Research Impact Framework

Enhancing Academic and Societal Value

Research Engagement & Impact Office

OLLSCOIL TEICNEOLAÍOCHTA BHAILE ÁTHA CLIATH
TU DUBLIN
TECHNOLOGICAL UNIVERSITY DUBLIN

CONTENTS PAGE

1. Introduction to Research Impact

The Research Impact Framework for Technological University Dublin (TU Dublin) has been developed to provide our researchers with a structured approach to planning, achieving, and demonstrating the impact of their work. In an evolving research landscape, there is a growing emphasis on not just the academic outputs but also the broader societal, economic, and environmental impacts of research. This is a living document that will be updated periodically to reflect emerging best practices, evolving research priorities, and feedback from our research community. The framework stems from international efforts to improve how research is assessed and valued, beginning with the 2012 San Francisco Declaration on Research Assessment (DORA), which advocates for the use of diverse metrics in research evaluation [1]. Further advancements include the 2015 Leiden Manifesto for Research Metrics, promoting responsible metrics, the 2020 Hong Kong Principles for assessing researchers' contributions beyond publications, and the 2021 EU initiative "Towards a Reform of the Research Assessment System," emphasising holistic evaluation criteria [2-4].

These global principles and reforms stress the necessity for TU Dublin researchers to align their work with broader impact goals. The framework also resonates with the Coalition for Advancing Research Assessment (CoARA), which supports the adoption of improved research assessment practices and to which TU Dublin is a signatory [5]. Moreover, this initiative is in alignment with TU Dublin's research strategy (2023-2028) and the university's Strategic Plan (2024-2028), which prioritise innovation, societal contribution, and excellence in research [6, 7]. By incorporating these international guidelines, our framework aims to elevate the visibility and significance of research impacts, ensuring our work contributes meaningfully to society, the university, and our funders:

For society, impactful research drives advancements in areas such as technology, health, and policy, leading to improved quality of life, economic growth, and informed decision-making. It addresses pressing societal challenges, from climate change to public health crises, by translating academic findings into practical solutions and innovations [8].

For the university, demonstrating research impact improves its reputation, attracts funding, and fosters stronger partnerships with industry, government, communities, and other institutions. It emphasises the university's role as a catalyst for positive change, aligning academic pursuits with societal needs and priorities. Ultimately, research impact ensures that the knowledge generated within the university, and through our collaborations with external partners, contributes meaningfully to the broader community, reinforcing the value and relevance of academic inquiry [6].

For funders, the importance of research impact lies in ensuring that their investments yield tangible or demonstratable and meaningful outcomes. Funders, whether government agencies, private foundations, or industry partners, are increasingly focused on the real-world applications and benefits of the research they support. Demonstrating research impact provides funders with evidence that their financial contributions are driving progress, fostering innovation, and addressing critical societal challenges. It reassures them that their resources are being used effectively to produce measurable results, which can justify continued or increased funding. Moreover, showcasing impactful research helps funders to align their objectives with public and policy priorities, enhancing their own credibility and influence. By prioritising research with demonstrable impact, funders can achieve greater accountability and

return on investment, ultimately contributing to the advancement of knowledge and societal well-being [8-13].

While there are many definitions of research impact used globally, the following is the definition approved for use by TU Dublin.

***Definition**: Research Impact is defined as the contribution that research makes to society, the environment, the economy, industry, culture, public policy and services, health and quality of life, and collaborations to achieve these.*

2. Categories of Impact

Building on the understanding of why impactful research matters, it is crucial to explore the various categories of research impact. Although all research ultimately benefits society, it is useful to categorise impacts to highlight the specific areas they influence. Below are examples of different categories of research impact [14, 15]. While not all research projects will impact every category listed, it is important for researchers to recognise that their work may influence some (at least one), or even all of these areas, depending on the focus and breadth of their research.

- **Societal Advancement:** Research impact can lead to societal advancements by providing solutions to social problems, improving quality of life, and informing public debate and understanding.
- **Economic Growth:** Commercialisation of research findings can lead to new products, services, industries, and jobs, contributing to economic growth and competitiveness.
- **Cultural Enrichment:** In the Arts and Humanities, research impact can foster cultural enrichment and preservation, influence creative industries, and enhance the cultural capital of societies.
- **Health and Well-being:** Medical and health-related research can have profound impacts by improving healthcare outcomes, informing public health policies, and enhancing the overall well-being of populations.
- **Environmental Sustainability:** Research can guide effective environmental management, influence sustainable practices, and contribute to the fight against climate change and biodiversity loss.
- **Policy and Legislation:** Research can shape policy at all levels, providing the evidence base for legislation that affects virtually every aspect of public and private life.

- **Education and Curriculum Development:** Impactful research influences educational content and methods, leading to more informed and skilled graduates who are better equipped to address future challenges.
- **Public Engagement and Literacy:** Accessible research can aid in public science literacy, leading to a more informed citizenry capable of engaging with scientific issues.
- **Ethical and Philosophical Insights:** Research in ethics, philosophy, and related fields can impact moral reasoning and societal values, influencing how people think about and respond to various issues.

Figure 1 below, illustrates examples of the interconnected nature of research impact across three primary domains: research, society, and the economy. It emphasises how research activities and outcomes influence and are influenced by these broader contexts, highlighting the multifaceted and collaborative nature of research impact. The diagram also showcases how sustainable development, evidence-based policymaking, and public engagement with science intersect at the centre of these domains, indicating the holistic approach required to achieve impactful research outcomes. By understanding and leveraging these intersections, researchers at TU Dublin can strategically plan and execute their work to maximise its relevance and benefit to both society and the economy, aligning with the university's strategic goals and broader global objectives.

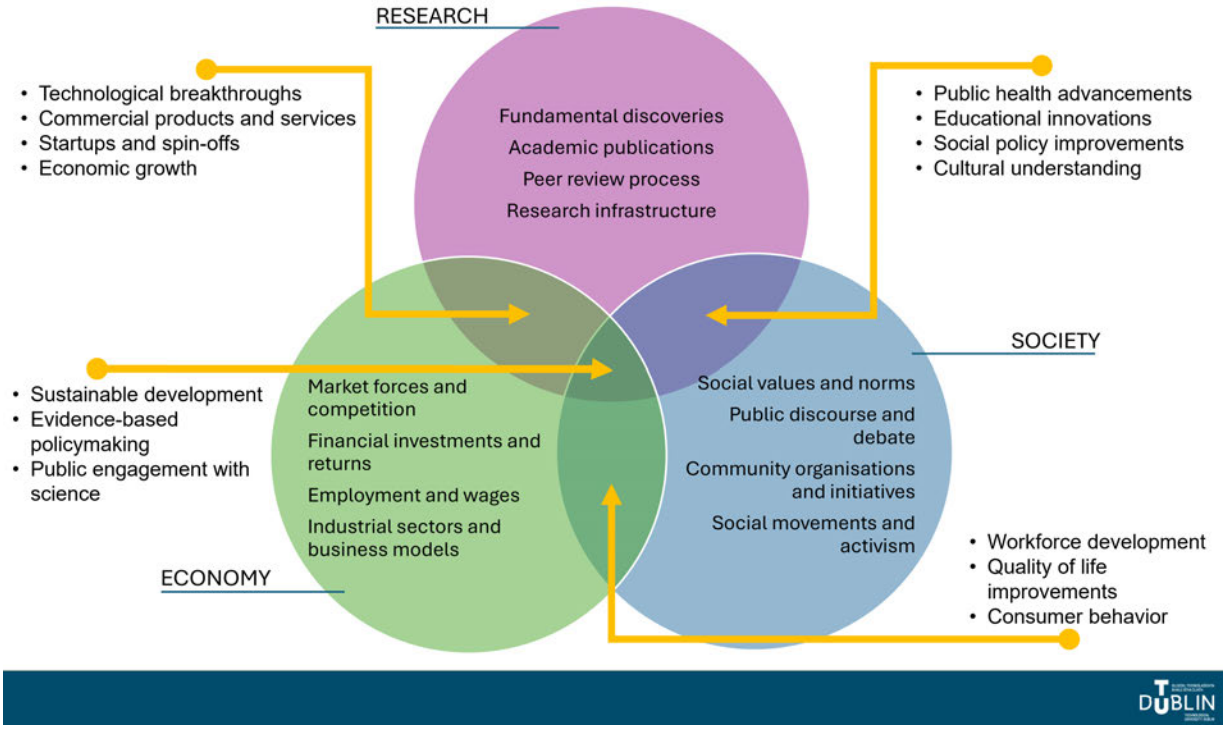


FIGURE 1: *The Intersection of Research, Society, and the Economy. The overlapping areas demonstrate how research can drive market forces and competition, influence financial investments and returns, and affect employment and wages, as well as how these economic factors, in turn, shape social values, public discourse, community initiatives, and impact society.*

3. Scale and Reach of Research Impact

Research impact scale and reach refer to the extent and scope of the effects that research activities have beyond the academic environment. To understand the concepts of scale and reach in research impact, it is helpful to consider specific examples that illustrate these dimensions. One example is the development of a cure for an orphan disease. An orphan disease, by definition, affects a very small number of individuals globally, meaning the scale of the impact in terms of the number of people directly affected by the research is limited. However, despite the small scale, the reach of the impact is extensive. A cure for the orphan disease means that every individual suffering from this rare condition worldwide would benefit. The research not only eliminates the disease for those affected but also sets a precedent for future research in rare diseases, potentially influencing medical practices and policies globally. In contrast, consider the implementation of a government policy to ban smoking. This policy has a significant scale as it affects a large portion of the population, encompassing all smokers within the jurisdiction as well as public health systems, workplaces, and public spaces. The reach of this policy change is substantial. It impacts the health of current and future smokers while also benefiting non-smokers by reducing exposure to second-hand smoke. Additionally, the policy can lead to widespread public health improvements, reduce healthcare costs, and influence smoking behaviours and policies in other regions.

Figure 2 overleaf illustrates how the scale and reach of research impact varies substantially while still being substantive for those affected by it. The scale of research impact can be broadly categorised into small-, medium-, and large-scale, each representing different levels of influence and engagement. Small-scale impact typically involves localised changes or innovations, such as improvements in a specific clinic's patient care protocols, the development of a new software tool for a local business, or improvements in teaching methods within a single school. These impacts are often direct and immediate, benefiting specific groups or communities closely associated with the research.

Medium-scale impact extends beyond the immediate environment to influence regional or sectoral developments. This could include regional public health initiatives, implementation of digital infrastructure projects in smart cities, or the development of industry standards. These impacts affect broader communities and industries, promoting significant changes and advancements that benefit a wider audience. They often require collaboration with multiple stakeholders and can drive policy changes or sector-specific innovations.

Large-scale impact encompasses national or global changes, reflecting substantial and far-reaching effects of research. Examples include contributions to international health guidelines, global policy reforms, and large-scale infrastructure projects. This level of impact demonstrates the research's capacity to address widespread challenges, influence international standards, and contribute to global knowledge and practice. Large-scale impacts often involve extensive collaboration, significant dissemination efforts, and a robust evidence base to support widespread adoption and policy implementation.

The reach of research impact, on the other hand, pertains to how widely the effects of research are felt. It includes the geographical spread, the diversity of the affected populations, and the variety of sectors influenced by the research. Effective research impact reaches diverse audiences, including policymakers, practitioners, industry stakeholders, and the public.

By strategically planning and executing dissemination and engagement activities, researchers can maximise the reach of their work, ensuring that the benefits of their research extend as far and wide as possible. This holistic approach to research impact ensures that academic endeavours contribute meaningfully to societal advancement and global progress.

