A thought to ponder . . .

How do you know if your work is having the impact you want?

RESEARCH, INNOVATION & IMPACT
Societal Impact

Understanding Your Impact: Evaluating and Demonstrating Broader and Societal Impacts of Research

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RESEARCH, INNOVATION & IMPACT
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Mission: To work collaboratively with University of Arizona's faculty, researchers, scholars, and practitioners, and in partnership with our communities, to ensure that **equitable participation and the greatest possible societal impact of UArizona research is realized.**

https://impact.arizona.edu

Today's Agenda

- Introduction to Evaluation
- Key Evaluation Tools
- **Break**
- Tools for Societal Impact Evaluation
- Impact Categories
- Impact Evaluation Examples
- Activity
- Wrap-Up
- Networking

Section 1: Introduction to Evaluation Concepts & Key Tools

What is evaluation?

Evaluation is:

- A set of approaches and techniques used to make judgments about the effectiveness or quality of a program or intervention
- Used to improve a program's effectiveness and to inform decisions about its design, development, and implementation

Why do evaluation?

- Evaluation generally provides information that can guide the project, suggest how it might be improved, and provide evidence to demonstrate whether it worked as intended
- The primary purpose of evaluation is to assess and/or improve the merit, value, or effectiveness of a program or project and to advance the field by deriving lessons for funders, policymakers, or practitioners

Evaluator responsibility

- The evaluator is responsible for assessing the implementation of project activities and documenting the success of the project in relation to its goals and expected outcomes.

Who wants it?

- Evaluation studies are typically conducted for clients and in collaboration with various stakeholders who are invested in improving or assessing a particular event, program, or activity
- Public and private funders represent a primary audience for evaluation findings, so when writing a funding proposal, you should know exactly what they require or expect
- Other stakeholders might typically include your internal project team; staff and administrators at your institution; your project's participants or consumers; colleagues in your field; colleagues in tangential fields; and future collaborators

Research vs. Evaluation

- Evaluation is not research
- The purpose of research is to generate new knowledge, while evaluation is about making evaluative claims and judgments that can be used for decision making and action
- Evaluators and researchers often work collaboratively to fully characterize a program and its impacts

Research vs. Evaluation

- Research generally asks ‘how’ and ‘why’ questions.
- Evaluation generally asks ‘did’ or ‘did not’ and ‘to what extent’ questions.

Making soup analogy

Research: How does the flavor of the soup change if I use different ingredients? What happens to the texture of the soup if I cook it at a different temperature?

Evaluation: Did they use appropriate procedures and methods when cooking the soup? Did they consider the proper ingredients when planning the recipe?

Do I need to include evaluation?

- If you're writing a proposal that includes activities meant to achieve a societal impact, you'll likely need to include some form of project evaluation in your proposal
- Be sure to read the funder solicitation carefully to know what the specific evaluation requirements are for the proposed project

What does the funder require?

It is important to understand what type of evaluation/evaluator is required:

- Internal to the project
- Through an external advisory board function
- External to the project
- External to the organization

Types of evaluation

- **Process or implementation evaluation** determines whether program activities have been implemented as intended
- **Outcome or effectiveness evaluation** measures program effects in the target population by assessing the progress in the outcomes or outcome objectives that the program is to achieve

Stages of evaluation

- **Front-End** – done for the purposes of planning a project or intervention
- **Formative** – evaluation that happens while the project or intervention is occurring to help to make improvements
- **Summative** – end of project evaluation that documents effectiveness and outcomes, typically used to help decide whether a program should be adopted, continued or modified. Summative evaluations are also used to inform the field.

Culturally responsive evaluation

- A culturally responsive evaluation attempts to fully describe and explain the context of the program or project being evaluated. Culturally responsive evaluators honor the cultural context in which an evaluation takes place by bringing needed, shared life experience and understandings to the evaluation tasks at hand
- Evaluation is based on an examination of impacts through lenses in which the culture of the participants is considered an important factor, thus rejecting the notion that assessments must be objective and culture free, if they are to be unbiased.
- Having an evaluator or a team of evaluators that is culturally sensitive to the program environment will ensure that cultural nuances—large and small—will be captured and used for interpreting progress and summative evaluations.

Getting started

- Talk with your evaluator early while developing the proposal so that they understand (and can help you craft) your goals and objectives before drafting an evaluation plan. Evaluation planning is collaborative!
- Make sure that your evaluation plan is tailored to your proposed activities and intended outcomes

Evaluation planning

A strong evaluation plan includes:

- Carefully crafted, relevant overall evaluation questions
- A detailed data collection plan that is coordinated with project activities
- A thoughtful project logic model
- A plan for reporting and dissemination of findings
- A bio for your evaluator so that reviewers know who's on your team and what makes them uniquely qualified to carry out the evaluation of the project

Evaluation planning

A strong evaluation plan should include a clear description of:

- What data will be collected
- From what sources
- How, by whom, and when
- How the data will be analyzed

Presenting your evaluation plan

Items that can make your evaluation plan at the proposal stage even stronger include:

- A table that maps out the evaluation questions to the data collection plans. This can save space by conveying a lot of information in a table instead of in narrative form.
- Combining the evaluation plan and project timelines so that the reviewers can see how the evaluation will be coordinated with the project and offer timely feedback.

Key Evaluation Tools & Definitions

Logic modeling

Situation – what are the particular conditions to consider as you are planning this project

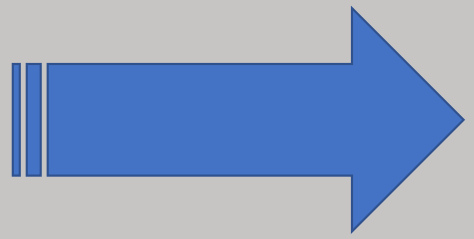
Priorities – what are the most important aspects to incorporate into this project

