in this chapter, reinforcing the proportionate evidence expectations and cross-actor coordination necessary for building an impact-driven academic ecosystem.

The development of brokerage functions often accompanies broader shifts toward collaborative, transdisciplinary, and mission-driven research agendas. Knowledge brokers help operationalise these agendas by assisting in the early identification of societal needs, supporting researchers in articulating plausible impact pathways, facilitating stakeholder engagement throughout the research lifecycle, and helping monitor evolving contexts and adjust research directions as necessary. Small, flexible funds (e.g. for co-design/bridging) can enable timely brokerage activities and sustained participation.

Brokers also contribute to building reflexivity within research processes, encouraging researchers to consider how their assumptions, methods, and outputs interact with societal dynamics. By fostering mutual learning between science and society, brokerage practices enhance the credibility, legitimacy, and usability of research contributions and reinforce open science practices. They also foreground equity and inclusion by ensuring that diverse voices inform the framing and interpretation of problems.

While knowledge brokerage can take many institutional forms, ranging from formal offices to informal networks, it plays a crucial role in facilitating the collective navigation of complex, non-linear pathways toward societal impact. Knowledge brokers must be, and be perceived as, impartial actors to be effective. This role typically cannot be fulfilled by researchers alongside their scientific responsibilities; instead, it requires dedicated staff with the time, skills, and positional independence to facilitate trust-based collaboration. Institutions must therefore invest in clear role descriptions, training, career pathways, and formal recognition of brokerage work in workload models and promotion criteria to institutionalise it as a core function. Clear governance (e.g. conflict-of-interest rules), role descriptions, training, and career pathways, along with recognition in workload models and promotion, help institutionalise brokerage as a core function. As such, knowledge brokers are increasingly viewed as integral actors in research ecosystems that seek to foster meaningful societal transformations.

Chapter 4. From Principles to Practice: Key Lessons and Actions Forward

The COVID-19 pandemic accelerated public expectations that research will be relevant, trustworthy, and usable, not just publishable. In parallel, misinformation, disinformation, equity concerns, and the growth of open science have raised the bar for how evidence is produced, communicated, and utilised. Against this backdrop, calls to integrate societal impact into research assessment are now widely discussed.

As we argue in this White Paper, the question is no longer *why* this matters, but *how* to make it work in practice. Building on the conceptual foundations and current practices outlined in the previous chapters, this section focuses on turning principles into action.

This chapter identifies enabling principles, roles, and structures to support meaningful and responsible impact assessment. It begins with six guiding principles grounded in real-world complexity, derived from the evidence and practices reviewed in Chapters 2 and 3, followed by targeted recommendations for researchers, institutions, funders, and stakeholders. The final sections outline how systems can develop the capabilities, infrastructure, and culture necessary to integrate societal impact as a routine dimension of research quality.

The goal is not to offer a single blueprint, but to support deliberate, participatory, adaptive, and context-sensitive strategies for embedding impact thinking into the core of research systems.

Six Principles for Integrating and Assessing Societal Impact Across Research Systems

Effective societal impact integration and assessment require principles that reflect the real-world complexity of how research contributes to change. These six principles (**Figure 3**) provide a practical foundation for designing, supporting, integrating, and evaluating impacts in ways that are context-sensitive, inclusive, and aligned with public value.

1. ***Prioritise societal relevance.*** Societal impact should be treated as a core dimension of research quality, not an optional add-on. This means embedding relevance into institutional missions and strategies, research design, funding strategies, and evaluation criteria, without compromising academic rigour and freedom. Research can be directed toward pressing societal issues while preserving independence by clearly articulating how research aligns with shared societal goals and public priorities and by using currently dominant metrics cautiously, never as sole proxies for quality or impact. Delivering on this principle is a joint responsibility of funders and institutions as co-actors: funders shape calls, provide flexible monitoring, and train evaluators; institutions align hiring and promotion, offer brokerage and protected time, and uphold academic freedom.
2. ***Embrace pluralism.*** Societal impacts take many forms, including policy changes, increased public awareness, environmental restoration, and cultural revitalisation. These outcomes emerge through diverse pathways, both direct and diffuse. No one-size-fits-all method exists for evaluating impact (Muhonen et al., 2020). Instead, mixed methods and case-based approaches should be combined proportionately and transparently, treating pluralism as a strength that captures complexity rather than a weakness to be eliminated.