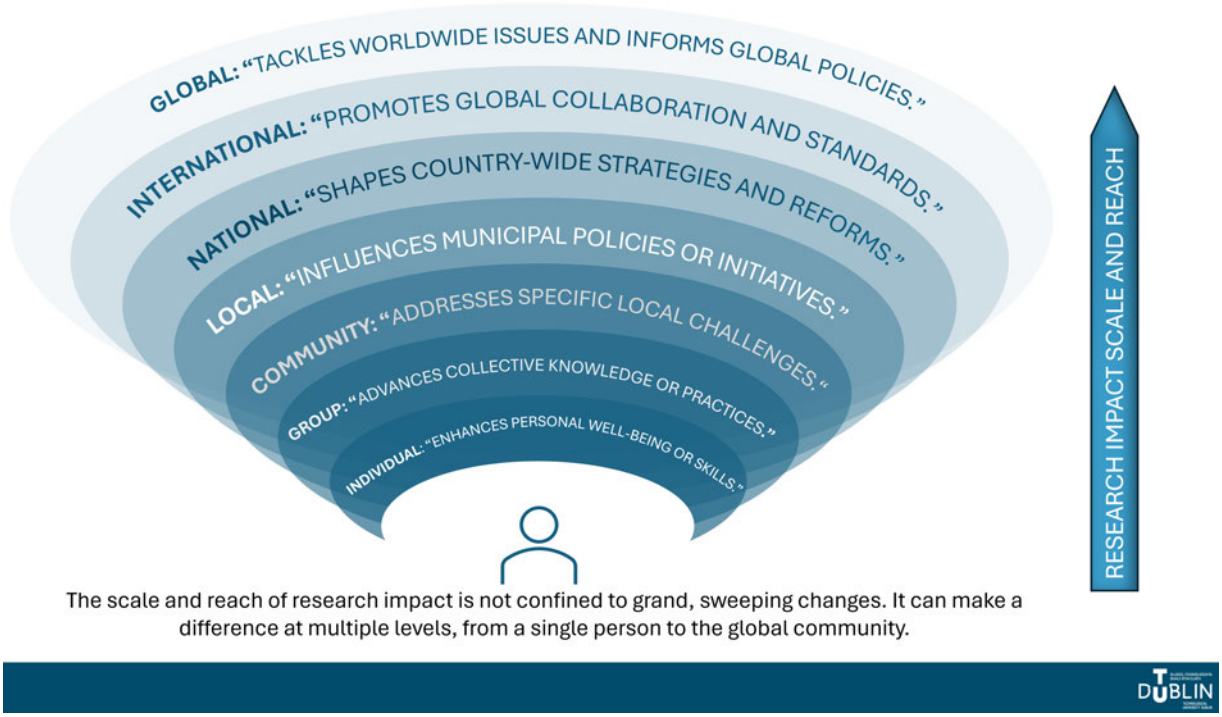


FIGURE 2: *The Broad Spectrum of Research Impact. Research impact is not confined to grand, sweeping changes. It can make a difference at multiple levels, from a single person to the global community.*

By applying the idea of research impact scales—small, medium, and large—to our university faculties' activities, we can effectively illustrate the diverse range of our research's influence as shown in figure 3. For example, in the Faculty of Science & Health, small-scale impacts might involve innovations in lab techniques or local health initiatives, whereas medium-scale impacts could include regional health conferences and guidelines for medical practices. Large-scale impacts extend to national health policy changes and contributions to global health initiatives. Similarly, the Faculty of Computing, Digital and Data could demonstrate small-scale impacts through digital solutions for local enterprises, medium-scale impacts through regional tech conferences, and large-scale impacts by participating in global tech consortia. Each faculty, including Business, Arts & Humanities, and Engineering & Built Environment, can showcase their specific examples of research impact across these three scales, highlighting their contributions from local improvements to global collaborations. This structured approach not only clarifies the scope of our research activities but also highlights the significant and varied impacts we have across different sectors and communities.

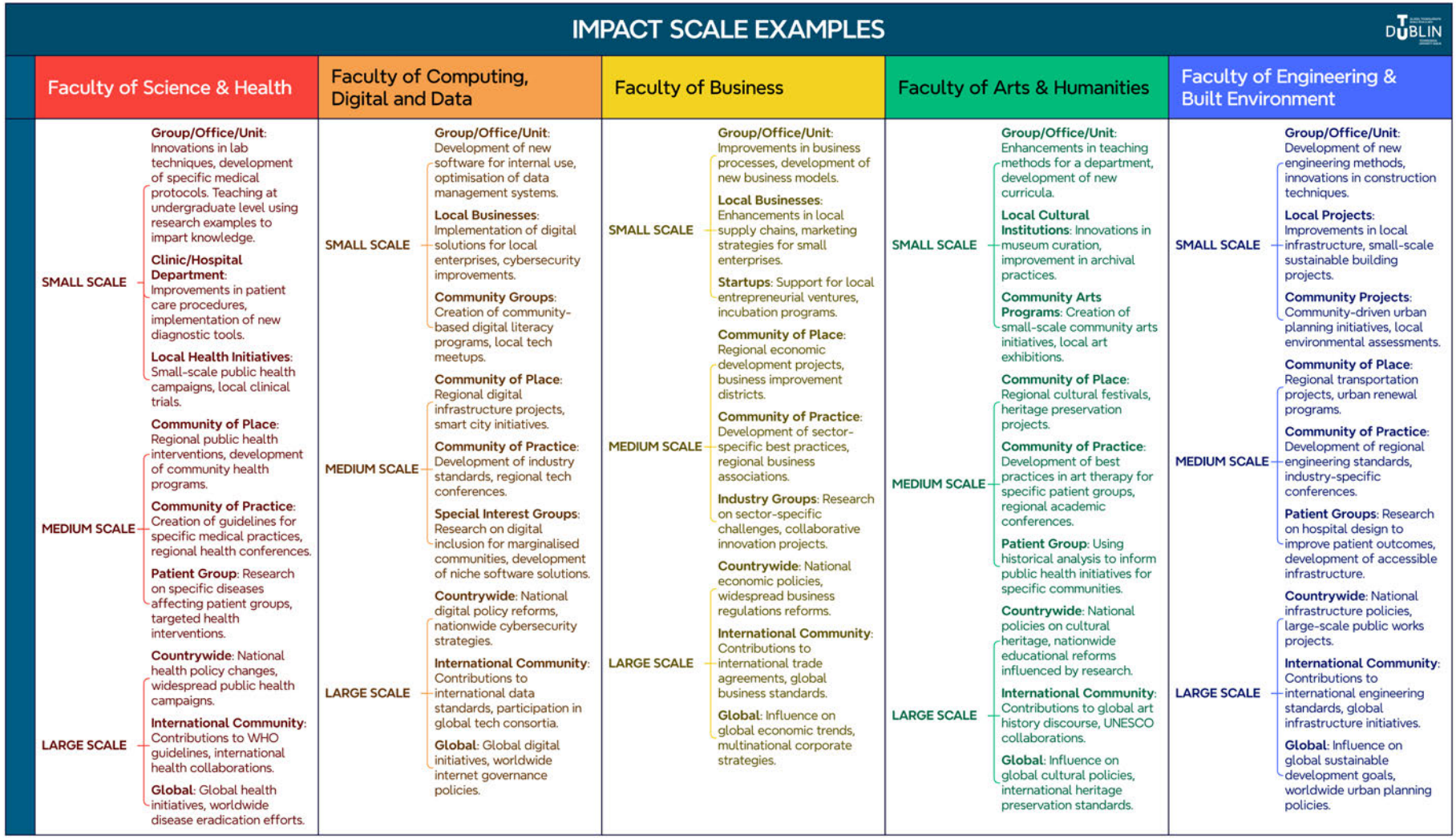


FIGURE 3: *Research Impact Scale Examples Across TU Dublin Faculties. This table provides examples of research impact at varying scales across the different faculties at TU Dublin. The impact examples are categorised into small, medium, and large scale to illustrate the breadth and depth of potential research outcomes within each faculty.*

4. Planning for Impact

Effective impact planning is an essential component of any research project aimed at generating meaningful and measurable outcomes. Without planning there may not be any impact, and without planning, potential impact could well be missed. This section provides a guide for researchers on how to systematically plan for and strategically achieve the desired impact of their work. It outlines the steps needed to identify relevant stakeholders, set clear and achievable impact goals, and design pathways to ensure that the research translates into tangible benefits for society. By integrating impact planning into the research process from the outset, researchers can refine the relevance and applicability of their findings, ensuring that their work not only advances academic knowledge but also addresses real-world challenges and opportunities [16, 17]. Including a clearly laid out plan for research impact in a grant application can significantly elevate the application and increase its chances of success, particularly as funders are increasingly assigning greater importance to the impact section.

FIGURE 4: *Stages in the research process. From the idea to the impact.*

Aligning your research impact plans with the United Nations Sustainable Development Goals (SDGs) improves the relevance and global significance of your work. By mapping your research objectives to specific SDGs, you ensure that your efforts contribute to addressing critical global challenges such as poverty, health, education, and climate change. Drilling down to the targets and indicators of each SDG allows for a more focused and measurable impact strategy. Each SDG is broken into detailed targets, which specify the desired outcomes, and indicators, which provide metrics to assess progress [18]. By aligning your research impact plans with these targets and indicators, you can clearly demonstrate how your research contributes to achieving specific global milestones, thereby making your work more impactful and aligned with international priorities. This approach not only broadens the scope of your research but also enriches its credibility and appeal to funders and stakeholders committed to sustainable development. Figure 5 overleaf is taken from the Global Indicator Framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development. It illustrates how the broad objectives of an SDG can be achieved and quantified by drilling down into specific, measurable indicators and targets, providing detailed guidance on tracking progress and outcomes. [18].

Incorporating keywords from the UNSDG goals, targets, and indicators document into research grant applications and publications is essential for accurately tracking and demonstrating contributions to the United Nations Sustainable Development Goals (UNSDGs). By aligning research topics, methodologies, and findings with specific UNSDG keywords, researchers can ensure that their work is recognised within the global framework of sustainable development. This practice facilitates easier indexing and retrieval of research by databases and institutions that monitor progress towards these goals. Consequently, it not only enhances the visibility and impact of the research but also underlines its relevance and contribution to addressing critical global challenges as outlined in the UNSDGs. For example, using terms like "premature mortality," "non-communicable diseases," or "substance abuse treatment" directly links the research to specific targets, ensuring that efforts are properly catalogued and acknowledged in the context of sustainable development. Including these keywords in grant applications is equally crucial, as many funding bodies now utilise AI (artificial intelligence) to scan for relevant terms that align with the UNSDGs. By embedding specific UNSDG-related keywords into their proposals, researchers can increase the likelihood of their applications being progressed and thereby increasing their chances of securing funding.

Goals and targets (from the 2030 Agenda)	*Indicators*
3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases	3.3.1 Number of new HIV infections per 1,000 uninfected population, by sex, age and key populations 3.3.2 Tuberculosis incidence per 1,000 population 3.3.3 Malaria incidence per 1,000 population 3.3.4 Hepatitis B incidence per 100,000 population 3.3.5 Number of people requiring interventions against neglected tropical diseases

FIGURE 5: *Examples of specific targets and indicators for Goal 3: Health and Well-being in the UN Sustainable Development Goals. Taken from the Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development.*

4.1 Identifying Stakeholders

In developing our *Research Impact Framework*, we align closely with the principles outlined in the *Research Engagement Framework* to ensure a holistic approach that not only measures impact but also fosters active and meaningful engagement with key stakeholders. This synergy will better support our researchers in enhancing the relevance, visibility, and societal value of their work. For further guidance, researchers are encouraged to consult the Research Engagement resources at this link, which provides comprehensive strategies and best practices for effectively identifying and engaging with stakeholders throughout the research process.

4.2 Setting Impact Objectives

Setting impact objectives is a crucial step in ensuring that research projects achieve meaningful and measurable outcomes. Impact objectives serve as a roadmap for researchers, guiding their efforts toward specific, desired effects that their work aims to achieve. These objectives should be clearly defined, achievable, and aligned with both the research plan and the broader societal, economic, or environmental needs. The process of setting impact objectives begins with identifying the key stakeholders who will be affected by the research, including policymakers, industry partners, community groups, and the general public. Understanding the needs and priorities of these stakeholders helps in formulating objectives that are relevant and impactful.