Outputs – who is participating, what is being implemented, what is produced

- Participants
- Activities
- Products

Outcomes – what is achieved or changed

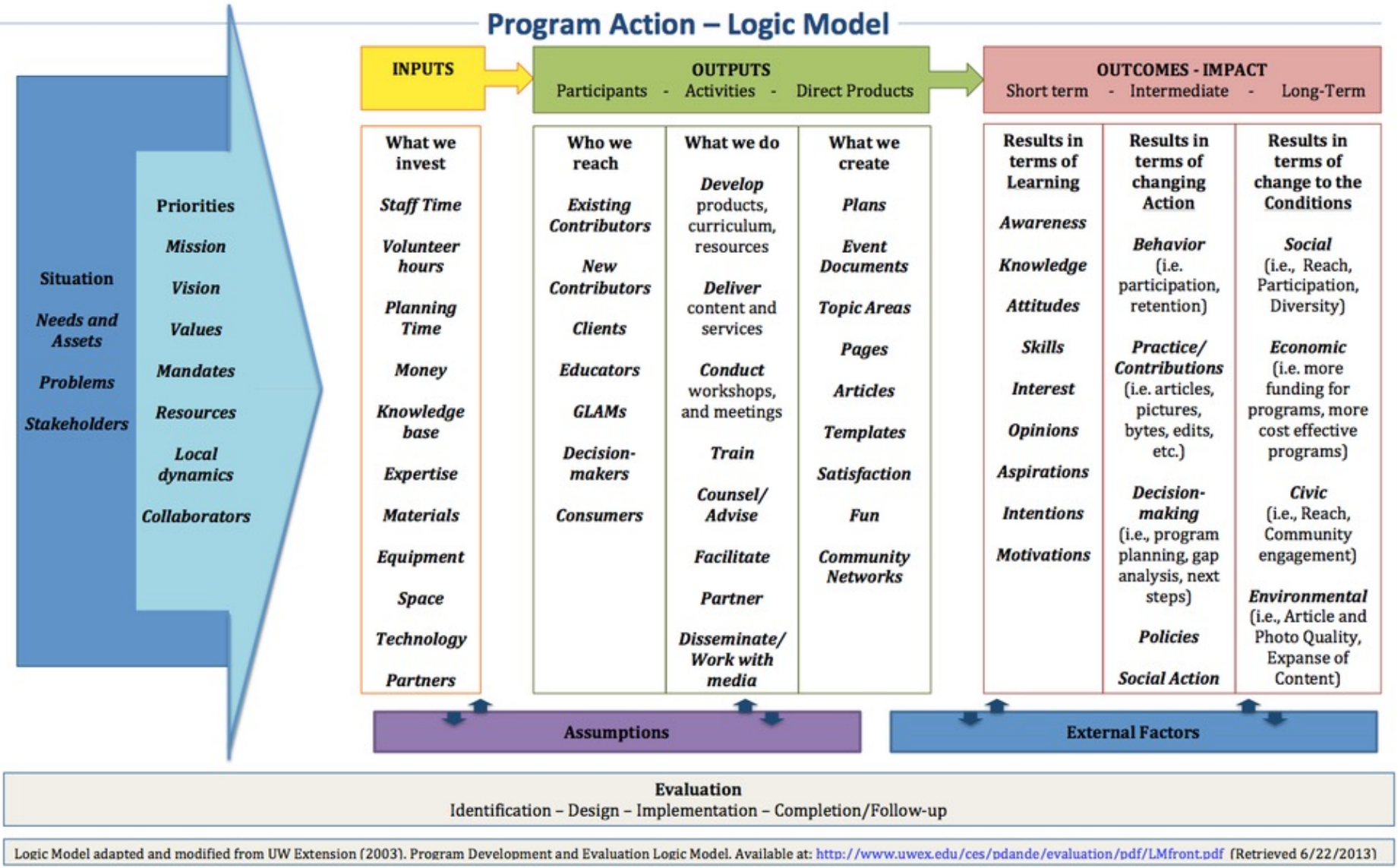
- Short-term
- Medium-term



Impact(s) – Long-term, overarching goal.

May not be achieved within the scope of the project)

Program Action – Logic Model



Evaluation
Identification – Design – Implementation – Completion/Follow-up

Logic Model adapted and modified from UW Extension (2003). Program Development and Evaluation Logic Model. Available at: http://www.uwex.edu/ces/pdande/evaluation/pdf/LMfront.pdf (Retrieved 6/22/2013)

Sample evaluation table

Evaluation Question: [state evaluation question, add rows as needed for additional evaluation questions and related indicators]				
Indicator	Data Source & Collection Method	Timing	Analysis	Interpretation
[what will be measured – ideally there will be more than one indicator per evaluation question]	[where the data will come from and how it will be obtained]	[when the data will be collected]	[how the qualitative and quantitative data will be transformed and summarized into usable information]	[procedures for using findings to answer the evaluation questions and reach evaluative conclusions]

Determining evaluation questions

Evaluation Questions:

- Overarching questions about your project's quality or impact
- The number of questions depends on the scope and purpose of the evaluation; 3 to 7 questions is typical
- Questions should address both project implementation and outcomes

What will be measured?

Indicators:

- Specific pieces of information about an aspect of a project.
- Basically, what will be measured in order to answer the evaluation questions.
- It is useful to use multiple indicators to address an evaluation question, including both quantitative and qualitative data.

evalu-ate.org

Where will you find evidence?

Data Sources:

- Entities from which data will be collected.
- Typical sources might include project staff, students/participants, faculty, project partners, institutional records, project records, project artifacts, website statistics.

How will you collect data?

Data Collection Methods:

- The means by which information will be gathered
- Typical methods might include surveys, focus groups, interviews, observations, document review, and database queries.

Who will collect and analyze data?

Responsible Parties:

- The individuals or organizations tasked with collecting, analyzing and interpreting the needed information.
- This often requires cooperation among multiple entities.

When does evaluation happen?

Timing:

- Identifies when and how frequently data will be collected.
- For example, at events, annually, quarterly
- Discussing the timing is important so that reviewers can see that data collection takes place when needed for reporting and decision-making purposes
- It also lets reviewers see that the data collection schedule is appropriate in the context of other project activities

How is the data used?

Analysis Plan:

- Describes how the data, both quantitative and qualitative, will be summarized into meaningful, usable information

Interpretation:

- How the analyzed data will be used to reach conclusions related to the evaluation questions.

