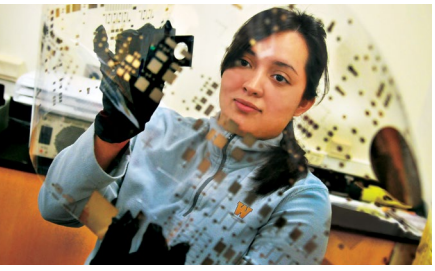
Association of Public & Land-grant Universities

PUBLIC IMPACT RESEARCH

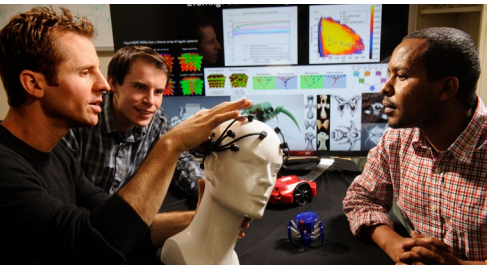
ENGAGED UNIVERSITIES MAKING THE DIFFERENCE












NOVEMBER 2019

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FRONT AND BACK COVER PHOTOS (FROM LEFT) COURTESY OF (TOP ROW) UNIVERSITY OF COLORADO BOULDER UNIVERSITY OF KANSAS; UNIVERSITY OF LOUISIANA AT LAFAYETTE; COLORADO STATE UNIVERSITY (MIDDLE ROW) WESTERN MICHIGAN UNIVERSITY; GEORGIA STATE UNIVERSITY; UNIVERSITY OF IDAHO; UNIVERSITY OF MAINE (BOTTOM ROW) UNIVERSITY OF WYOMING; UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN; UNIVERSITY AT BUFFALO; WESTERN MICHIGAN UNIVERSITY

Executive Summary

We call on our colleagues to adopt "**Public Impact Research" (PIR)** as a broad label to describe how university research improves lives and serves society—locally, regionally, nationally, and globally. Using PIR consistently along with fundamental discovery and training the next generation workforce communicates powerfully to the public the value of university research and could help restore public trust in our institutions.

University research from the arts and humanities to the social and natural sciences, has long been at the forefront of scientific, scholarly, and creative efforts in the U.S., both leading the world in fundamental discoveries and responding powerfully to essential societal needs. Research and related technology development continue to alter our lives and offer opportunities that have never been greater for societal improvement such as with smart cities, artificial intelligence, personalized medication and healthcare, and the sustainable use of the ocean for economic development. However, national and global challenges have also increased while at the same time, public trust in our academic institutions is diminishing. As we face intense health emergencies, global climate change, and the challenge of providing national and international food security, universities are working to address these challenges in partnership with a wide range of organizations.

PIR is our overarching concept for a growing number of complementary labels for research activities and engagement, including Grand Challenges, Convergence, transdisciplinary, and "HIBAR" (Highly Integrative Basic and Responsive) research, among others. Although these approaches differ in various attributes, they draw upon a deep understanding in specific areas of fundamental research to build new knowledge and engage with stakeholders to identify and address societal issues. Using PIR as an umbrella term will leverage these approaches to magnify the general public's understanding of how universities partner with others to provide value to the public on issues of real interest and impact.

Although the *idea* of PIR will be familiar to many higher education leaders and researchers (particularly to those working in extension activities), the concept has not always been voiced or promoted explicitly or in a unified manner. In these troubled and challenging times, this report seeks to provide, in a clear and streamlined way, **an explicit call to university leaders, faculty, and their partner stakeholders to act both individually, and collectively through APLU.**

Five Action Steps

1. **Adopt the overarching term "PIR"** to better demonstrate value to the public.
    - Integrate PIR into advocacy for government and private support, showing how PIR relies upon and feeds fundamental research.
    - Contribute examples of how institutions and stakeholders use PIR in their messaging.
2. **Conduct PIR more purposefully** by adopting a variety of institutional approaches.
    - Identify PIR approaches that best reflect your own institutional and stakeholder cultures.
    - Adapt lessons from the experiences of other institutions, including international collaborations addressing global challenges.