When planning for impact, there are various methodologies to set effective objectives. One widely recognised approach is the SMART framework, which stands for Specific, Measurable, Achievable, Relevant, and Time-bound. This method ensures that objectives are clear and attainable within a specified timeframe, facilitating better planning and execution. The benefit of using SMART objectives is that they provide a structured and tangible framework for measuring progress and success, which can be particularly useful in ensuring accountability and achieving desired outcomes (Figure 6). Specific objectives provide clear direction and focus, avoiding vague or overly broad objectives. Measurable objectives allow researchers to track progress and assess the success of their efforts through quantifiable indicators.

Achievable objectives ensure that the plans are realistic given the resources, time, and context of the research. Relevant objectives align with the mission and values of the funder, the government, international agreements, and address pressing issues or gaps in the current knowledge or practice. Time-bound objectives set a clear timeframe for achieving the impact, helping to maintain momentum and accountability.

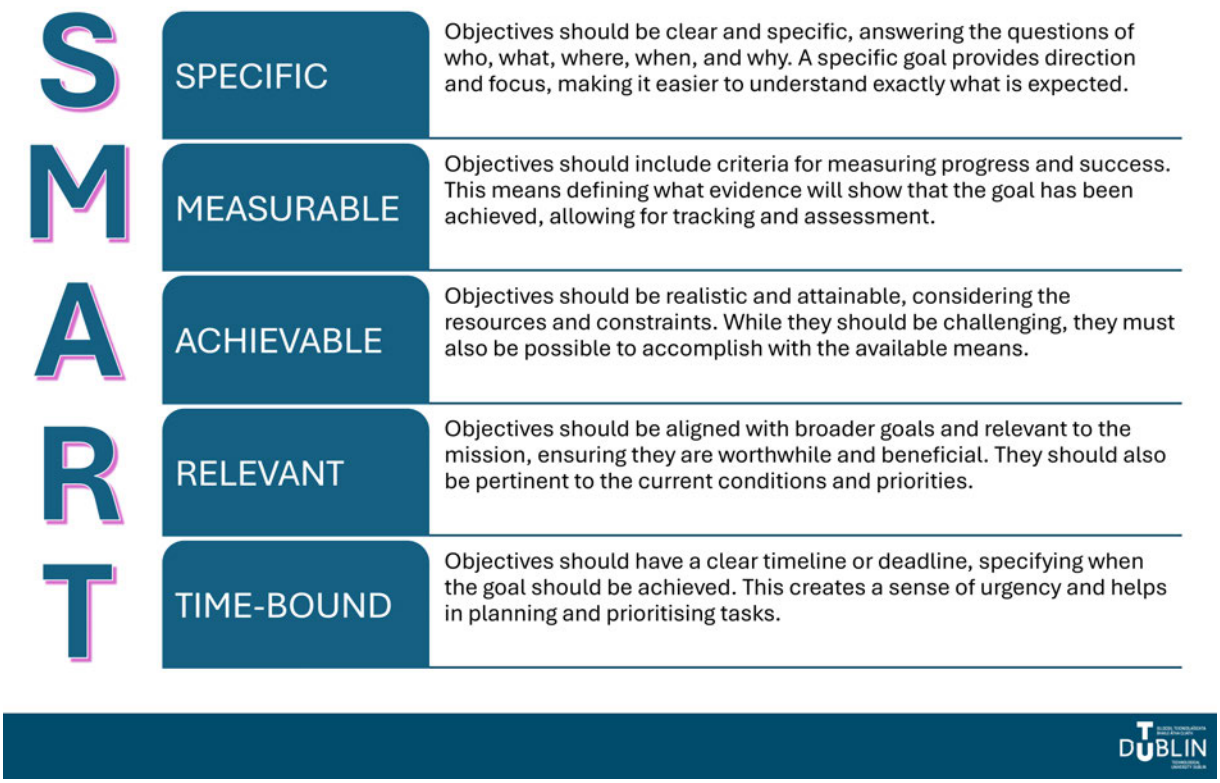


FIGURE 6: *Understanding SMART Objectives. This diagram provides a detailed explanation of SMART objectives, a framework designed to help set clear, actionable, and achievable objectives.*

Additionally, impact objectives should be flexible and adaptable, allowing for adjustments as the research progresses and as new opportunities or challenges arise. Researchers should also consider the pathways to achieving their impact objectives, identifying the activities, collaborations, and dissemination strategies that will be necessary to reach their objectives. Regular monitoring and evaluation of progress toward these objectives is essential. providing feedback and insights that can inform ongoing and future research efforts (see **Tracking the Impact** below). By setting well-defined and strategic impact objectives, researchers can elevate the relevance, visibility, and societal value of their work, ensuring that their research contributes to meaningful and lasting change.

4.3 Pathways to Impact

Creating a pathway to impact involves several stages, each designed to ensure that the research achieves meaningful and measurable outcomes. Research can achieve impact through various pathways, each tailored to the nature of the research and its intended outcomes, but what's central to its success is engagement and communication.

Public engagement involves communicating research findings to the broader public to increase awareness, understanding, and informed decision-making, but stakeholders, where appropriate, should also be involved in the design and planning stage of the project to ensure their needs are being met [19]. Policy engagement focuses on influencing policy development and implementation by providing evidence-based recommendations to policymakers. Industry collaboration aims at partnering with businesses to drive innovation, improve practices, and develop new technologies or products. Educational outreach enhances teaching and learning by integrating research into educational programs and curricula. Finally, community involvement engages local communities in the research process, addressing their specific needs and fostering social change. Each pathway requires targeted strategies and activities to ensure that the research effectively reaches and benefits its intended audience.

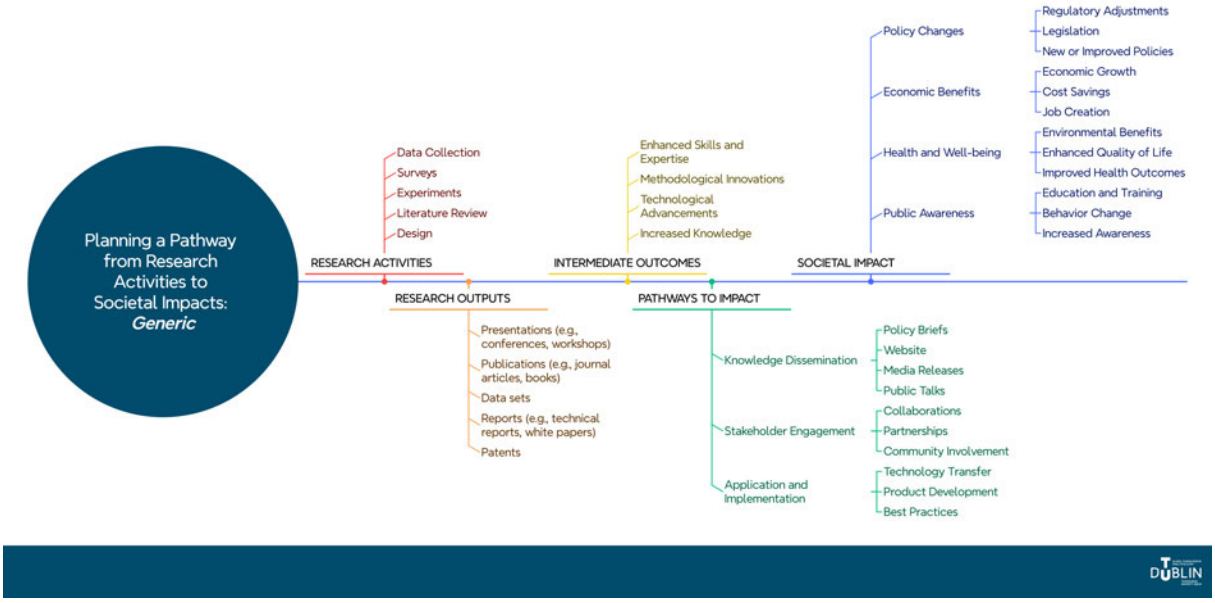


FIGURE 7: *Generic Pathway to Research Impact.*

Figure 7 above outlines the detailed process of planning and achieving societal impacts from research activities. It begins with **Research Activities**, which include data collection, surveys, experiments, literature reviews, and design. These activities lead to **Research Outputs** such as presentations, publications, data sets, reports, and patents.

From these outputs, researchers achieve **Intermediate Outcomes**, which encompass new skills and expertise, methodological innovations, technological advancements, and increased knowledge. These outcomes pave the way for **Pathways to Impact**, involving knowledge dissemination, stakeholder engagement, and the application and implementation of research findings.

Ultimately, these pathways culminate in **Societal Impact**, which includes a range of benefits such as policy changes, economic growth, health and well-being improvements, public

awareness, and environmental benefits. This structured approach ensures that research activities are strategically planned and executed to achieve meaningful and measurable societal impacts.

You'll find illustrative ***Pathways to Research Impact***, featuring hypothetical examples tailored to each faculty, by clicking the icons below.

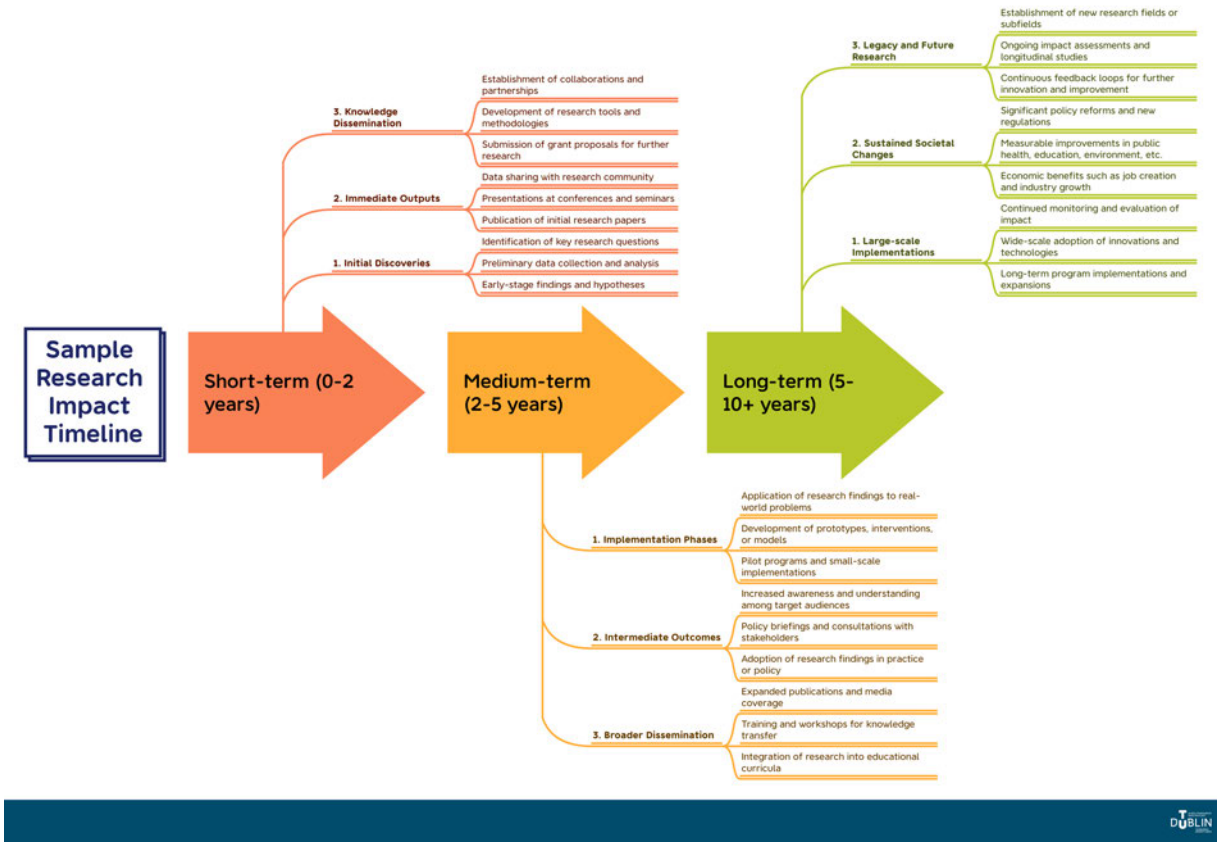


FIGURE 8: *Indicative Timeline for Achieving Research Impact. This chart visually represents an indicative timeline for achieving various types of research impact, segmented into three phases: short-term (0-2 years), medium-term (2-5 years), and long-term (5-10+ years). The precise timeline can vary substantially but it is important to provide realistic ones when considering your impact.*

4.4 Basic Logic Model for Research Impact Planning

There are several models available for research impact planning, such as the Theory of Change and the Payback Framework, each with their own strengths and weaknesses [20-22]. The W. K. Kellogg's Basic Logic Model is one example of a structured framework designed to assist researchers in planning for impact. This model provides a visual representation of the logical relationships between the resources, activities, outputs, outcomes, and impacts of a research project. By mapping out these elements, researchers can systematically plan, track, and communicate the anticipated impact of their work. While the Basic Logic Model offers a clear and organised approach, it is not without its flaws. One limitation is its linear nature, which may oversimplify the complexity and iterative processes inherent in many research projects. Additionally, it can sometimes be challenging to capture the nuanced and dynamic interactions between different components of a research project within this structured format.