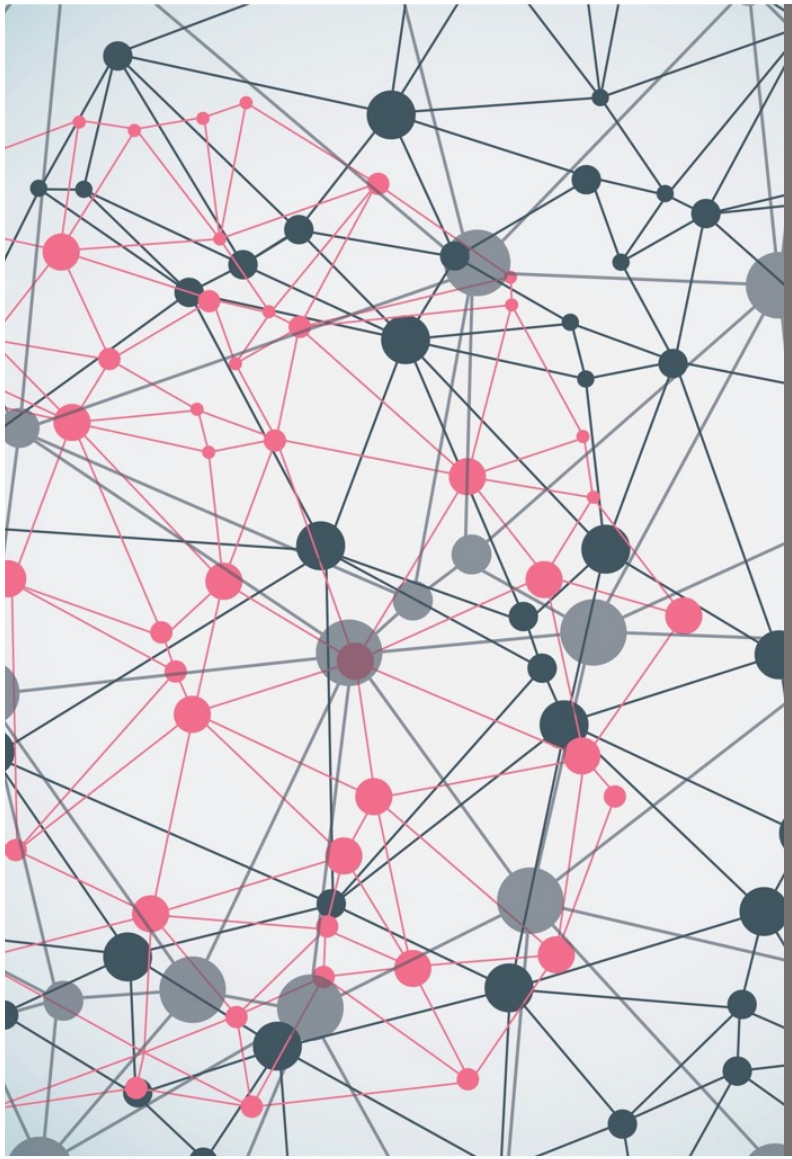
EXAMPLE

Evaluation Question: To what extent are students using education pathways established by the project?					
Indicator	**Data Source and Methods**	**Responsible Party**	**Timing**	**Analysis**	**Interpretation**
Number of high school students enrolled in the college's wind energy technology courses	Institutional data	Project director obtains from institutional research office	End of each semester	Counts	Comparison with project target of 10 per semester
Percentage of dual-enrolled high school students who intend to pursue wind technology degrees or certificates	Survey of dual-enrolled students	External evaluator develops survey and conducts analyses; faculty administer survey	End of each semester	Descriptive statistics, disaggregated by demographic characteristics	Comparison with project target of 60% or more, , with one-third or more from underrepresented minority groups
Students' perceptions of what affects their education or career interests	Focus group with	External evaluator	End of each spring semester	Inductive coding to determine factors that increase or suppress interest in wind technology	Identify which, if any, factors can be influenced by the program
Percentage of students who began has dual-enrolled who graduate with wind technology degrees or certificates	Institutional data	Project director obtains from institutional research office	End of each semester after first cohort is eligible to receive degree or certificate	Descriptive statistics, disaggregated by demographic characteristics	Comparison with project target of 40% or more, with one-third or more from underrepresented minority groups

How much will it cost?

- If an internal evaluation is acceptable, account for the time of the person doing the evaluation work based on their salary. It takes more time than you might expect.
- For an external evaluator, expect to spend 5-15% of the project budget on evaluation.
- Sometimes an ‘evaluation advisory board’ is enough, they are generally experts in the field who review the data generated by the internal project team. But you still need a plan!

Section 2: Evaluation Tools for Societal Impact Assessment



What are *Societal Impacts*?

Societal impacts are the ways your research, or the process of conducting your research, has influenced the world beyond academia.

Evaluating Societal Impacts

We need to go beyond addressing a particular problem

We want to demonstrate that we've contributed to solving the problem – that some kind of demonstrable change has occurred

Outputs in-and-of themselves are not the source of change (although that can be indicators and contributors)

Research findings can help propel change – so can the *process* of doing the research, particularly when we are engaging with societal partners

Instrumental impacts – your research led to tangible changes to plans, decisions, practices, or policies

Conceptual impacts – your research contributed to changes in people's knowledge about or awareness of an issue