3. **Engage stakeholders** broadly and across the entire spectrum of PIR activities.
    - Before launching a PIR initiative, consider whether the program meets the test proposed by the Kellogg Commission as the benchmark for an engaged institution and develop a plan for improving your engagement practices.
    - Identify key research strengths and how they align with important issues and needs within communities, with appropriate attention to special needs of diverse populations. Universities and partners ought to work closely with communities affected by these issues.
    - Work with partners to assess the cost of engagement as part of a PIR initiative and ensure that those costs are covered by project budgets.
    - Work with partners to develop goals for PIR initiatives and determine how progress toward those goals and the project's community impact will be measured.
4. **Communicate about PIR to all stakeholders** to better convey significant public dividends.
    - Invest in communications, including human capital and dissemination tools.
    - Weave training for communication scholarship and impact to the public into the fabric of institutions.
    - Involve stakeholders (in content and, if possible, delivery) in highlighting the importance of PIR.
5. **Build specific campus and stakeholder structures and policies to encourage PIR.**
    - Build commitment among potential funders for research that addresses important social issues.
    - Continue to change the disciplinary-publication-focus of faculty advancement guidelines. Incentivize transdisciplinary research through explicit funding of cross-college/cross-unit activities; examples include seed grants and provision of funds to the VPR to support transdisciplinary faculty hiring. Develop and share guidance for evaluating the quality and impact of non-traditional forms of academic outputs and work with stakeholders through APLU.
    - APLU and its member institutions should discuss with sponsors the possibility of using PIR and its associated typology as a means to provide consistent guidelines for measurement and evaluation of broader societal impacts.

Each of the foregoing recommendations is discussed in relevant sections of this report, containing more detailed recommendations with additional material referenced in appendices available online at www.aplu.org/PIR. Through a survey of U.S. research administrators, we learned that PIR is already occurring in bold or subtle ways at most institutions but often this work has happened in response to specific, ad hoc initiatives. Our goal in issuing this report is to normalize PIR as a standard part of the university research enterprise, recognizing that this will require incremental cultural changes at many institutions. APLU intends to encourage implementation of these recommendations by universities and their partners. The association can provide considerable support by highlighting university examples of PIR, by compiling and analyzing new university policies and organizational changes that promote PIR, and by devoting meeting sessions, websites, and other communications venues to PIR. Using PIR as a common and widely understood vernacular to communicate examples of such work and showcase its impact will help strengthen and mobilize public support for research.

Section 1. Introduction: Adopt the term "Public Impact Research" (PIR) – Why?

Diverse types of research are essential to the mission and impact of public and land-grant universities. Just as teaching and research go hand in hand, fundamental and applied research function in a symbiotic way, each supporting and motivating the other. Fundamental discoveries in every field guide the way toward further basic research and inspire new ways to address societal issues through new technologies, policies, and practices. Likewise, efforts to apply research discoveries to contemporary issues routinely circle back toward fundamental research questions. The oft-stated dichotomy between "basic" and "applied" research is reductive and illusory. Frequently, the same researchers and research teams are engaged in seeking new knowledge and solving societal challenges—and in other instances, there is an explicit or indirect interaction between these twin quests. It is important to note, too, that the eventual societal impact of all forms of research may be difficult to discern or predict and could occur years after an initial discovery.

> "To him who devotes his life to science, nothing can give more happiness than increasing the number of discoveries. But his cup of joy is full when the results of his studies immediately find practical application. There are not two sciences. There is **ONLY ONE SCIENCE** and the application of science, and these two activities are linked as the fruit is to the tree."
>
> - Louis Pasteur

Institutions of higher education contribute to individuals and societies in profound ways. Public and land-grant universities, in particular, have an obligation to serve the public. Research is critical to advancing knowledge and improving society. In response to public need and the increasingly multidisciplinary nature of research, working with a variety of partners beyond the academy, many universities are currently joining, launching, or continuing research initiatives aimed at solving or mitigating local, regional, national, and/or global problems.