Despite these limitations, utilising a model like the Basic Logic Model can be highly beneficial. It assists researchers in articulating their goals, identifying necessary resources, and planning activities that align with desired outcomes. Moreover, it facilitates the tracking of progress and the communication of impact to stakeholders, funders, and the broader community. By providing a clear framework, it ensures that research efforts are systematically aligned with intended impacts, augmenting the overall effectiveness and visibility of the research.

The Basic Logic Model for Research Impact Planning provides a structured framework to guide researchers in planning and achieving impactful outcomes. This model illustrates the sequential flow from initial resources to ultimate impact, emphasising the importance of each stage in the research process [23]. The Model is structured around five key headings (Figure 9) that guide the planning and evaluation process of a research project:

1. **Resources/Inputs**: This section includes all necessary resources required to initiate and support the research project. These may encompass funding, personnel, equipment, facilities, and other essential inputs. Adequate resourcing is crucial to ensure that the planned activities can be effectively carried out.

2. **Activities**: Activities represent the core actions and processes undertaken during the research project. These include designing and conducting experiments, data collection, analysis, and other research methodologies. Effective execution of these activities leads to the generation of valuable outputs.

3. **Outputs**: Outputs are the tangible products resulting from the research activities. These can be academic publications, reports, prototypes, software, or any other measurable deliverables. Outputs are directly controlled by the research team and serve as the foundation for achieving broader outcomes.

4. **Outcomes**: Outcomes refer to the short- to medium-term effects of utilising the research outputs. This may involve increased knowledge and awareness, changes in behaviour, policy adjustments, or improvements in practices. While researchers can directly influence outcomes through dissemination and engagement strategies, these effects are largely dependent on how the outputs are used by the intended audience.

5. **Impact**: Impact is the long-term consequence of the research, representing significant and lasting changes in society, the economy, the environment, or other areas. Impact occurs when the research outcomes lead to broad societal benefits, such as improved health, economic growth, or environmental sustainability. While impact is the ultimate goal, it is often indirectly influenced by the researchers.

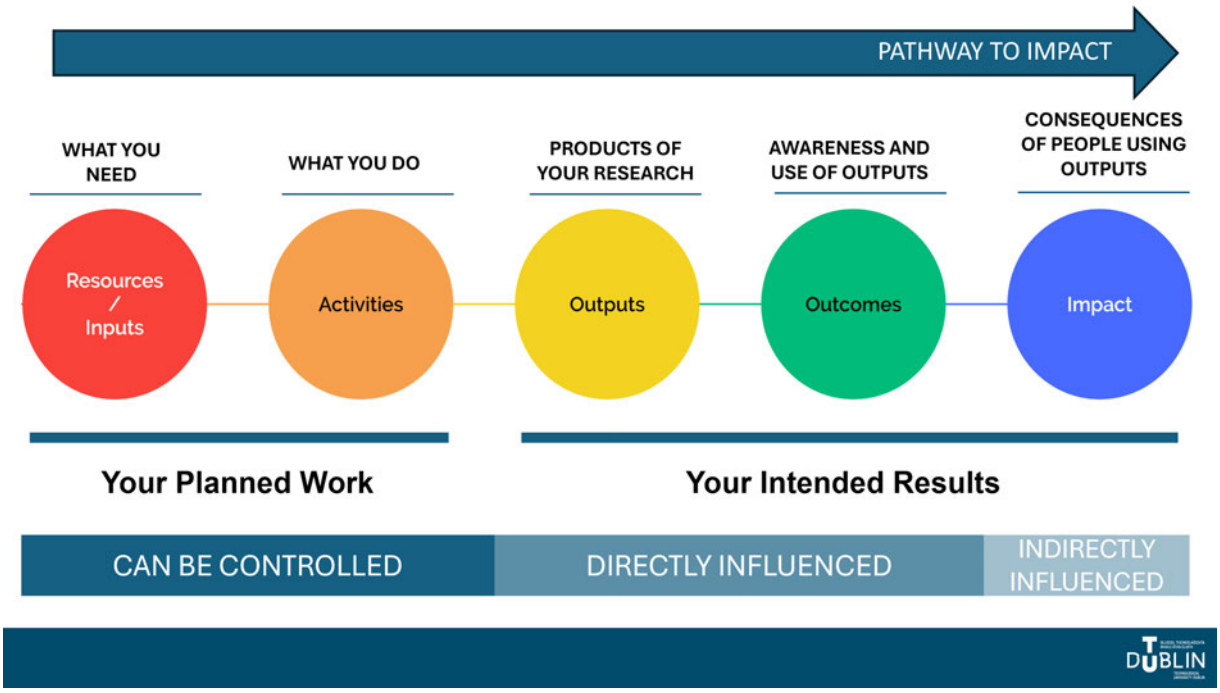


***FIGURE 9**: The Basic Logic Model for Research Impact Planning showing what can be controlled, directly influences, and what can be indirectly influence.*

Figure 10 overleaf entitled "Examples for Each Component in a *Basic Logic Model*," serves as a detailed guide for researchers in completing the sections of the W. K. Kellogg's *Basic Logic Model* when planning for research impact. Please note that the examples listed for each of the key components: Inputs, Activities, Outputs, Outcomes, and Impacts, are not comprehensive and will depend on the specific project and research area.

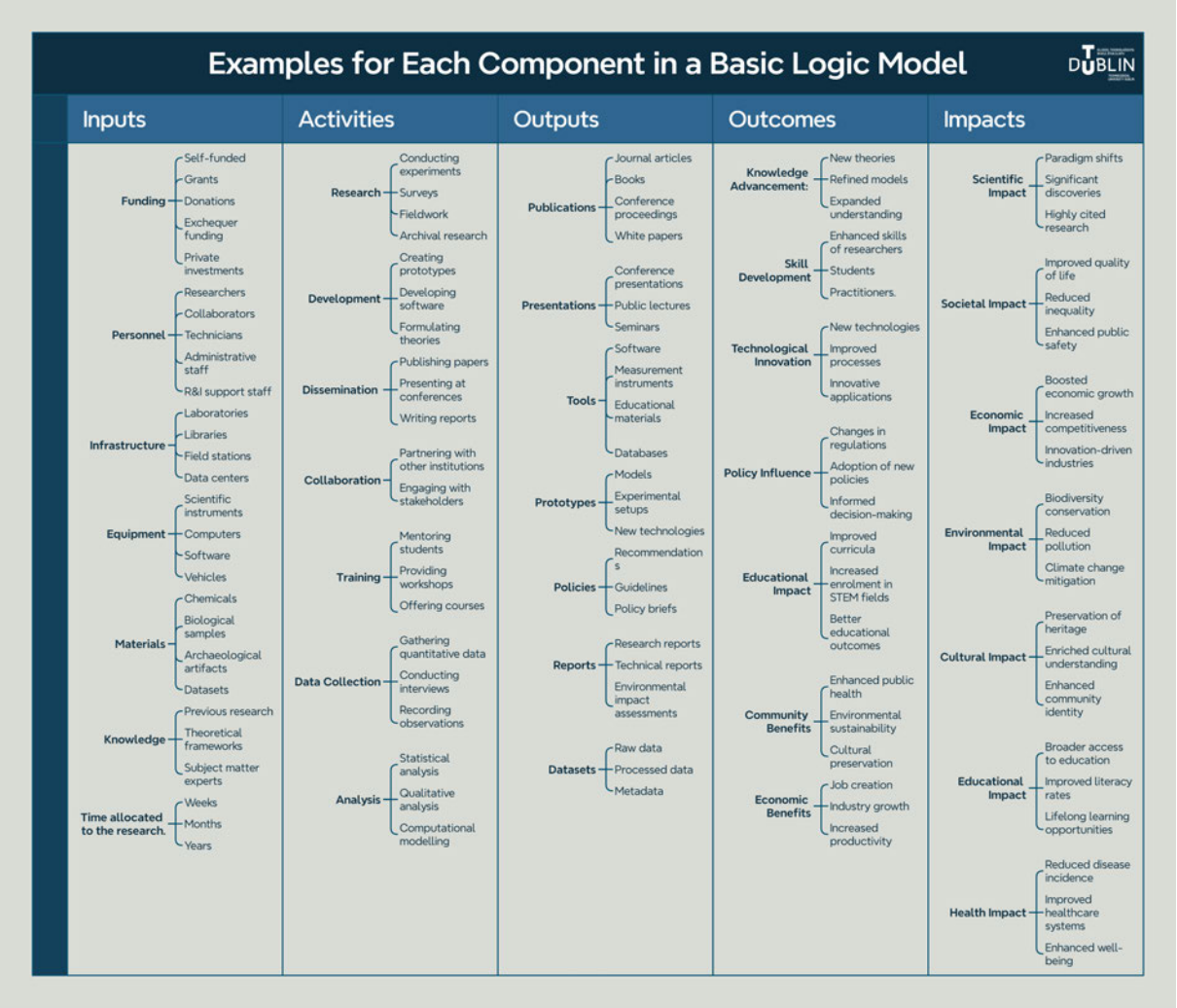


FIGURE 10: *Examples to illustrate components in a Basic Logic Model*

As good as the basic logic model is, it can be advantageous to blend it with another model, namely the *Theory of Change* [22]. This combination can enhance research planning for impact by providing a more comprehensive and flexible framework and mitigating against some of the problems with the linear focus of the *Basic Logic Model*. Both models serve as valuable tools for outlining the pathway from research activities to desired outcomes and impacts, but they offer different perspectives and benefits.

The *Theory of Change* provides a detailed roadmap of how and why a desired change is expected to occur within a specific context. It helps researchers articulate the connections between their research activities, outputs, outcomes, and long-term impacts, emphasising the causal pathways and underlying assumptions. By integrating the *Theory of Change* with the *Basic Logic Model*, researchers can not only plan and track their work systematically but also critically examine and communicate the rationale behind their strategies and the anticipated changes. In addition to the steps outlined in the *Basic Logic Model*, the *Theory of Change* includes the following narratives [22, 23] which are explained below. You can find a completed example at this link here.

- **Context and Rationale:** This initial step involves understanding the broader context within which the research takes place and identifying the specific problem or opportunity the research aims to address. It includes a clear articulation of the rationale behind the research and its relevance to stakeholders.
- **Assumptions and Risks:** A critical component of the *Theory of Change* is identifying the underlying assumptions that link each stage of the process. These assumptions must hold true for the desired change to occur. Additionally, potential risks and barriers that could impede progress must be considered and mitigated.
- **Causal Pathways:** The *Theory of Change* requires mapping out the causal pathways, showing how each stage logically leads to the next. This visual representation helps clarify the steps needed to achieve the intended impact and makes explicit the cause-and-effect relationships.
- **Long-term Vision:** Provides a clear vision of the long-term impacts and ultimate goals of the research.

By integrating the *Theory of Change* with the *Basic Logic Model*, researchers can create a clear idea that not only plans for the necessary resources and activities but also anticipates the processes through which their work will lead to meaningful and lasting change.