3. ***Plan for impacts from the start.*** Societal impacts should be embedded throughout the research lifecycle, from proposal to post-project reflection with proportionate, dedicated resources (e.g. seed/bridging funds for co-design and early engagement). This includes identifying intended users, anticipating uptake, and mapping contribution pathways. Impact planning is not about control, but about being deliberate. Dissemination, scientific recognition, and policy influence all enhance the potential for societal impact, even if the outcomes remain uncertain or long-term. Plans should emphasise contribution over single-cause attribution, make assumptions explicit, and include early indicators.

4. ***Co-create impact.*** Research that supports change is rarely produced in isolation. Collaboration among researchers, civil society, policymakers, businesses and other actors is essential. Co-creation processes foster trust, enhance usability, and make research more responsive to real-world realities. This requires funding structures, incentives, human resources and institutional support that recognise the collective and cumulative nature of impact. Co-creation should be meaningful (early and sustained), with attention to power dynamics, roles, and shared expectations. To make co-creation a reality, funders and institutions must act as partners, not just initiators. Funders provide resources for early engagement and iteration, while institutions offer impartial brokerage, incentives, and safeguards that protect independence while enabling collaboration. In this paper, we treat co-creation as a practice and transdisciplinary (TD) research as the broader research mode within which co-creation often operates; both require attention to roles, capabilities, and safeguards.

5. Assess both benefits and risks. Impact is not always positive. Responsible research systems must also consider unintended or negative consequences and potential environmental, ethical, or social trade-offs, which is crucial to commit to a focus towards long-term benefits for society. Embedding ethical reflection and anticipatory governance into evaluation processes ensures a more balanced and accountable assessment of research's societal role. Identifying and mitigating plausible risks is a legitimate outcome within impact pathways, not only a safeguard activity, and uncertainty should be reported clearly.

6. Balance accountability with learning. Evaluation systems must support both public accountability and internal learning and development. Summative evaluations provide transparency, while formative approaches enable reflection, adaptation, and responsiveness. Together, they ensure that impact assessment measures value, builds capacity, and improves practice.

What Each Actor Can Do

Delivering societal impacts is a shared responsibility that differs across roles. Researchers, institutions, funders, and stakeholders each have distinct roles and responsibilities in supporting, enabling, and assessing societal impact. The actions below are not prescriptive but highlight areas where strategic shifts can support more inclusive and effective research systems. Numbered recommendations R1–R12 appear below and are cross-referenced in the Executive Summary and actor sections.

Funders

R1: Resource early engagement or co-design.

R2: Combine excellence with relevance in calls, support co-creation.

R3: Build evaluator capability; keep evidence demands proportionate.

Funders shape what gets valued. [R2] Embedding social impact in funding requires adjusting the assumptions behind current funding models, setting relevant macro-objectives and specific micro-objectives, aligning key research design variables, embedding impact in proposal evaluation and facilitating impact over grant monitoring. [R2] Impact-oriented funding design should include realistic expectations, flexible timelines, and clear support for co-creation. [R1] Contribution-based models are often better suited than attribution-based ones, particularly for long-term or interdisciplinary efforts. [R2] Funders also play a vital role in enabling experimentation, supporting summative and formative assessments, and ensuring impact plans are not bureaucratic exercises but meaningful guides. [R3] Investing in evaluator training and diverse review panels ensures credible judgment.

Research institutions

R4: Integrate impact into hiring/promotion/support.

R5: Establish intermediary/broker roles, recognise engagement time.

R6: Align strategy with societal goals; provide protected time/incentives.

Universities and research organisations set the tone for valuing impact. [R6] This includes aligning strategies with societal goals, reforming reward and promotion systems, and providing dedicated support structures, such as impact officers, training programmes, or engagement units. [R4] Intermediary roles like knowledge brokers and pedagogical engineers can help research teams build shared vision and dialogue. [R5] Institutions must also support the time and relational work involved in societal engagement, which is often under-acknowledged. [R6] At the same time, institutions operate within political and economic contexts that shape research priorities. Because agenda-setting and funding allocation are not neutral, there is a risk that research may be steered toward serving the interests of the dominant group. To safeguard autonomy and integrity of research, institutions must adopt strategies that protect societal impact efforts from co-option, while upholding equity, inclusion, and the public good. [R4, R5] Practical enablers include clear recognition criteria (e.g. narrative evidence), proportionate monitoring, evaluator training for interdisciplinary or transdisciplinary work, and small internal funds for co-design and post-project follow-ups.