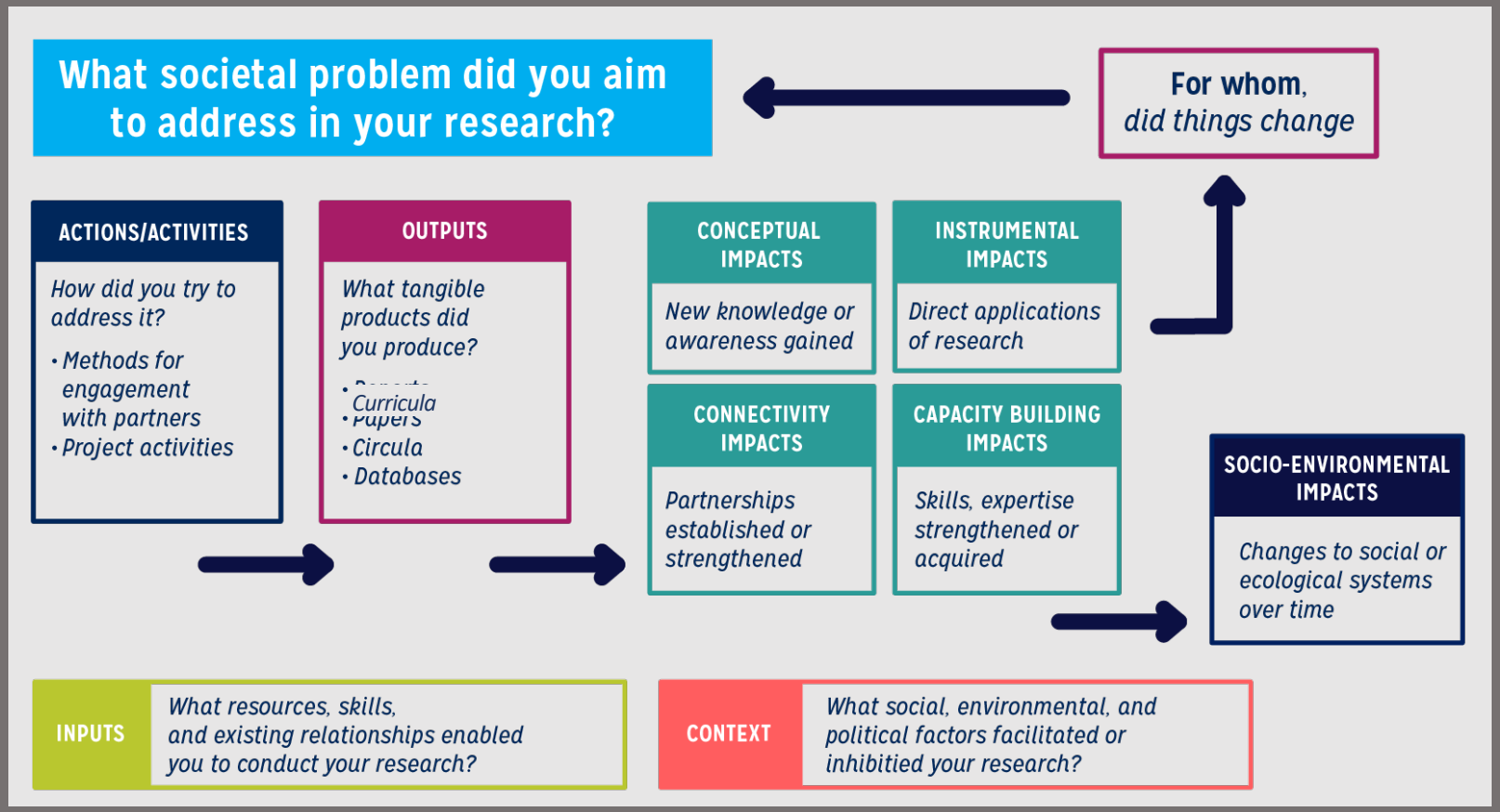
Capacity building impacts – your research contributed to enhancing the skills, expertise, or resources of an organization or group of people

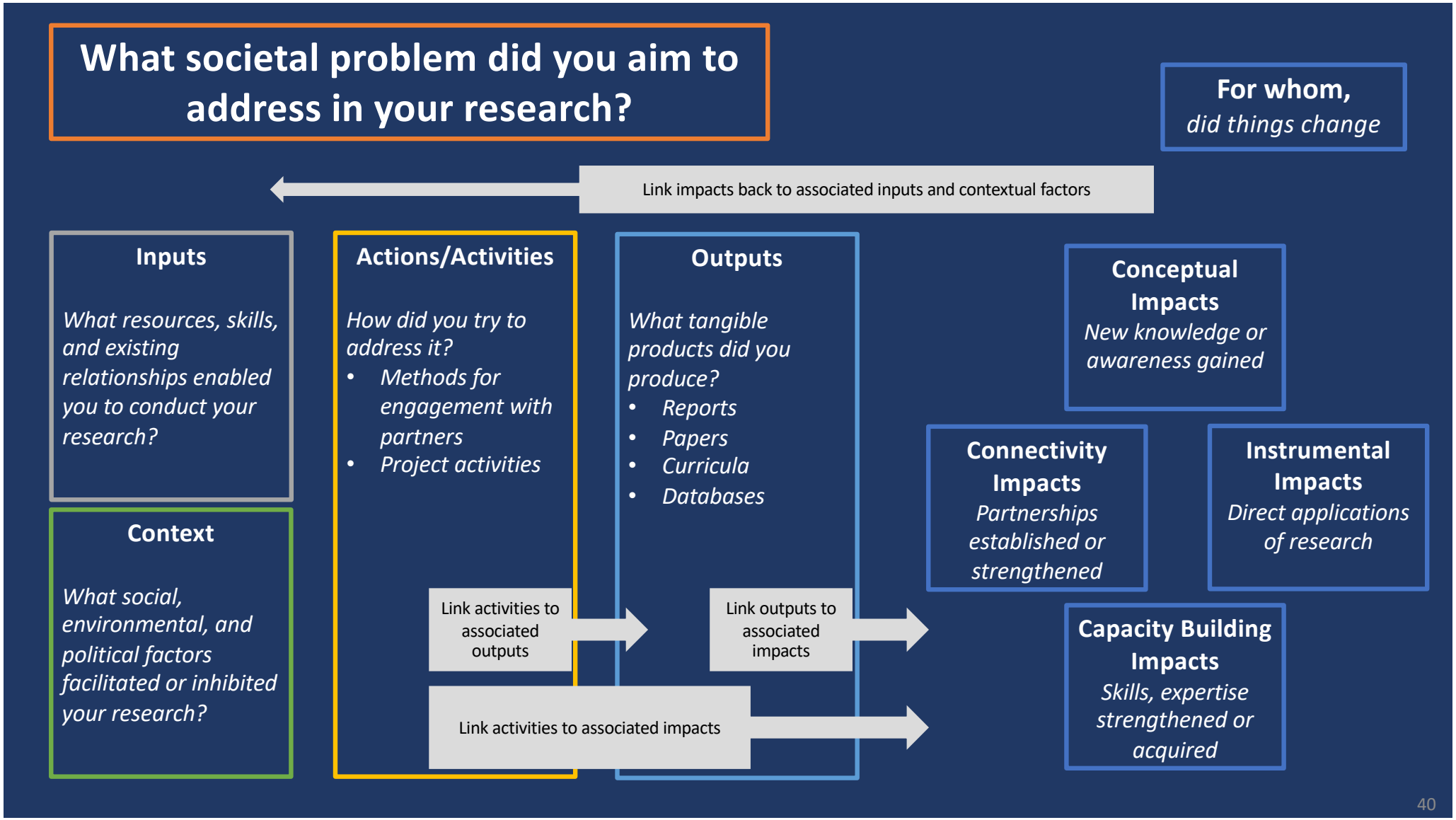
Connectivity impacts – your research led to new or strengthened relationships, partnerships, or networks that endure after the project ends