The Research Engagement and Impact Office has created a ***Planning for Impact*** template, which has been adapted from the W.K. Kellogg Foundation Logic Model Development Guide and is designed to help researchers outline their planned work and intended results. It includes sections for detailing resources/inputs, activities, outputs, outcomes, and impacts, facilitating a structured approach to achieving and measuring research impact. You can download it from this link: TU Dublin - Planning For Impact Template. If you require help with completing this template, contact our office or review our online video tutorials in the links at the end of this document.

5. Tracking the Impact

Designating an individual to monitor and evaluate research impact is crucial to ensure that the intended outcomes are effectively monitored and achieved. Without dedicated oversight, the significant contributions and changes brought about by research efforts may be overlooked or inadequately documented. Funders increasingly require someone to be explicitly named in this role to guarantee accountability and the systematic tracking of progress.

Having a designated person responsible for impact evaluation ensures that there is a clear focus on assessing whether the research goals are being met and on identifying any necessary adjustments. This role not only involves collecting relevant data, but also analysing results, and reporting on the impact in a structured manner. In larger research groups, it is often easier to allocate this responsibility to a specific individual or team member. However, even in smaller teams, comprising only a few researchers, it is equally important to assign someone to this task. In such cases, the project lead can take on this role to ensure that the impact of the research is diligently tracked and evaluated.

By naming a person responsible for impact measurement, research teams can provide funders with the confidence that their investments are being effectively utilised and that the research is generating the intended benefits. This practice not only aligns with funding requirements but also increases the overall quality and visibility of the research outcomes. This role includes:

- **Coordinating Data Collection:** Ensuring that data is consistently and accurately collected across all research projects.
- **Performing Analysis:** Analysing data to assess the extent of impact and identify areas for improvement.
- **Reporting Findings:** Compiling impact reports and disseminating them to relevant stakeholders, including funders, policymakers, and the academic community.
- **Supporting Researchers:** Providing guidance and support to researchers in developing impact plans and identifying relevant impact metrics.
- **Reengaging with Stakeholders:** This is essential for identifying any issues, making necessary adjustments, and improving the research's relevance and effectiveness.
- **Promoting Best Practices:** Sharing best practices in impact measurement and fostering a culture of impact-oriented research within the institution.

Tasking someone with this responsibility ensures that the process of measuring and evaluating impact is systematic and thorough. It also helps in demonstrating the tangible benefits of research to funders, policymakers, and the public, thereby boosting the overall value and credibility of the institution's research efforts.

6. Measuring and Evaluating Impact

Effective measurement and evaluation of research impact are critical for demonstrating the value of research activities and ensuring that the outcomes align with societal needs [17, 19, 24, 25]. It is important to get a baseline of where the field is prior to starting your research activities so that you can identify the changes that subsequently may occur. Here are key steps and considerations for this process:

1. *Establish Clear Objectives and Indicators:* Begin by defining clear and specific objectives for your research impact. Establish a thorough understanding of the prior art in your field before commencing your research activities, so you can accurately identify and measure the societal impact your work induces. Develop measurable indicators that align with these objectives. Indicators can be quantitative (e.g., number of publications, citation counts, policy changes) and qualitative (e.g., stakeholder testimonials, narrative case studies).

2. *Develop a Comprehensive Data Collection Plan:* Create a detailed plan for collecting data that includes what data will be collected, how it will be collected, and who will be responsible. This plan should encompass both ongoing data collection during the research process and post-research collection to capture long-term impacts.

3. *Utilise a Mixed-Methods Approach:* Employ a combination of quantitative and qualitative methods to gather a comprehensive view of research impact. Quantitative methods might include surveys, bibliometric analysis, and economic assessments, while qualitative methods could involve interviews, focus groups, and narrative case studies.

4. *Engage with Stakeholders:* Regularly engage with stakeholders throughout the research and evaluation process. Stakeholder input can provide valuable thoughts into the practical applications and broader impacts of the research. Their feedback is crucial for refining impact metrics and ensuring their relevance and accuracy.

5. *Regular Monitoring and Reporting:* Implement a schedule for regular monitoring and reporting of impact. This could be done annually or biannually, depending on the nature and duration of the research. Regular monitoring allows for tracking progress towards impact goals and making necessary adjustments in a timely manner.

6. *Use Visual Tools for Communication:* Incorporate visual tools such as dashboards, graphs, and infographics to present impact data clearly and effectively. Visual aids make complex data more accessible and understandable to diverse audiences, including non-experts.

7. *Continuous Improvement:* Use information gained from the evaluation to inform future research and impact strategies. Continuously improving the process based on past experiences helps in achieving greater impact over time.

8. *Impact Categories:* Identify which impact category (or categories) the research work is influencing (See **Categories of Impact** above).

7. Reporting and Communicating Research Impact

Effective reporting and communication of research impact are critical for demonstrating the value and relevance of research activities to a broad audience. By systematically documenting and sharing the outcomes and benefits of research, institutions can highlight their contributions to scientific advancement, societal well-being, and economic development. Communicating research impact not only increases visibility and stakeholder engagement but also fosters transparency and accountability, ensuring that research findings are accessible, understandable, and actionable for policymakers, industry partners, and the general public.

1. **Identifying Target Audiences:** Effective communication requires identifying and tailoring messages to different audiences, including:
    - **Academics and Researchers**: Focus on detailed methodologies, findings, and theoretical implications.
    - **Policymakers**: Concisely highlight the practical implications, policy recommendations, and societal benefits in accessible language.
    - **Industry and Business Partners**: Emphasise the economic impact, potential for commercialisation, and technological advancements.
    - **General Public**: Use plain language to explain the relevance and benefits of the research, focusing on human-interest stories and real-world applications.
2. **Utilising Multiple Channels:** Leverage various communication channels to reach a wider audience such as:
    - **Academic Journals and Conferences**: Publish findings in peer-reviewed journals and present at conferences to engage with the academic community.
    - **Policy Briefs**: Create concise, accessible documents summarising research findings and policy recommendations for policymakers[26].
    - **Media and Press Releases**: Work with the Research Engagement & Impact Office publicity team to disseminate news releases to media outlets.
    - **PURE Research Profiles**: The PURE research profile system at TU Dublin is utilised to highlight and communicate research impact by systematically capturing, managing, and showcasing researchers' outputs, collaborations, and societal contributions.
    - **Social Media**: Use social media platforms to share updates, engage with the public, and connect with other researchers but use caution about services you use.
    - **Webinars and Public Talks**: Organise online and in-person events to discuss research findings with diverse audiences.
    - **Websites**: Project websites are an excellent tool for communicating research impact to a wider audience by providing a centralised platform where detailed information, updates, and outcomes of the research can be easily accessed and shared with diverse stakeholders.

3. **Engaging Stakeholders:** Active engagement with stakeholders throughout the research process can enhance impact communication. Involve stakeholders in planning and dissemination activities, and seek their input to ensure that the research addresses relevant issues and reaches the intended audience.

4. **Creating Impact Narratives:** Craft compelling narratives that highlight the journey from research inception to impact. These stories should illustrate the challenges faced, solutions developed, and the positive changes resulting from the research. Narratives make the impact more relatable and memorable, helping to convey the significance of the work to a broader audience (see **Research Impact Case Studies** below).

5. **Feedback and Continuous Improvement:** Regularly seek feedback from stakeholders and the target audience to improve communication strategies. Use this feedback to refine messages, identify new communication channels, and ensure that the research impact is effectively conveyed.

By structuring impact reports, measuring and documenting impact accurately, and using diverse communication strategies, researchers can effectively report and communicate the significance of their work, ensuring that it reaches and benefits a wide audience.

8. Research Impact Case Studies

At TU Dublin, we are committed to showcasing the transformative power of research through our published case studies. These case studies, curated by the Research Engagement and Impact Office, provide in-depth narratives of how our researchers are making significant contributions to society, the economy, and the environment.

Our research impact case studies serve multiple purposes:

- *Highlighting Success Stories:* They celebrate the achievements of our researchers, illustrating how their work addresses real-world challenges and creates tangible benefits.
- *Demonstrating Value:* By documenting the pathways from research to impact, these case studies show the value of investment in research and its broader implications for policy, practice, and public welfare.
- *Engaging Stakeholders:* They engage various stakeholders, including policymakers, industry partners, and the general public, by providing accessible and compelling accounts of research outcomes.
- *Encouraging Collaboration:* These stories foster collaboration by highlighting opportunities for partnerships and further research.

Each case study typically includes:

- *Research Overview:* A summary of the research project, including its objectives, methods, and key findings.

- *Impact Description:* Detailed accounts of the impacts achieved, categorised into societal, economic, environmental, cultural, educational, and health impacts.
- *Stakeholder Involvement:* Information on how stakeholders were engaged throughout the research process and how their input shaped the outcomes.
- *Visuals and Evidence:* Supporting visuals such as infographics, charts, and photographs, along with evidence such as testimonials, quantitative data, and policy documents.

Through the publication of these case studies, TU Dublin not only promotes the exceptional work of our researchers but also illustrates the real-world applications and benefits of their work. We invite you to explore these stories and discover how our research is making a difference locally and globally.

In conclusion, this document is designed to provide TU Dublin researchers with a framework to strategically plan, implement, and demonstrate the impact of their work. By aligning with international best practices and principles, as outlined in this document, our researchers are well-equipped to maximise the broader societal benefits of their research. By systematically identifying stakeholders, setting clear impact goals, and utilising robust monitoring and evaluation tools, we can ensure that our research not only advances academic knowledge but also makes a meaningful and measurable difference in the world. This framework is a living document, intended to evolve with the changing research landscape and continuously support our commitment to excellence and innovation in research impact.

For further guidance and tools, please refer to the resources and references listed below. These documents and links provide additional and practical support to help you effectively plan and achieve your research impact goals.

9. Resource Links:

1. **Ten Tips for Researchers: How to achieve impact on policy:** The Joint Research Centre is the European Commission's science and knowledge service which employs scientists to carry out research in order to provide independent scientific advice and support to European Union policy. https://knowledge4policy.ec.europa.eu/publication/10-tips-researchers-how-achieve-impact-policy_en

2. **Altmetric:** Tracks the attention and engagement that research outputs such as scholarly articles and datasets receive online. https://www.altmetric.com/

3. **Dimensions:** A comprehensive research database that provides tools to explore the connections between researchers, institutions, grants, publications, and patents. https://www.dimensions.ai/

4. **European Commission – Directorate-General for Research and Innovation:** Reports and publications on research impact and innovation strategies. https://ec.europa.eu/info/departments/research-and-innovation_en

5. **European Research Area (ERA):** Policy documents and strategic plans for research and innovation in Europe. https://research-and-innovation.ec.europa.eu/strategy/dissemination-and-exploitation-research-results_en

6. **European Science Foundation (ESF) - Research Impact and Policy:** Guidelines and case studies on achieving policy impact with research. http://archives.esf.org/publications.html

7. **Evaluating impact from research: A methodological framework:** This paper analyses literature to provide a new definition of research impact and impact evaluation. https://doi.org/10.1016/j.respol.2020.104147

8. **Fast Track Impact:** Fast Track Impact is the world's leading source of evidence-based resources and training for researchers who want to generate impact from their research. https://www.fasttrackimpact.com/

9. **Google Scholar:** Allows researchers to track citations to their articles, see who is citing their work, and calculate various metrics like h-index. https://scholar.google.com/

10. **Health Research Board (HRB) - Research Impact Framework 2021-2025:** Framework and tools for measuring the impact of health research. https://www.hrb.ie/publication/hrb-strategy-2021-2025-health-research-making-an-impact/

11. **Health Services Executive Ireland:** How to Achieve Impact with Your Research: Planning for Impact. https://hseresearch.ie/wp-content/uploads/2021/09/Guide-no-5-Planning-for-impact.pdf

12. **ImpactStory:** A tool to help researchers discover the online impact of their work through metrics and Altmetrics. https://profiles.impactstory.org/