The Association of Public and Land-grant Universities (APLU) Public Impact Research (PIR) Initiative seeks to bring together multiple, previously non-aligned efforts—including Grand Challenges and Highly Integrative Basic and Responsive (HIBAR) Research—as a national (and potentially international) movement. With a common framework, we encourage more institutions to label and increase societally-responsive research. APLU calls for the adoption of the term "Public Impact Research," or "PIR," as an overarching concept for the many forms of research and engagement that are already underway. Using this term will help to convey how a large portion of university research, across all academic disciplines, seeks a positive societal impact.

Interest in PIR among campus and other leaders is expanding for several reasons. Most importantly, there is a need for renewed realization that our public and land-grant institutions were originally conceived and

funded for the public good, with early research activities aimed at practical improvements in agriculture and the mechanical arts. These pursuits continue across the entire array of disciplines, including the social sciences and the arts and humanities. Nevertheless, the value of public universities has been increasingly questioned by elected officials and the general public. Emphasis on PIR in university communications and strategic plans could help these constituencies better understand how research conducted at universities addresses issues of importance to various communities, including local neighborhoods, states, regions, and the whole world.

Campus leaders understand that funding agencies increasingly emphasize the public impact of research because it clearly and directly connects the investment of taxpayer dollars to public benefit. Today's student researchers and early-career scholars are drawn toward societally-relevant research and consider opportunities to work on such projects in choosing where to study. Furthermore, degree and certificate programs increasingly reflect or incorporate societal impact. From first-year undergraduates to senior faculty researchers, there is widespread recognition within the academic community that we live during a time of acute need for data-driven responses to ecological, humanitarian, medical, political, and technological challenges—and the list of challenges is ever growing.

Notable characteristics of PIR include the following:

- Broad participation and engagement, which includes external stakeholders, experts, university researchers, students, and diverse [1] members of the community—potentially including global partners.
- Creation or synthesis of new knowledge or understanding, with benefit to the public the central purpose of any PIR project —and often responding to the needs of a particular community.
- Involvement of researchers from multiple disciplines.
- Outcomes of such research may be transitioned to commercial or non-profit organizations or to communities for actual deployment in the "real world."

By the nature of its purpose and key characteristics, PIR encompasses a broad range of activities with a correspondingly wide range of attributes. Universities interested in growing this portfolio of research will need to make decisions about how they will engage with their communities (which may not necessarily be local), how they might enhance existing relationships, which campus groups might be mobilized to facilitate engagement, and how they will communicate internally and externally regarding their engagements. To help universities describe their PIR efforts, we include further discussion and a newly developed Typology for Public Impact Research in online Appendix 1. Additionally, APLU Council on Research (CoR) conducted an informal survey in spring 2019, with 70 respondents, to better understand our institutional involvement in PIR. A snapshot of the results is in online Appendix 2, with references to results throughout this document. As indicated above, many universities have extensive, impressive, and impactful traditions of engaging in PIR across the disciplines and in response to a wide range of societal challenges. The aim of the current initiative is to facilitate improvement in how universities encourage, practice and tell their stories as practitioners of PIR.

[1] PIR could benefit underserved populations and encourage many of these groups to get involved in PIR work as a future goal. The American Geophysical Union's Thriving Earth is a good example (https://thrivingearthexchange.org/)

Texas A&M Institute for Sustainable Communities

Natural and built environments, and public health are facing increasing threats: disasters, poverty, ecosystem decline, and the decreasing availability of clean water. These negative trends will likely accelerate due to climate change. Human activity is straining the planet's resources, and degrading our ability to adaptively respond to and reverse the growing threats.

By integrating research, education, and engagement to derive practical solutions, the Texas A&M Institute for Sustainable Communities is helping guide a broad range of human activities onto a path toward sustainability. Creating resilient people, communities, and ecosystems is accomplished through an understanding of the interrelatedness between human and environmental processes. Working across many disciplines, we study and create solutions for problems in ecological decline, public health, climate change, natural hazards and the location and design in urban land use and infrastructure systems.

Institute for Sustainable Communities experts work in partnership with the public, nonprofits, government agencies, and the private sector. They advise the international and national scientific organizations, the legislature of state governments, and local communities on issues related to urban growth and land use policy, water security, and housing for low-income households after disasters. Our experts are educating the next generation of leaders in science, public health, urban planning and design, resilient infrastructure systems, and environmental governance by creating a cadre of citizen-scientists in local high schools who understand their neighborhoods and help populate our Living Labs platform.