Socio-environmental impacts *– changes to social and/or ecological systems, such as improvements in health and well-being or in ecosystem structure and function, that result from actions taken because of your research.*

Meadow, Alison M., and Gigi Owen. 2021. Planning and Evaluating the Societal Impacts of Climate Change Research Project: A guidebook for natural and physical scientists looking to make a difference. Tucson: University of Arizona. http://doi.org/10.2458/10150.658313

Societal Impact Logic Model




What societal problem did you aim to address in your research?
For whom, did things change
Link impacts back to associated inputs and contextual factors
Inputs
What resources, skills, and existing relationships enabled you to conduct your research?
Context
What social, environmental, and political factors facilitated or inhibited your research?
Actions/Activities
How did you try to address it?
• Methods for engagement with partners
• Project activities
Outputs
What tangible products did you produce?
• Reports
• Papers
• Curricula
• Databases
Link activities to associated outputs
Link outputs to associated impacts
Link activities to associated impacts
Conceptual Impacts
New knowledge or awareness gained
Connectivity Impacts
Partnerships established or strengthened
Instrumental Impacts
Direct applications of research
Capacity Building Impacts
Skills, expertise strengthened or acquired

How to craft a Problem Statement

Ask yourself:

What problem do you aim to solve? Is it really a problem outside of the academic literature? What will solving this look like? Who is this a problem for?

https://researchimpactacademy.com/

A problem statement is usually one or two sentences to explain the problem your research will address. In general, a problem statement will outline the negative points of the current situation and explain why this matters. It also serves as a great communication tool, helping to get buy in and support from others.

https://www.sheffield.ac.uk/

Problem Statement vs. Research Question

#1

Cultural resources, including buildings and structures, are threatened by climate change. Loss of these resources would represent a loss of our collective history and the embedded knowledge contained within them.

#2

There is insufficient understanding of how extreme rain events projected under climate change will impact different building materials. This project tests the durability of three different materials (adobe, earthen walls, and wood) under simulated rain events based on projections of future precipitation intensity.

Describing Activities and Engagement

Modes of engagement

- Workshops
- Joint performances or presentations
- Regular meetings
- As-needed meetings
- Shared fieldwork

Points of Engagement

- Developing the research question
- Writing the proposal
- Data collection
- Data analysis
- Interpretation of findings
- Dissemination of findings

Activities + Outputs

- Outputs can be the vehicle that takes research to impact
  - Peer-reviewed publications are sometimes required by policy-makers
  - A presentation or performance can be the best way to communicate with a particular audience
- Activities – the act of working together – can also be a driver of impact
  - Learning new methods via joint fieldwork
  - Ongoing conversations between researchers and practitioners help both groups learn and build trust

Linking Activities, Outputs, and Impacts

Why do you think your ***particular activity*** or output generated that ***particular impact***?

- After consulting with our partners, we determined that the most effective way for them to access these findings was if we integrated them into an existing decision support tool they already use regularly. We were able to design a module for the tool using our research findings.

- Our art outreach coalition has built a strong relationship with this particular community over the last 3 years. We are dedicated to holding monthly visual art workshops at the community center. We have a consistent core 20 students, and regularly have more than 30 at each event. Students have told us that they are considering attending the university because they now know some university faculty.

Who changed because of your research?

Stakeholders:
- Community Partners
- Policy Makers
- Industry Professionals
- Practitioners
- Government Officials

Students:
- K-12
- Undergraduates
- Graduate Students
- Continuing Education

General Publics:
- Residents of a City
- Interested Parties

The demographics of the people impacted by your research is important

How do you know? *Evidence of change*

- **Feedback from your partners**
  - Formal (letters of recommendation or partnership)
  - Informal (email or phone calls)
- **Reference to your work in a management/policy document**
  - Research findings forming the basis of policy document
  - Citation in management reports or publications
  - Check Altmetric or Overton to find your citations
- **Feedback from the general public**
  - Audience surveys
  - Emails or other engagement from public
  - Media interviews/reference to your work
- **Formal evaluation of your work**
  - Pre-post tests
  - Surveys/interviews of partners
  - Randomized control trials