13. **InCites:** A research evaluation tool that allows you to analyse institutional productivity and benchmark your output against peers worldwide. https://incites.clarivate.com/

14. **IUA Campus Engage Resources:** Engaged Research & Innovation for Societal Impact How to guides. https://www.iua.ie/ourwork/university-societal-engagement/engaged-research-societal-impact/

15. **Metrics Toolkit:** The Metrics Toolkit helps scholars and evaluators understand and use citations, web metrics, and altmetrics responsibly in the evaluation of research. https://www.metrics-toolkit.org/

16. **ORCID:** A persistent digital identifier that distinguishes researchers and allows them to connect their contributions and affiliations. https://orcid.org/

17. **PlumX Metrics:** Provides information into the ways people interact with individual pieces of research output in the online environment. https://plumanalytics.com/learn/about-metrics/

18. **Research Excellence Framework UK:** The Research Excellence Framework (REF) is the UK's system for assessing the quality and impact of research in higher education institutions to inform the allocation of public funding. https://www.ref.ac.uk/

19. **Researchfish:** An online platform for researchers to report the outputs, outcomes, and impacts of their funded research. https://www.researchfish.net/

20. **Science Europe - Practical Guide to Research Impact Assessment:** A practical guide for researchers on how to assess and enhance the impact of their work. https://www.scienceeurope.org/our-priorities/research-assessment/

21. **Scopus:** A large abstract and citation database of peer-reviewed literature that provides various metrics to track research impact. https://www.scopus.com/

22. **UN Sustainable Development Goals:** A comprehensive list of the goals, targets and indicators. https://unstats.un.org/sdgs/indicators/indicators-list/

23. **Vitae - Research Impact Resources:** Resources and case studies on achieving and demonstrating research impact. https://www.vitae.ac.uk/impact-and-evaluation

24. **Web of Science:** A robust research database offering citation data for many different academic disciplines, helping to measure research impact. https://www.webofscience.com/

25. **W.K. Kellogg Foundation Logic Model Development Guide:** A detailed guide on developing logic models for program planning and evaluation. https://www.betterevaluation.org/sites/default/files/2021-11/Kellogg_Foundation_Logic_Model_Guide.pdf

10. References

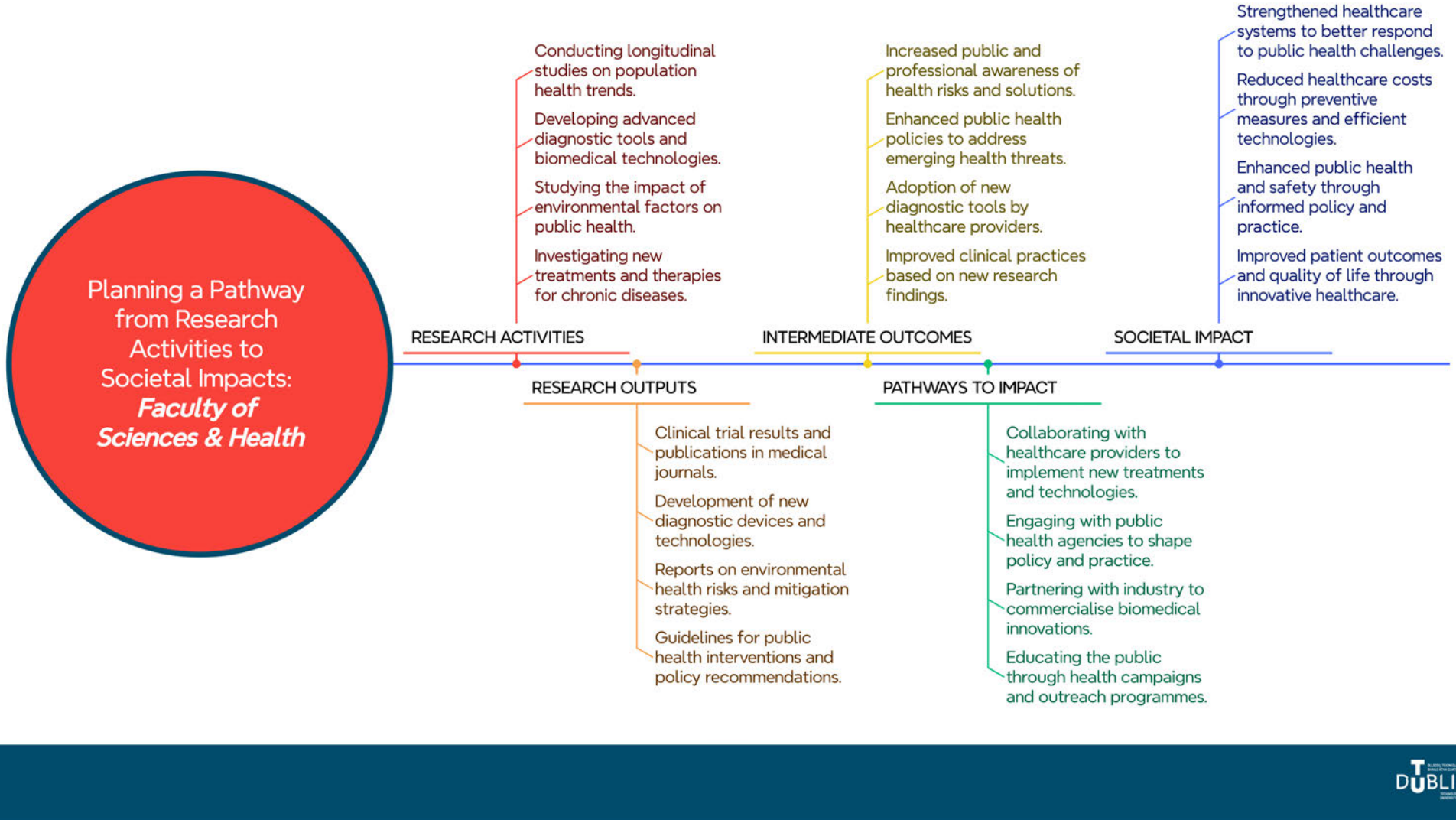
1. Cagan, R., *The San Francisco Declaration on Research Assessment*. Dis Model Mech, 2013. **6**(4): p. 869-70.
2. Hicks, D., et al., *Bibliometrics: The Leiden Manifesto for research metrics*. Nature, 2015. **520**(7548): p. 429-31.
3. Moher, D., et al., *The Hong Kong Principles for assessing researchers: Fostering research integrity*. PLoS Biol, 2020. **18**(7): p. e3000737.
4. European, C., R. Directorate-General for, and Innovation, *Towards a reform of the research assessment system – Scoping report*. 2021: Publications Office.
5. *Coalition for Advancing Research Assessment (CoARA)*. 2024 [cited 2024 June 28th]; Available from: https://coara.eu/.
6. *TU Dublin Research & Innovation Strategy 2023-2028*. 2023 [cited 2024 June 28th]; Available from: https://www.tudublin.ie/media/website/research/images/TU-Dublin-Research--Innovation-Strategy-Final-Portrait.pdf.
7. *TU Dublin Strategic Plan 2024 - 2028*. 2024; Available from: https://www.tudublin.ie/explore/about-the-university/strategicintent/.
8. *Impact 2030: Ireland's Research and Innovation Strategy*. 2022, Government of Ireland.
9. *National Smart Specialisation Strategy for Innovation 2022-2027*. 2022, Government of Ireland.
10. *Research and Innovation*. 2024 [cited 2024 June 28th]; Available from: https://commission.europa.eu/about-european-commission/departments-and-executive-agencies/research-and-innovation_en.
11. *Research Excellence Framework 2029*. 2024 [cited 2024 June 28th]; Available from: https://www.ref.ac.uk/.
12. *HRB Strategy 2021-2025: Health research - making an impact* 2021, Health Research Board: Ireland.
13. *How To Achieve Impact with Your Research: Planning for Impact*. 2021, Health Services Executive.

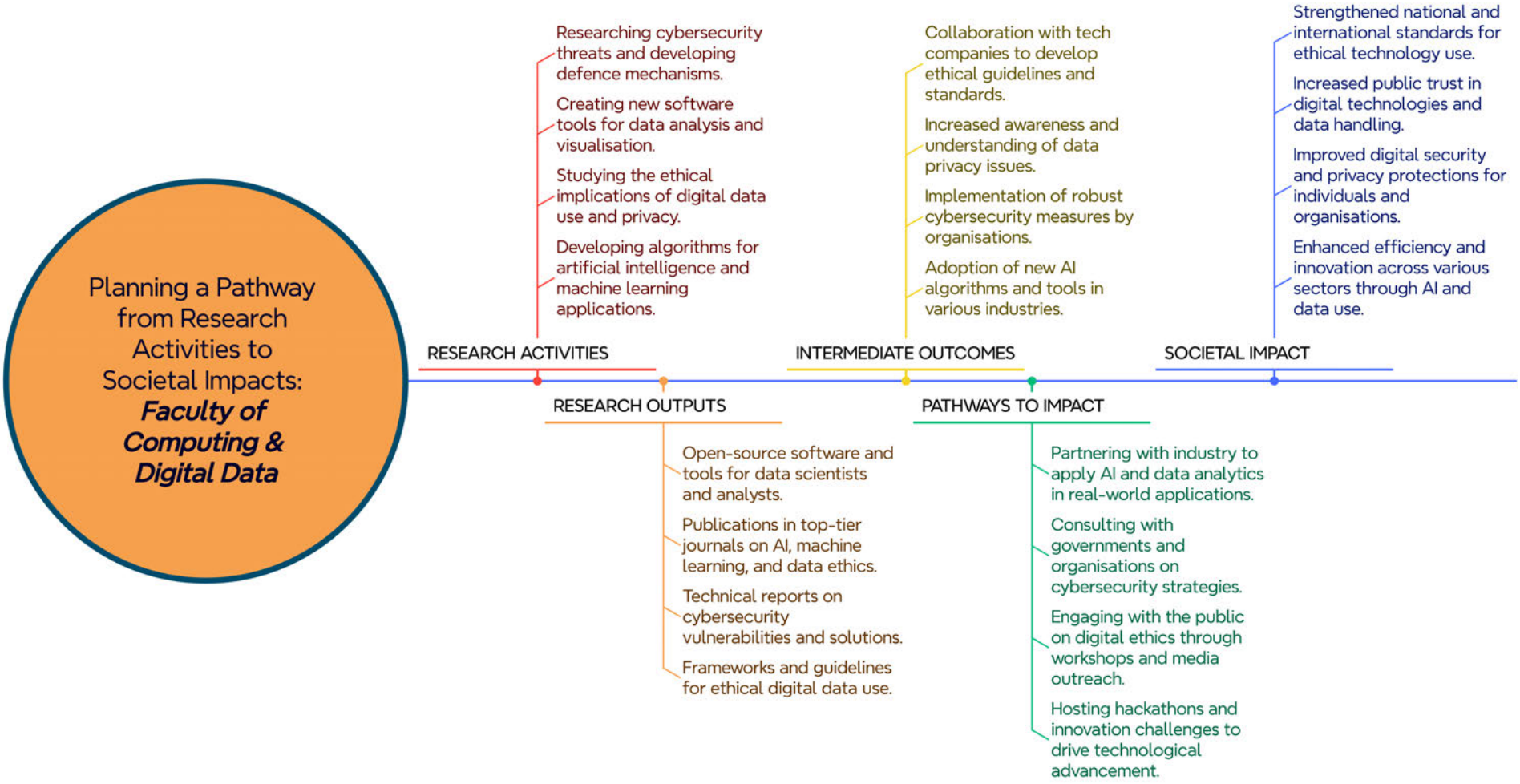
14. Cahill, S., *Pam Denicolo (ed.), Achieving impact in research*. Dementia, 2014. **13**(6): p. 855-856.
15. McKenna, H.P., *Research Impact*. 2021.
16. Greenhalgh, T., et al., *Research impact: a narrative review*. BMC Med, 2016. **14**: p. 78.
17. Reed, M.S., et al., *Evaluating impact from research: A methodological framework*. Research Policy, 2021. **50**(4): p. 104147.
18. *Global indicator framework for the Sustainable Development Goals and targets of the 2030 Agenda for Sustainable Development*. 2024 [cited 2024 June 28th]; Available from: https://unstats.un.org/sdgs/indicators/indicators-list/.
19. *IUA Campus Engage Resources - Engaged Research & Innovation for Societal Impact*. 2024 [cited 2024 June 28th]; Available from: https://www.iua.ie/ourwork/university-societal-engagement/engaged-research-societal-impact/.
20. Donovan, C. and S. Hanney, *The 'Payback Framework' explained*. Research Evaluation, 2011. **20**(3): p. 181-183.
21. *Theory of Change*. 2024 [cited 2024 29/7/2024]; Available from: https://www.theoryofchange.org/what-is-theory-of-change/.
22. Wendt, K., *Theory of Change: Defining the Research Agenda*, in *Theories of Change: Change Leadership Tools, Models and Applications for Investing in Sustainable Development*, K. Wendt, Editor. 2021, Springer International Publishing: Cham. p. 3-12.
23. Foundation, W.K.K., *Logic Model Development Guide*. 2004: W.K. Kellogg Foundation.
24. *10 Tips for Researchers: How to achieve impact on policy*. 2020 [cited 2024 June 28th]; Available from: https://knowledge4policy.ec.europa.eu/publication/10-tips-researchers-how-achieve-impact-policy_en
25. Read, M.S. *Fast Track Impact*. 2024 [cited 2024 June 28th]; Available from: https://www.fasttrackimpact.com/.
26. Pennock, A., *The CQ Press Writing Guide for Public Policy*. 2018: SAGE Publications.