1.1. Recommendations:

Adopt the overarching term "PIR" to better demonstrate value to the public

- Integrate PIR into advocacy for government and private support, showing how PIR relies upon and feeds fundamental research.
- Contribute examples of how institutions and stakeholders use PIR in their messaging.

The APLU Council on Research (CoR), charged by Dr. Sandra A. Brown, Vice Chancellor for Research at the University of California, San Diego and CoR Chair, convened five Workgroups in 2018 and 2019 to explore the idea of PIR and provide recommendations. This effort draws heavily on an NSF sponsored HIBAR Research Alliance Initiation Workshop March 20-21, 2018 hosted by UC San Diego[2]. The contributors to the workgroups are listed in Appendix 1 of this report with additional information in online Appendix 3. The APLU Commission on Economic & Community Engagement (CECE), Council on Governmental Affairs (CGA), Council on International Initiatives (CII), and Council on Strategic Communications (CSC) also contributed to this report.

[2] Thanks to Dr. Louise Howe for her vision, support, and encouragement of this transformational effort -- NSF grant #1828988

Section 2. Conduct PIR More Purposefully by Adopting a Variety of Institutional Approaches

PIR is an umbrella concept that is **both a culture** of increasing public impact AND a **portfolio of research projects** addressing real-world problems on multiple scales. PIR interacts with the knowledge from fundamental discovery that is a core function of universities. Thus, there is no single starting point to enhancing PIR, as every institution is different and most institutions already have much of this work underway, albeit perhaps not named PIR. Indeed, two thirds of the institutions responding to our informal survey indicated they have university-wide project initiatives already in progress.

To develop and nurture the culture of PIR and to augment a portfolio of research projects will require early attention to administrative structure and support, accountability, community engagement, and communication. Centralized resources, such as communications staff, dedicated proposal development support, and the management of long-term strategic research partnerships can work across multiple PIR initiatives in a university, capitalizing on synergies across initiatives while minimizing inefficiencies and siloing. If centers/institutes (or analogous entities) are planned, early clarity on the institutional home of such organizations (e.g., within a department, college, school, campus, university) is valuable. In every case, engaging early and consistently with the deans of schools/colleges with the greatest involvement in the PIR initiative will be important to successful implementation.

There are multiple ways of establishing PIR projects. Once an institution or group of investigators has decided to undertake projects – be they large or small, success will depend in part upon a careful process aligned with the institution's strategic priorities, expertise, engagement with appropriate stakeholders, and culture. Two prominent approaches—Grand Challenges and HIBAR both are defined as PIR, yet they—exemplify different attributes in their varied framing as they share the objective of enhancing the public impact of university research.

Northern Illinois University students collect samples of local water to conduct water quality analysis.

PIR: A Broad Framework that Incorporates Both Grand Challenges and HIBAR

Scale, Scope, and Team Size. Grand Challenges are usually designed to be large in scale, ambitious in scope, and multi-disciplinary. HIBAR research projects need not be large and they do not need to span academic disciplines, although they often do. However, they must be transectoral.

Engagement of Partners and Timing. HIBAR research projects include, from their inception, at least one non-university expert on a key societal problem of interest, as a co-leader of the research. While Grand Challenge programs often benefit from collaboration with external stakeholders, there are no prescriptions requiring their inclusion or the timing of such inclusion.

Research and Problem-Solving Approaches. HIBAR research projects combine fundamental and applied research through the four following aspects of integration: (1) motivation for discovery and helping society, (2) academic research methods and creative problem solving, (3) academic researchers and non-university expert partners, and (4) tackling long-term problems and maintaining urgency. Grand Challenge programs are defined in relation to the culture, practice and priorities of the institution, ranging from significant long-term challenges to narrower challenges with shorter time horizons.

Goal Orientation. Some Grand Challenge programs are focused on ambitious and measurable goals, while others are not. Although all HIBAR research projects have the goal of helping to solve an important societal problem, given their long-time horizon, they are less likely to be defined in a simple quantitative manner.