Impact Goal Frameworks

College of Education

Research Impact

Access to Higher Education

Asset-Based Practices

Bilingual and Biliterate Education

Broader Impacts in HSI Institutions

Curriculum Design

Digital Learning Capacity

Diversity and Identity

Education Program Design

Educational Policy

Educator Professional Development

Evaluation and Assessment Science

Indigenizing Education

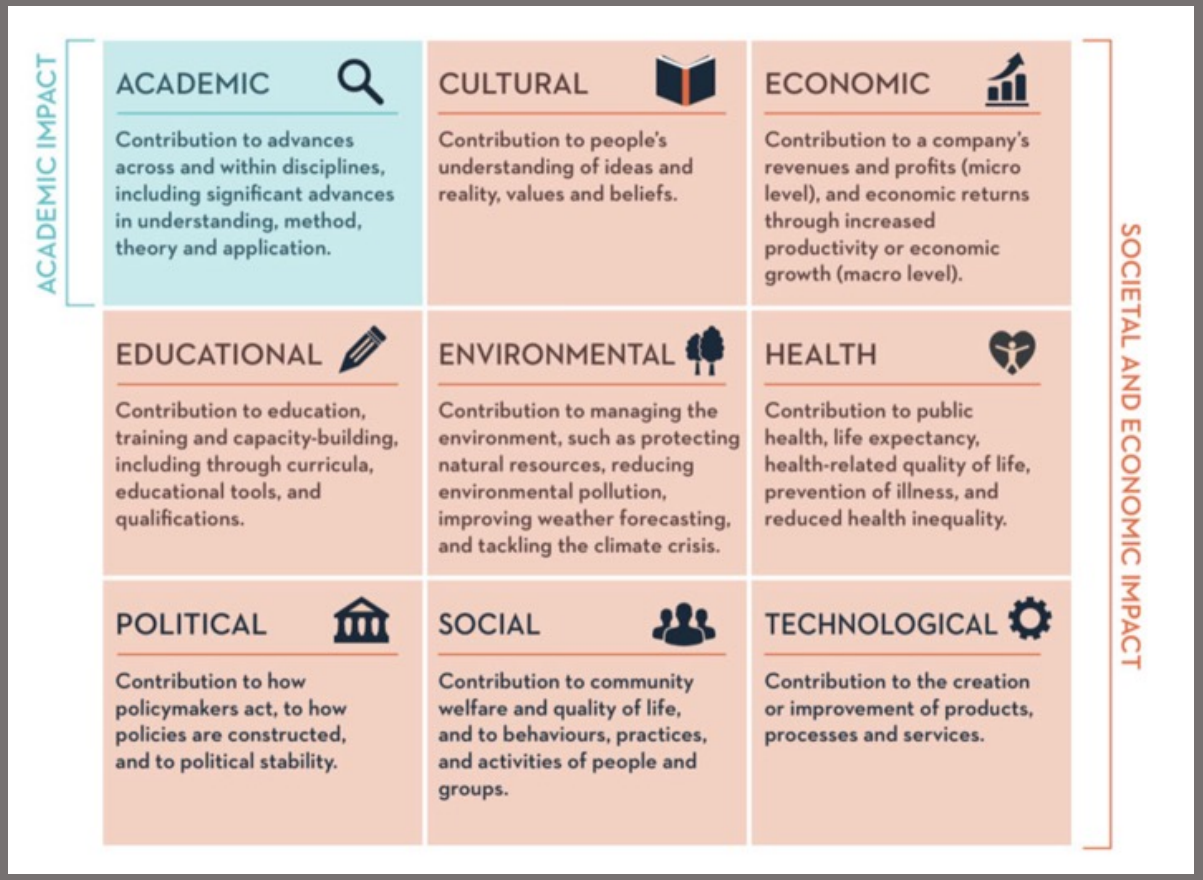
Literacies and Cultures

Science of Learning, Motivation, and Innovative Teaching Practices

Science, Mathematics, Environmental, and Sustainability Education

Student Wellness

Research Impact Toolkit



NSF's Broader Impacts Categories

	"Archived" List	America COMPETES 2010	AICA 2017	PAPPG (current)
Training Students, STEM Education, and Workforce	Advance discovery, training graduate students, mentoring postdoctoral researchers and junior faculty, involving undergraduates	Development of a globally competitive STEM workforce; improved undergraduate STEM education; improved pre-K-12 STEM education and teacher development	Developing an American STEM workforce that is globally competitive through improved pre-K-12 STEM education and teacher development, and improved undergraduate STEM education and instruction	Improved STEM education and educator development at any level; development of a diverse, globally competitive STEM workforce
Broadening Participation	Broaden participation of under-represented groups	Increased participation of women and underrepresented minorities in STEM	Expanding participation of women and individuals from underrepresented groups in STEM	Full participation of women, persons with disabilities, and underrepresented minorities in STEM
Enhanced Infrastructure and Partnerships	Enhance infrastructure for research and education	Increased partnerships between academia and industry	Enhancing partnerships between academia and industry in the U.S.	Enhanced infrastructure for research and education; increased partnerships between academia, industry, and others
Knowledge Dissemination and Scientific Literacy	Broaden dissemination to enhance scientific and technological understanding	Increased public scientific literacy	Improving public scientific literacy and engagement with science and technology in the U.S.	Increased public scientific literacy and public engagement with science and technology
Societal Impact and Economic Competitiveness	Benefits to society may occur when results of research and education projects are applied	Increased national security and economic competitiveness of the U.S.	Increasing the economic competitiveness of the U.S.; advancing the health and welfare of the American public; supporting national defense	Improved well-being of individuals in society; improved national security; increased economic competitiveness of the U.S.

REF 2021 Research Excellence Framework

Summary Impact Types
Cultural
Economic
Environmental
Health
Legal
Political
Societal
Technological

UNITED NATIONS

Sustainable Development Goals

Examples of Impact Evaluation

FIRESCIENCE.GOV
Research Supporting Sound Decisions

The JFSP provides funding and science delivery for scientific studies associated with managing wildland fire, fuels, and fire-impacted ecosystems to respond to emerging needs of managers, practitioners, and policymakers from local to national levels.

CALIFORNIA

CALIFORNIA FIRE SCIENCE CONSORTIUM

In early August 2021, the Antelope Fire in the Klamath National Forest in northern California burned through two large silvicultural studies within the Goosenest Adaptive Management Area (AMA). Ecological research at the Goosenest AMA was initiated in the mid-1990s and tested different thinning treatments—big tree (emphasizing the retention of large trees), pine emphasis (favoring pines which were historically more common in a regime of relatively frequent predominantly low to moderate severity fire), pine emphasis thinning followed by two rounds of prescribed fire (in 2001 and 2010), and an untreated control. In 2001, many of the units also became part of the JFSP-funded national Fire and Fire Surrogate Study, and three prescribed fire-only units were added. More than 20 years of data had been collected in all study units when the Antelope Fire occurred. Within 2 weeks of the fire, the California Fire Science Consortium revisited the studies and discovered some key themes. While weather conditions varied considerably while the units burned, many of the untreated control units experienced a stand-replacing crown fire. On the other extreme, units that were thinned and followed up by two prescribed fires fared the best overall, averaging little tree mortality. The thin only and prescribed fire only treatments appeared somewhere in between. Thinning alone caused fire to transition from a crown fire to a surface fire in many locations but often still generated enough heat to cause substantial crown damage.