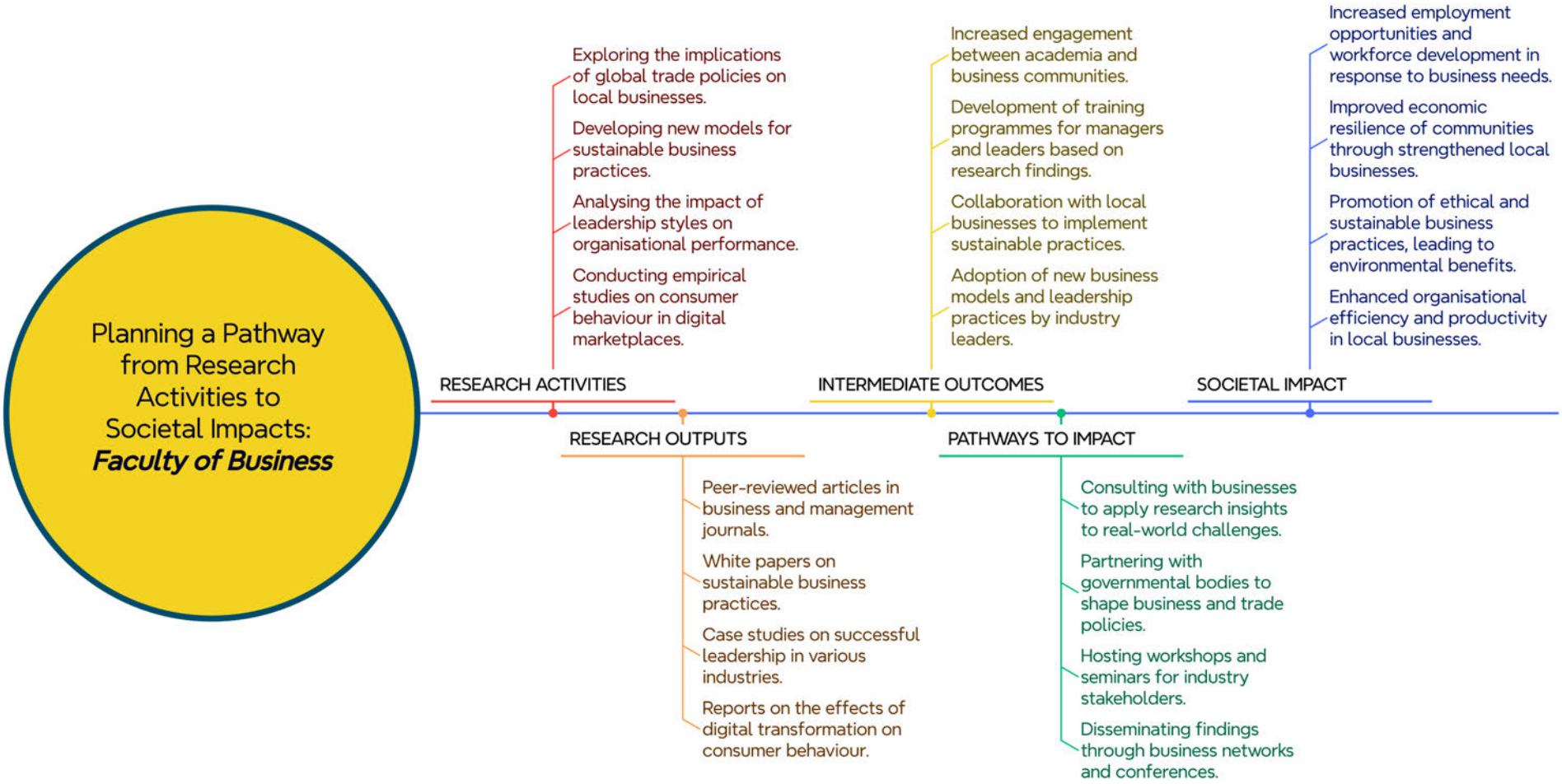
11. Contact Details

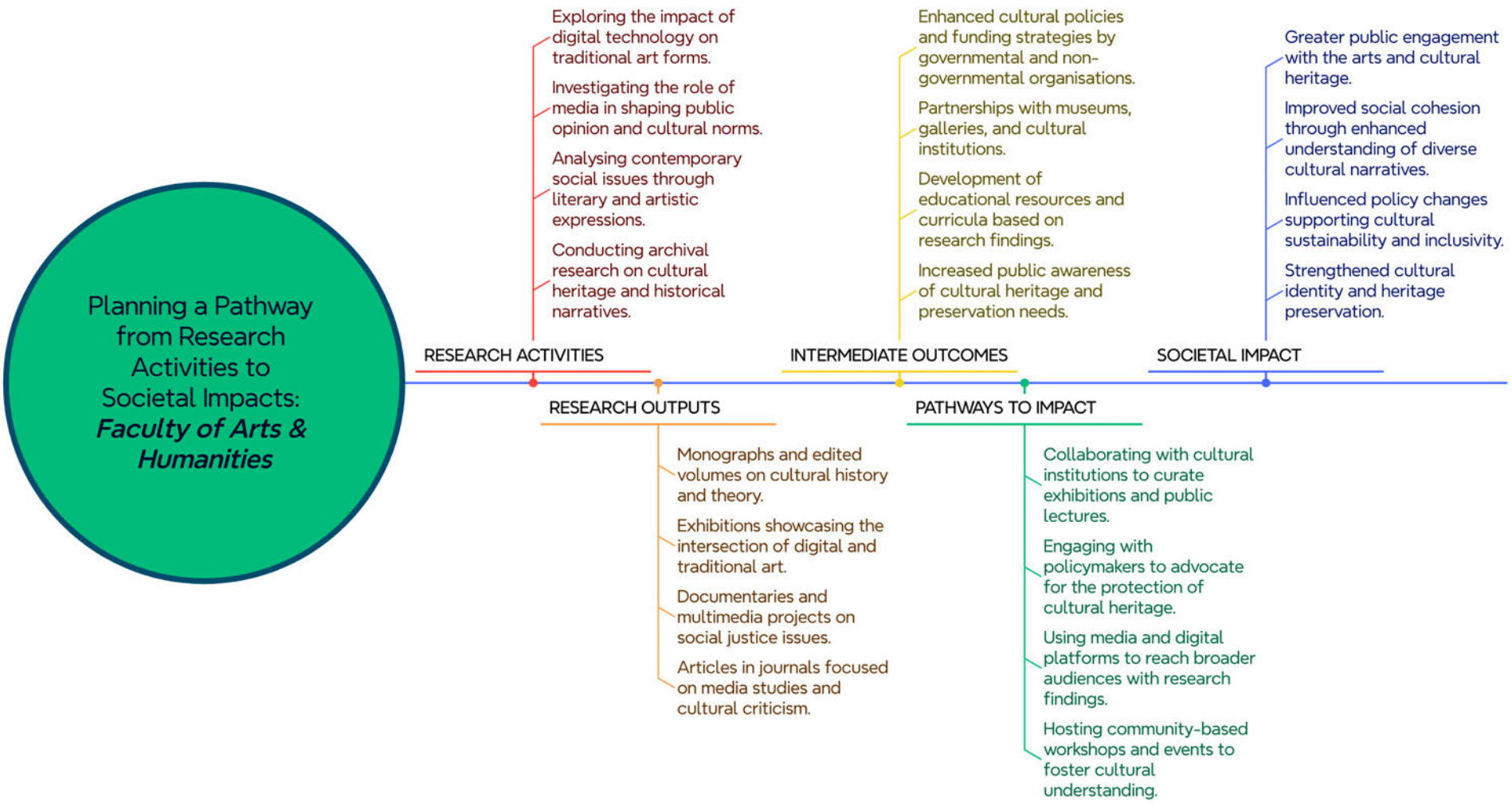
Research Impact Lead:	Dr. Gordon Cooke
Email:	gordon.cooke@tudublin.ie
Phone:	+353 1 220 7910
Office Email:	engagementandimpact@tudublin.ie