Researchers

R7: Engage users and plan pathways to use.

R8: Evidence contributions proportionately; use open science where appropriate.

Researchers play a critical role in engaging with users, identifying pathways to use, and embedding relevance into research design. [R7] Societal impacts should be considered from the outset, including clear identification of potential users and intended benefits. [R7] Skills in co-creation, policy engagement, and strategic communication are increasingly essential. [R8] Open-science practices (where appropriate) improve traceability and reuse; concise contribution evidence (e.g. brief outcome notes) and narrative CVs/portfolios help document value proportionately. [R8] Researchers can also shape institutional norms by sharing stories of contribution, not just publication metrics.

Early-career researchers

R9: Ensure early-career researchers receive mentorship, training, recognition, and realistic expectations, with early impact literacy embedded early in doctoral and postdoctoral development.

While many are motivated to pursue societal impact, the current system treats such contributions as optional. It can increase pressure on ECRs, particularly for those on short-term contracts or in new positions. [R9] ECRs represent a key opportunity to embed impact thinking early in academic pathways, but this must be supported by mentorship, training, and assessment practices that recognise diverse forms of contribution. [R9] Introducing impact literacy from the start helps broaden awareness and build confidence, without creating undue burdens during a vulnerable career stage. This also helps qualify ECRs for jobs outside academia. [R9] Proportionality is key: expectations should be realistic and supported with time, resources, and recognition.

Senior researchers

R10: Champion integration of impact in hiring/promotion; mentor others; enable peer learning.

Senior researchers are well-positioned to lead institutional advocacy, champion the integration of impact into hiring and promotion processes, and mentor others in stakeholder engagement. [R10] Many must navigate the shift away from the traditional models under which they were trained. Peer learning opportunities can help bridge generational divides. [R10] They can also model reflexivity by acknowledging both contributions and limitations, including potential unintended consequences.

Businesses

R11: Partner and co-fund; set shared targets/roadmaps; offer ECR placements.

Private sector actors, including for-profit and social enterprises, can support and amplify research efforts through funding and collaboration. [R11] Pathways to impacts include many forms of collaboration of research with business, including shared targets and goals, roadmaps, and

placements for ECRs. [R11] Clear rules on transparency and independence are needed to avoid conflicts of interest and maintain trust.