The consortium worked with the Antelope Fire Public Information Office and the Klamath National Forest to write a press release of preliminary observations with accompanying photographs, which was posted on Facebook. While the resulting ecological benefits were partially achieved through a JFSP-funded project, the consortium's collaborative outreach through social media improved the conceptual understanding for a larger audience. The Facebook post was widely shared, which got the attention of reporters and directly and indirectly resulted in substantial media attention, including news articles in the *Sacramento Bee* and *Los Angeles Times*. In addition, the consortium's previous efforts to assist media by providing more scientifically grounded interviews may have led to a socio-environmental change in the way audiences view both fuel treatments and wildfire.

The relevant societal impact categories are conceptual and socio-environmental (Table 1).

REF2014 impact case studies
Research Excellence Framework

Activating the Reminiscence Theatre Archive (ARTA)

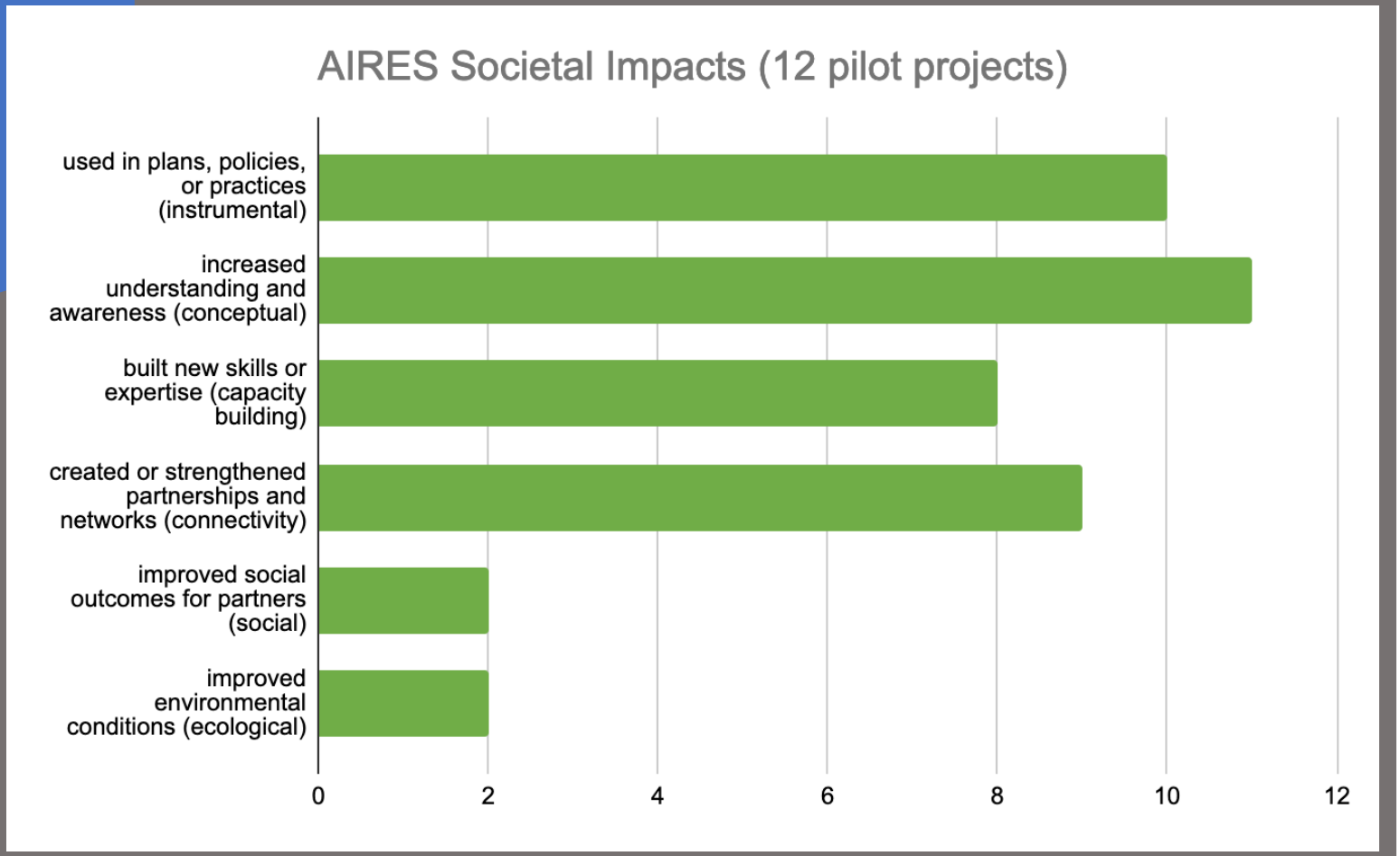
Summary of the impact
Reminiscence theatre's primary goals are to improve the well-being of senior citizens and promote intergenerational dialogue. ARTA has successfully engaged 100 marginalised older people, 13 young volunteers and over 200 others since 2012. The project has created a new model of reminiscence theatre by proving that archive material can be used instead of live interviews. It has learned the strengths and weaknesses of this approach and found creative solutions to the problems. It has also given the Reminiscence Theatre Archive a long-term `living' future. Finally ARTA has disseminated good practice internationally through a website, articles, training events and conferences.

Submitting Institution - University of Greenwich
Unit of Assessment - English Language and Literature
Summary Impact Type - Societal
Research Subject Area(s)