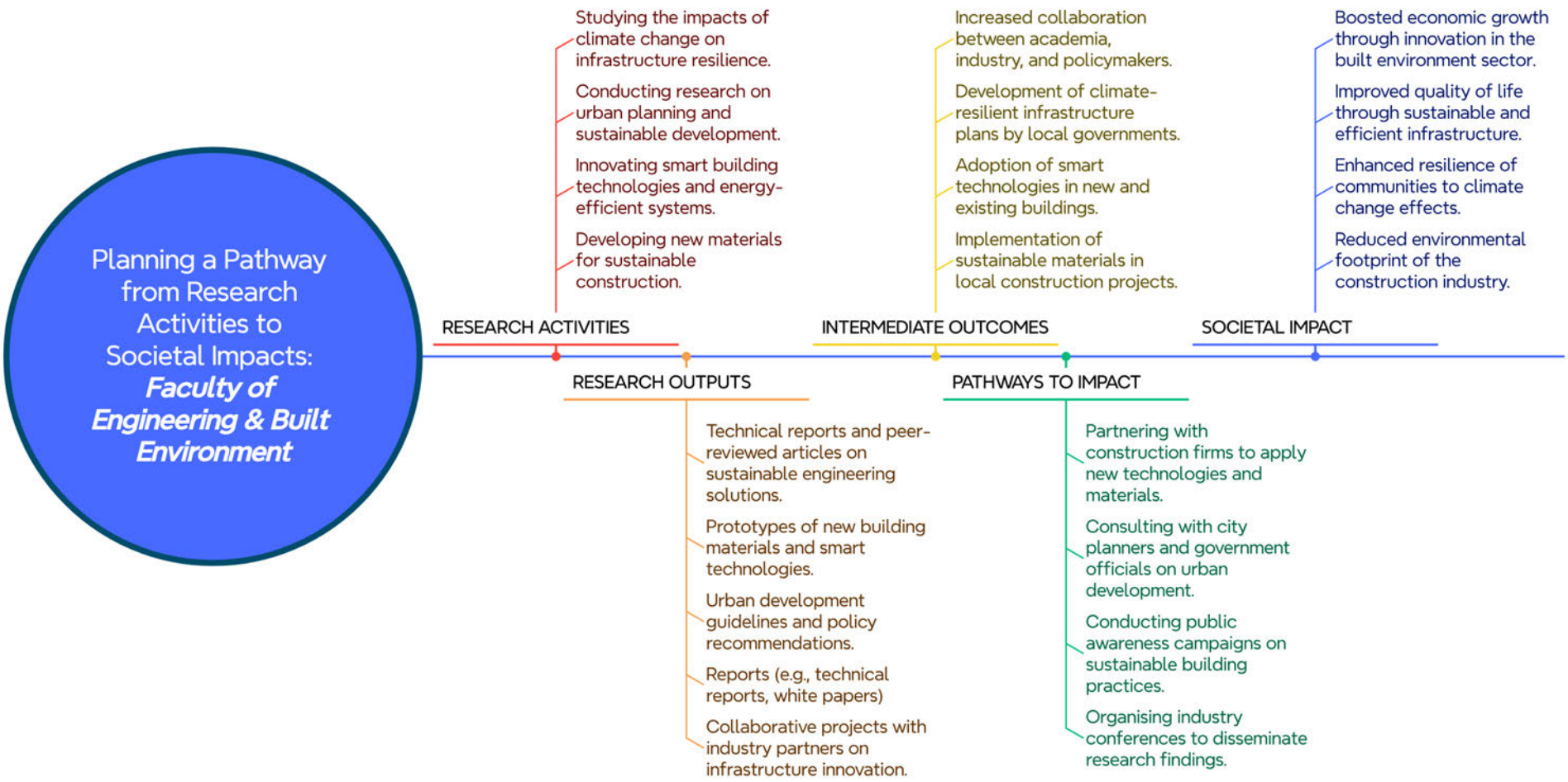
12. Appendix

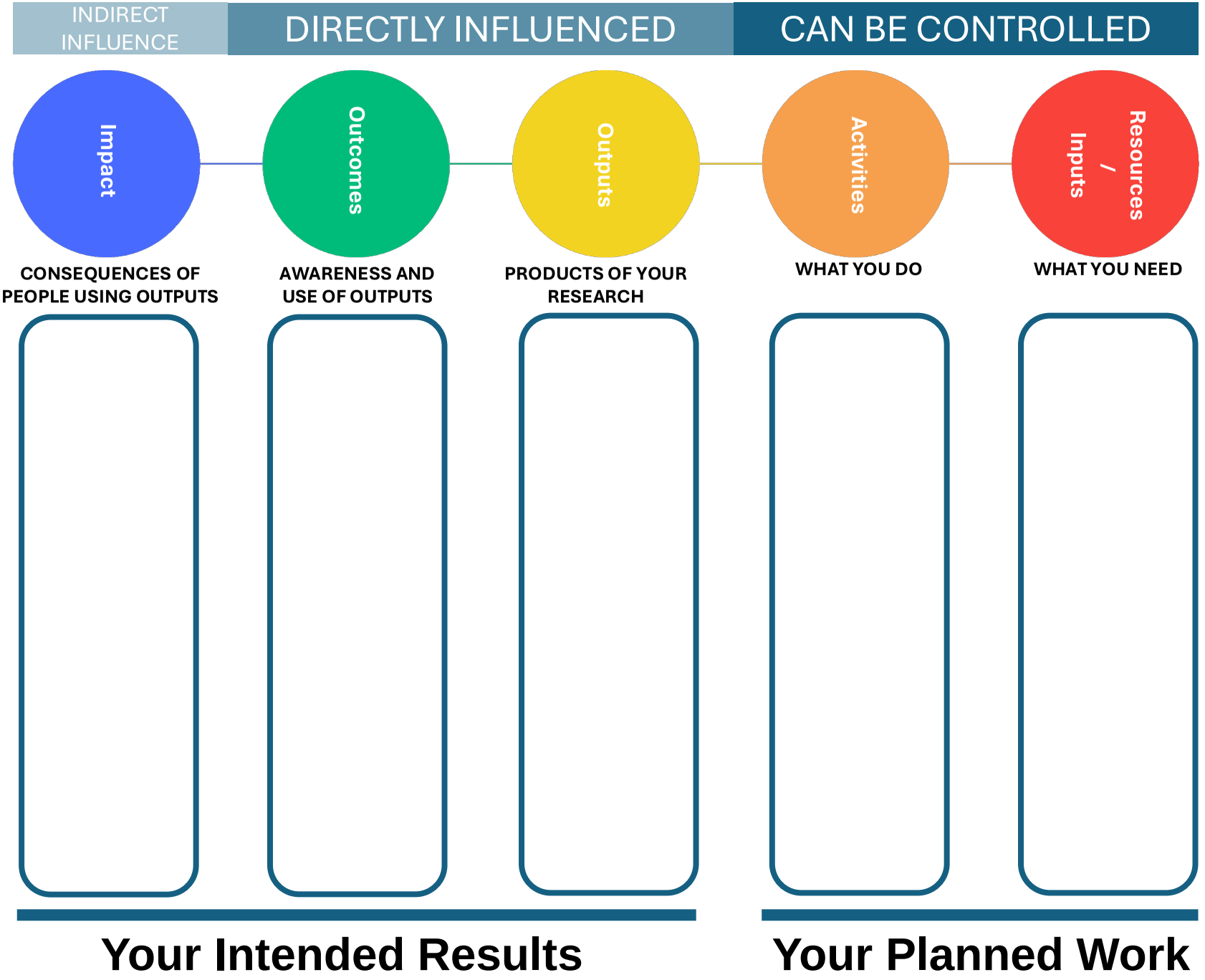

Planning a Pathway from Research Activities to Societal Impacts: Faculty of Sciences & Health
RESEARCH ACTIVITIES
Conducting longitudinal studies on population health trends.
Developing advanced diagnostic tools and biomedical technologies.
Studying the impact of environmental factors on public health.
Investigating new treatments and therapies for chronic diseases.
RESEARCH OUTPUTS
Clinical trial results and publications in medical journals.
Development of new diagnostic devices and technologies.
Reports on environmental health risks and mitigation strategies.
Guidelines for public health interventions and policy recommendations.
INTERMEDIATE OUTCOMES
Increased public and professional awareness of health risks and solutions.
Enhanced public health policies to address emerging health threats.
Adoption of new diagnostic tools by healthcare providers.
Improved clinical practices based on new research findings.
PATHWAYS TO IMPACT
Collaborating with healthcare providers to implement new treatments and technologies.
Engaging with public health agencies to shape policy and practice.
Partnering with industry to commercialise biomedical innovations.
Educating the public through health campaigns and outreach programmes.
SOCIETAL IMPACT
Strengthened healthcare systems to better respond to public health challenges.
Reduced healthcare costs through preventive measures and efficient technologies.
Enhanced public health and safety through informed policy and practice.
Improved patient outcomes and quality of life through innovative healthcare.


Planning a Pathway from Research Activities to Societal Impacts: Faculty of Computing & Digital Data
RESEARCH ACTIVITIES
Researching cybersecurity threats and developing defence mechanisms.
Creating new software tools for data analysis and visualisation.
Studying the ethical implications of digital data use and privacy.
Developing algorithms for artificial intelligence and machine learning applications.
RESEARCH OUTPUTS
Open-source software and tools for data scientists and analysts.
Publications in top-tier journals on AI, machine learning, and data ethics.
Technical reports on cybersecurity vulnerabilities and solutions.
Frameworks and guidelines for ethical digital data use.
INTERMEDIATE OUTCOMES
Collaboration with tech companies to develop ethical guidelines and standards.
Increased awareness and understanding of data privacy issues.
Implementation of robust cybersecurity measures by organisations.
Adoption of new AI algorithms and tools in various industries.
PATHWAYS TO IMPACT
Partnering with industry to apply AI and data analytics in real-world applications.
Consulting with governments and organisations on cybersecurity strategies.
Engaging with the public on digital ethics through workshops and media outreach.
Hosting hackathons and innovation challenges to drive technological advancement.
SOCIETAL IMPACT
Strengthened national and international standards for ethical technology use.
Increased public trust in digital technologies and data handling.
Improved digital security and privacy protections for individuals and organisations.
Enhanced efficiency and innovation across various sectors through AI and data use.


Planning a Pathway from Research Activities to Societal Impacts: Faculty of Business
RESEARCH ACTIVITIES
Exploring the implications of global trade policies on local businesses.
Developing new models for sustainable business practices.
Analysing the impact of leadership styles on organisational performance.
Conducting empirical studies on consumer behaviour in digital marketplaces.
RESEARCH OUTPUTS
Peer-reviewed articles in business and management journals.
White papers on sustainable business practices.
Case studies on successful leadership in various industries.
Reports on the effects of digital transformation on consumer behaviour.
INTERMEDIATE OUTCOMES
Increased engagement between academia and business communities.
Development of training programmes for managers and leaders based on research findings.
Collaboration with local businesses to implement sustainable practices.
Adoption of new business models and leadership practices by industry leaders.
PATHWAYS TO IMPACT
Consulting with businesses to apply research insights to real-world challenges.
Partnering with governmental bodies to shape business and trade policies.
Hosting workshops and seminars for industry stakeholders.
Disseminating findings through business networks and conferences.
SOCIETAL IMPACT
Increased employment opportunities and workforce development in response to business needs.
Improved economic resilience of communities through strengthened local businesses.
Promotion of ethical and sustainable business practices, leading to environmental benefits.
Enhanced organisational efficiency and productivity in local businesses.


Planning a Pathway from Research Activities to Societal Impacts: *Faculty of Arts & Humanities*
RESEARCH ACTIVITIES
Exploring the impact of digital technology on traditional art forms.
Investigating the role of media in shaping public opinion and cultural norms.
Analysing contemporary social issues through literary and artistic expressions.
Conducting archival research on cultural heritage and historical narratives.
RESEARCH OUTPUTS
Monographs and edited volumes on cultural history and theory.
Exhibitions showcasing the intersection of digital and traditional art.
Documentaries and multimedia projects on social justice issues.
Articles in journals focused on media studies and cultural criticism.
INTERMEDIATE OUTCOMES
Enhanced cultural policies and funding strategies by governmental and non-governmental organisations.
Partnerships with museums, galleries, and cultural institutions.
Development of educational resources and curricula based on research findings.
Increased public awareness of cultural heritage and preservation needs.
PATHWAYS TO IMPACT
Collaborating with cultural institutions to curate exhibitions and public lectures.
Engaging with policymakers to advocate for the protection of cultural heritage.
Using media and digital platforms to reach broader audiences with research findings.
Hosting community-based workshops and events to foster cultural understanding.
SOCIETAL IMPACT
Greater public engagement with the arts and cultural heritage.
Improved social cohesion through enhanced understanding of diverse cultural narratives.
Influenced policy changes supporting cultural sustainability and inclusivity.
Strengthened cultural identity and heritage preservation.


Planning a Pathway from Research Activities to Societal Impacts: Faculty of Engineering & Built Environment
RESEARCH ACTIVITIES
Studying the impacts of climate change on infrastructure resilience.
Conducting research on urban planning and sustainable development.
Innovating smart building technologies and energy-efficient systems.
Developing new materials for sustainable construction.
RESEARCH OUTPUTS
Technical reports and peer-reviewed articles on sustainable engineering solutions.
Prototypes of new building materials and smart technologies.
Urban development guidelines and policy recommendations.
Reports (e.g., technical reports, white papers)
Collaborative projects with industry partners on infrastructure innovation.
INTERMEDIATE OUTCOMES
Increased collaboration between academia, industry, and policymakers.
Development of climate-resilient infrastructure plans by local governments.
Adoption of smart technologies in new and existing buildings.
Implementation of sustainable materials in local construction projects.
PATHWAYS TO IMPACT
Partnering with construction firms to apply new technologies and materials.
Consulting with city planners and government officials on urban development.
Conducting public awareness campaigns on sustainable building practices.
Organising industry conferences to disseminate research findings.
SOCIETAL IMPACT
Boosted economic growth through innovation in the built environment sector.
Improved quality of life through sustainable and efficient infrastructure.
Enhanced resilience of communities to climate change effects.
Reduced environmental footprint of the construction industry.



Adapted from W.K. Kellogg Foundation Logic Model Development Guide

Research Engagement & Impact Office

TU DUBLIN
OLLSCOIL TEICNEOLAÍOCHTA BHAILE ÁTHA CLIATH
TECHNOLOGICAL UNIVERSITY DUBLIN