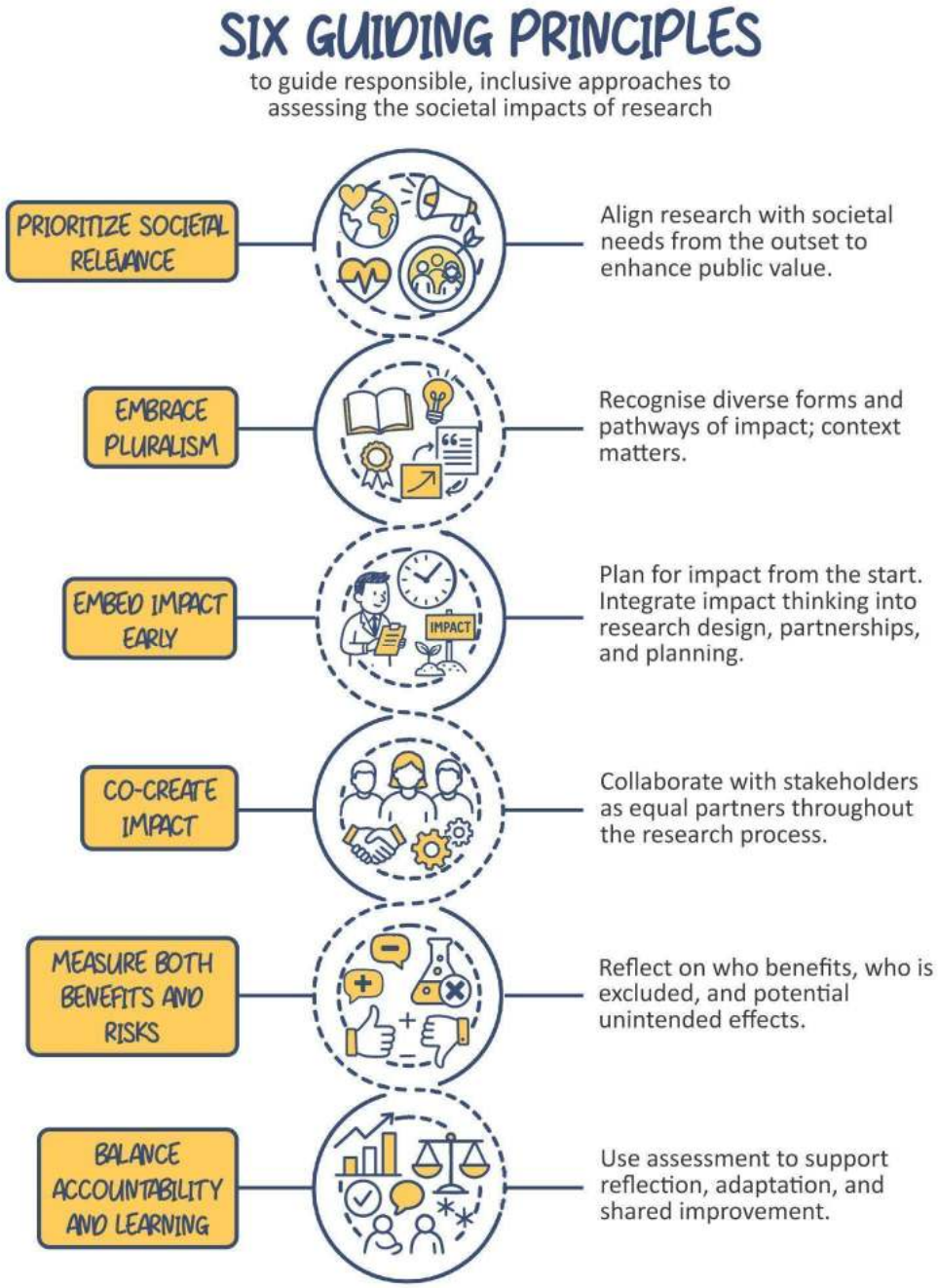

Figure 3. Six guiding principles for integrating and assessing societal impacts across research systems. This infographic summarises the six key principles proposed in the White Paper to support more responsible and meaningful integration and assessment of societal impacts. Together, these principles encourage inclusive, adaptive, and context-sensitive research practices. Source: own elaboration with visualisation by Estradivari.

Civil society and policymakers

R12: Co-define agendas, validate findings, and foster environments for uptake and dialogue.

Civil society organisations, NGOs, and public authorities are not only research users but also co-creators of knowledge and impact. [R12] Inclusive participation in agenda-setting, interpretation, and evaluation improves legitimacy. [R12] Policymakers can foster environments for uptake and dialogue, including mechanisms for research to inform practice. [R12] Civil society participation also helps surface diverse values and priorities, making impact assessments more equitable and context-sensitive.

All actors. No single actor can deliver impact alone. Coordinated efforts, mutual learning, and shared ownership are essential for developing systems that promote societal relevance. This means investing in relationships, capacity, and a shared culture of impact; one that values different forms of knowledge, recognises contribution over attribution, and prioritises responsiveness alongside excellence. Clear role definitions, proportionate evidence expectations, and regular spaces for cross-actor learning help ensure responsibility does not fall disproportionately on individual researchers.

How to Enable Transformation

Achieving effective societal impacts requires more than good intentions. It depends on deliberate investment in capacities, infrastructure, and institutional conditions that make impact feasible, credible, and sustainable. Transformation happens when individuals are supported, practices are aligned, and systems are designed to learn and adapt. It occurs through agents of change, early majorities, and new alliances. The following three areas highlight practical enablers across the research ecosystem.

Build impact capabilities

Delivering and assessing societal impact requires new competencies, both within and beyond academia. Researchers need skills to engage stakeholders, navigate social contexts, and translate knowledge into use. Evaluators must be able to assess complex, evolving contributions rather than isolated outcomes. Training evaluators in fairness, inclusion, and context sensitivity is essential to credibility.

Institutions should embed impact literacy into curricula, professional development, and leadership training, supported by tools such as theories of change, stakeholder mapping, and reflective evaluation. Equally important are soft skills, such as facilitation, negotiation, and ethical reasoning. Proportionality matters, especially for ECRs, who require mentorship, reduced burdens, and recognition.

Sustained success requires systematic support. Institutions should integrate impact literacy modules into graduate education and professional development programmes. At the same time, funders must mandate clear impact pathway plans in grant applications, securing a dedicated budget for this purpose.

Importantly, capability-building must extend beyond academia. Civil society, business actors, and policymakers also require support to participate in co-design, critically assess evidence, and contribute to impact in ways that align with their priorities.