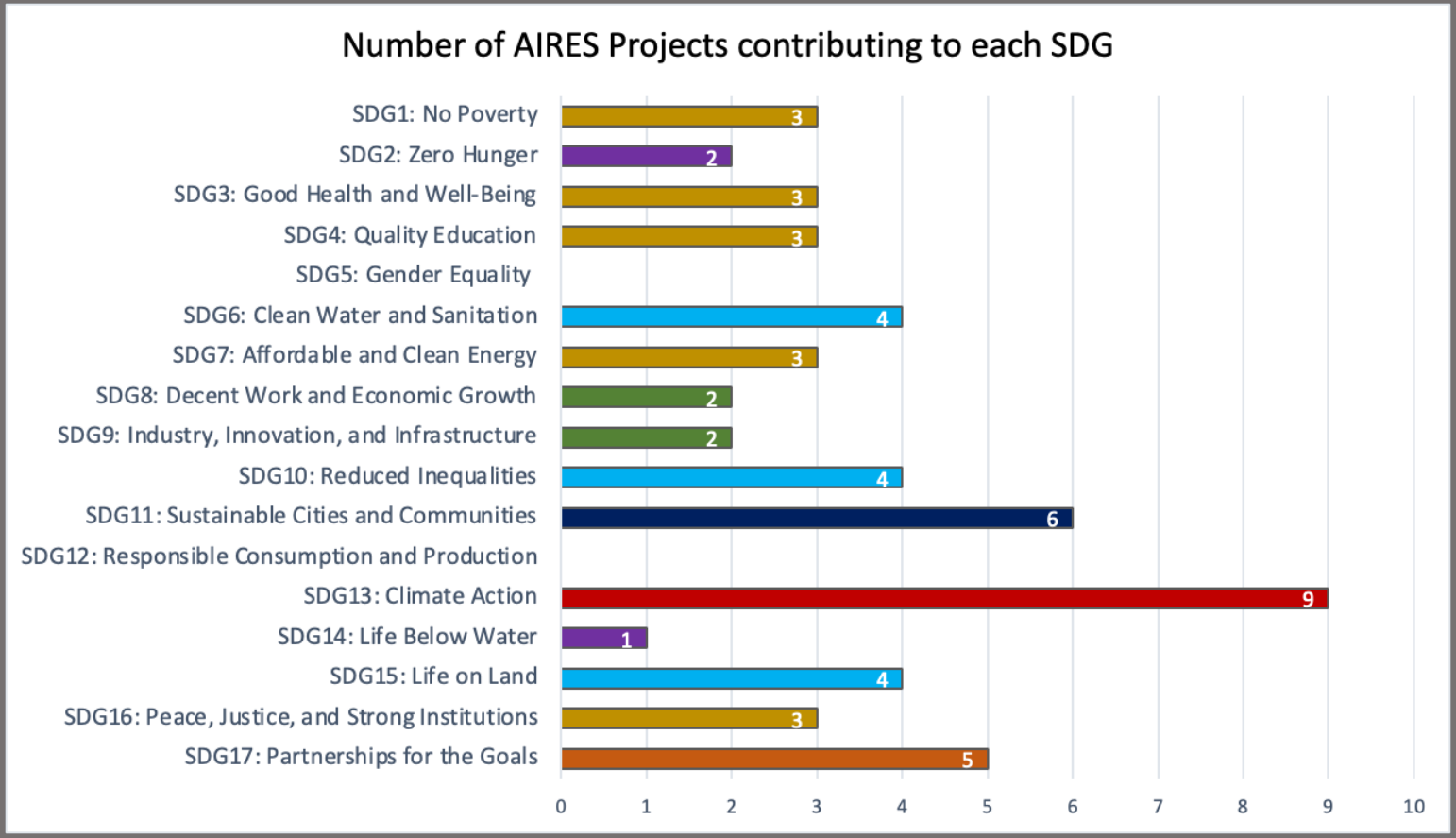
- **Studies In Creative Arts and Writing:** Performing Arts and Creative Writing
- **Language, Communication and Culture:** Cultural Studies, Literary Studies

More cases available: https://results2021.ref.ac.uk/impact#

Aggregating Impacts



Aggregating Impact Goals



Linking impact categories with an impact goal framework

	Instrumental	Conceptual	Capacity Building	Connectivity	Ecological	Social	Total
SDG1: No Poverty	3	0	2	0	0	1	6
SDG2: Zero Hunger	0	0	0	0	0	2	2
SDG3: Good Health & Well-Being	2	1	2	0	0	1	6
SDG4: Quality Education	1	2	3	2	0	0	8
SDG5: Gender Equality	0	0	0	0	0	0	0
SDG6: Clean Water and Sanitation	4	2	3	0	0	1	10
SDG7: Affordable & Clean Energy	2	2	1	0	0	1	6
SDG8: Decent Work & Economic Growth	0	0	2	0	0	0	2
SDG9: Industry, Innovation, & Infrastructure	1	1	0	0	0	1	3
SDG10: Reduced Inequalities	2	1	1	0	0	1	5
SDG11: Sustainable Cities & Communities	6	5	2	1	2	1	17
SDG12: Responsible Consumption & Production	0	0	0	0	0	0	0
SDG13: Climate Action	6	7	5	2	2	2	24
SDG14: Life Below Water	0	1	0	0	0	0	1
SDG15: Life on Land	1	4	1	1	1	0	8
SDG16: Peace, Justice, & Strong Institutions	2	1	3	2	0	1	9
SDG17: Partnerships for the Goals	0	1	0	4	0	0	5

How Impact is Measured:

- Research on SDG
- On-campus status regarding SDG
- Community engagements on SDG

THE **Impact Rankings 2022: the top 10**

2022 rank	Institution	Country/region	Score
1	Western Sydney University	Australia	99.1
2	Arizona State University (Tempe)	United States	98.5
3	Western University	Canada	97.8
=4	King Abdulaziz University	Saudi Arabia	97.5
=4	Universiti Sains Malaysia	Malaysia	97.5
6	University of Auckland	New Zealand	96.7
7	Queen's University	Canada	96.6
8	Newcastle University	United Kingdom	96.5
9	University of Manchester	United Kingdom	96.4
10	Hokkaido University	Japan	96.2

https://www.timeshighereducation.com/news/impact-rankings-2022-results-announced

Activity

- Think of a project or program you are involved in
- Which (if any) of the impact goal framework categories does it best fit?
  - Or describe your own category that is a better fit
- Problem statement: what specific problem within the larger category did your project/program seek to solve? Who is this a problem for?
- Complete the logic model
  - What activities did you do?
  - What outputs did you produce?
  - What changes occurred because of your research project (instrumental, conceptual, connectivity, capacity-building, or social/environmental impacts)?
  - What evidence you have of these changes?
  - Are there other factors that supported or inhibited your work (inputs and context)?
  - Summarize: how did this project contribute to solving the problem?

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Thank You

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https://uarizona.co1.qualtrics.com/jfe/form/SV_0wRI9RKdQgCkF1k