Strengthen research ecosystems

Societal impact depends on systems that support continuity, collaboration, and shared responsibility. Internally, institutions can create structures such as impact officers, advisory groups, or training hubs to guide planning and engagement. Intermediary roles, such as knowledge brokers and pedagogical engineers, can help research teams clarify impact pathways, facilitate dialogue, and build a shared vision. Peer-learning spaces, documentation tools, and shared case libraries can promote exchange and transparency. Open and interoperable digital infrastructures (data, code, case repositories) reduce duplication and support collective learning.

Externally, funders play a crucial role in facilitating cross-sector collaboration and accommodating flexible timelines. Funding designs that include time for engagement, value diverse forms of evidence, and support interdisciplinary work are more likely to lead to meaningful change. Alignment also matters; coordinated expectations among funders, institutions, and policymakers reduce duplication and build shared learning.

Embrace iteration

Societal impact is not linear; it evolves through feedback, learning, and change. Systems that support impact must be designed to adapt and reflect, not just report. Formative evaluation approaches enable researchers and institutions to adjust their strategies as projects evolve. Piloting new engagement models, assessment tools, or institutional structures enables learning before scaling them up.

Building robust evidence of impacts requires shared responsibility among researchers, institutions, and funders. Without support and coordination, data collection becomes burdensome and inconsistent. Improved tools, flexible processes, and shared infrastructure are essential for success.

This shift also requires investment in evaluative capacity. Evaluators must be trained in methodology and principles of fairness, inclusion, and context sensitivity. Without such preparation, new approaches risk being perceived as less objective or legitimate than traditional, metrics-based systems. Ultimately, embracing iteration supports a culture of reflection and responsiveness, where assessment drives improvement rather than compliance. Where impacts are expected post-award, brief follow-ups and light maintenance grants can help document change without imposing heavy reporting requirements.

Concrete Next Steps

Embedding societal impact into research systems is a long-term process. It requires commitment, coordination, and continuous learning across research communities, institutions, funders, and societal partners. While there is no universal blueprint, this chapter has identified key principles and enabling conditions to guide implementation in diverse contexts.

Progress will be incremental and context-specific. Shared frameworks, institutional support, and adaptive practices are essential, but transformation depends on how well these elements are aligned across the system. Coordination ensures that responsibilities are distributed fairly and that no group, especially individual researchers, bears a disproportionate burden.

To prevent impact assessment from becoming an additional layer of administrative burden, institutions should adopt lightweight and iterative documentation processes that align with existing reporting cycles. Impact evidence should build upon materials researchers already produce (e.g. narratives, stakeholder engagement logs), rather than requiring new, exhaustive templates.

CoARA offers a collaborative platform for advancing this work. Its efforts to reform research assessment, support organisational change, and connect learning across contexts provide a valuable foundation for experimentation and mutual learning. To help structure efforts, the following entry points suggest how actors might move from intention to implementation:

Laying the groundwork

- Pilot new approaches to impact planning, engagement, and formative assessment.
- Develop and share tools, guidance materials, and case studies across various contexts, prioritising open and interoperable resources.
- Review institutional policies and funding guidelines to support inclusive and realistic approaches, including recognition of narrative CVs or portfolios and diverse outputs.
- Establish or strengthen support roles (e.g. impact officers/coaches, knowledge brokers, pedagogical engineers) and provide small seed/bridging funds for co-design.

Building alignment and capacity

- Integrate societal impact into researcher development, impact literacy curricula, and leadership programmes.
- Reform recognition and reward systems to include diverse forms of contribution and co-creation/engagement activities.
- Support peer-learning spaces and cross-sector partnerships.
- Invest in infrastructures that enable documentation, dialogue, and shared evaluation practices.

Embedding new norms

- Recognise societal relevance as a core value of research assessment, used alongside but not replaced by currently dominant scientific excellence metrics.
- Promote alignment across assessment practices, within and between institutions, funders, and national systems.
- Expand training for evaluators to ensure fairness, inclusion, and context sensitivity, with specific preparation for inter- or transdisciplinary and co-created work.
- Foster a culture that values reflection, engagement, co-creation, open-science, and long-term societal value.

Within CoARA's Societal Impact Subgroup, the following priorities include mapping practices via interviews, identifying lessons learned, and applying these insights to advance findings and recommendations. Other working groups may also draw on these insights to inform their thematic priorities and build communities of practice.

Fostering societal impact must not come at the expense of research diversity. As impact becomes more central in research systems, care must be taken to avoid reducing it to a rhetorical or bureaucratic exercise. Impact evaluation frameworks must remain flexible and context-sensitive, recognising that different types of research generate different contributions. Some work aims directly at transformation (e.g. gender equality, climate adaptation), while others contribute incrementally or indirectly (e.g. taxonomic or theoretical advances). Both are essential to vibrant research ecosystems. Valuing this diversity helps sustain trust across disciplines and prevents the formation of unintended hierarchies.

Communities of practice can facilitate exchange, methodological innovation, and institutional learning towards shared standards and examples. Coordinated efforts of this kind are essential for embedding societal impact in research systems, not as a side project, but as a shared commitment. The path ahead will not be uniform, but it is clear. By acting deliberately and collectively, the research community can ensure that research makes a meaningful contribution to a more just, sustainable, and inclusive future.

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Organisations affiliated to this working group

- Aalto University
- Agence Nationale de la Recherche
- Akademie für Raumentwicklung in der Leibniz-Gemeinschaft (ARL)
- Bern University of Applied Sciences
- Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD)
- Czech Academy of Sciences
- ELKH (Eötvös Loránd Research Network)
- ETH Zürich
- EURASHE
- European Alliance for Social Sciences and Humanities
- European Consortium of Innovative Universities
- European Network for Research Evaluation in the SSH (ENRESSH)
- Eötvös Loránd Research Network
- FORMAS
- Federation of Finnish Learned Societies
- Foundation for Polish Science
- Haaga-Helia University of Applied Sciences
- Hochschulallianz für den Mittelstand
- Hochschule Darmstadt
- Hochschullehrerbund Bundesvereinigung
- Hochschullehrerbund hlb
- Inland Norway University of Applied Sciences
- Institut National de Recherche pour l'agriculture, l'alimentation et l'environnement (INRAE)
- International Sustainable Development Research Society (ISDRS)
- Iscte-Intituto Universitário de Lisboa
- Jagiellonian University
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- Knowledge Foundation (KKS Sweden)
- Laurea University of Applied Sciences
- Leibniz Association
- Leibniz Centre for Tropical Marine Research (ZMT)
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CoARA

The Coalition for Advancing Research Assessment (CoARA) is a collective of organisations committed to reforming the methods and processes by which research, researchers, and research organisations are evaluated. Current research assessment methods rely heavily on publication-based metrics such as citation counts and often fail to recognise the vast array of contributions made by researchers.

Over 700 research organisations, funders, assessment authorities, professional societies, and their associations have agreed on a common direction and guiding principles to implement reform in the assessment of research, researchers, and research organisations, outlined in the Agreement on Reforming Research Assessment published in July 2022, which provides an outline for reform and implementation.

Find out more about CoARA at www.coara.eu.

Working Group Overview

Working Groups are key communities of practice that work to implement research assessment reform in specific thematic areas. Participating members exchange knowledge, learn from each other's experience, discuss and develop outputs to advance research assessment and support the implementation of members' commitments.

The **Towards Transformation Working Group** brings together 60 organisations to advance research assessment practices that better reflect the societal relevance and transformative potential of science. It focuses on three interconnected subgroups: (1) developing standards for evaluating transdisciplinary research that integrates scientific and non-scientific knowledge to address complex challenges; (2) improving the assessment of applied and practice-based research with attention to societal, economic, and regional impact; and (3) enhancing the understanding and measurement of societal outcomes through guidelines and tools for researchers and funders.

The **Societal Impact Subgroup** within the Towards Transformation Working Group is dedicated to advancing the understanding, assessment, and promotion of research impact, with a particular focus on societal outcomes beyond academia. It is co-led by Raimund Bleischwitz (Leibniz Centre for Tropical Marine Research/ZMT) and Teresa Sordé Martí (Autonomous University of Barcelona). It brings together members with prior experience from projects such as Horizon Europe, STRINGS, and UK REF impact evaluations. Overall, the Subgroup comprises over 60 members representing more than 30 institutions, including universities, research institutes, and funders, across Europe. Its core activity is developing and promoting a White Paper that urges a transformative shift: embedding societal impact as a core dimension of research assessment, culture, funding, and evaluation. Ultimately, the Subgroup seeks to reframe research culture to recognise and reward the diverse ways in which research contributes to the public good and drives transformative societal change.