Adapted from University-Led Grand Challenges, UCLA report on Grand Challenge Research, 2018 p. 3

2.1. Broad Approaches to PIR Project Selection

Determining the process for identifying PIR project themes is an early decision point. Considerations shaping this process include the culture of the university and the factors listed in the comparison of Grand Challenge and HIBAR frameworks. The broadest choice will be between a "top-down" approach, in which university leaders choose a theme or multiple themes, and a "bottom-up" approach, in which faculty members identify themes. The approaches are not mutually exclusive, have differing challenges and benefits, and many institutions are likely to use both.

A top-down approach may enhance the speed of selection and implementation and the coordination of communications with both internal and external audiences but may diminish faculty buy-in, investment from academic units, or the cohesiveness of the PIR leadership team. A bottom-up approach may garner faculty buy-in and a cohesive leadership team but may result in a longer process or difficulty in including faculty with

relevant expertise who did not participate in shaping the original proposal. Universities also have pursued hybrid approaches seeded by broad top-down goals but developed and then institutionally supported by faculty.

A second key decision point can be relevant to both a top-down and faculty driven PIR process: whether and how to use competitive RFPs in the internal PIR selection/implementation process. A single-phase approach is more likely to be effective when existing centers are to be the primary locus of effort or when rebranding existing efforts as PIR is the goal. A process with multiple phases or rounds can be particularly valuable when new internal funds are being directed to the PIR. Planning and selection processes can help to address opportunity costs of such direction of funds to PIR and can help secure the commitment of academic leaders whose units will be impacted by the PIR effort as well as faculty, staff, and students. Such processes are particularly useful to generate disparate research in support of a specific PIR theme and can enhance faculty buy-in as a result. As with any internal RFP process, many issues must be considered before the RFP is written. Additional attributes of this process are cited in online Appendix 4.

2.2. Recommendations for Universities and Their Partners:

- Choose your PIR approach and initiatives to reflect the culture of your institution and partnering stakeholders.
- Adapt lessons from the experiences of other institutions:
  - Consult the UCLA report on Grand Challenge Research, the APLU HIBAR resources and visit the HIBAR Research Alliance (HRA) website to gain from the experiences of other institutions.
- APLU should continue providing examples of PIR projects, including underscoring the importance of international collaborative PIR addressing global challenges.

Section 3. Engage Stakeholders Broadly and Across the Entire Spectrum of PIR Activities

PIR addresses societal challenges large and small through true university and "community" partnerships. Community engagement is a critical cornerstone of PIR; in order to understand and amplify the potential impact of PIR, it is necessary to describe what is meant by both "community" and "engagement."

3.1. Community Engagement in PIR

Within the context of PIR, a community is a group of people or organizations external to the university that is connected by a shared goal of improving the quality of life for that community or solving a problem that they share. Meanwhile, "engagement" in this context is a research-centered, reciprocal collaboration between institutions of higher education and communities to solve problems large and small and to enhance quality of life through sustained partnerships and mutual benefit.

Community engagement in PIR is not a linear process that begins with a decision to conduct PIR and then proceeds to engage with the community to identify needs. Rather, engagement in PIR is both a practice and

an institutional culture that attracts faculty, students, and administrators who are continuously engaged in the issues facing communities. They build long-term partnerships and relationships that help them to understand the complexities of the issues and an awareness of how universities might best partner with communities to increase the impact of research. This engagement, because it is reciprocal and respects the knowledge of both university and community partners, encourages diversity of thought and participants (including underserved populations) - and therefore improves the ultimate impact of the research.

In a recent report to Congress, the Committee on Equal Opportunities in Science and Engineering (CEOSE) recommended that "NSF give increased attention to including diverse community voices…through community driven projects." This is based on the following propositions: "(1) significant societal problems cannot be solved without the unfettered full inclusion of underrepresented populations; (2) full inclusion, in turn, will result in better, more innovative and transformative S&E, as well as a better, more decent and just society; and (3) developing community-based research initiatives that are carried out with community members with a focus on local scientific problems is a promising strategy to help achieve the interrelated goals of full inclusion, better S&E, and a better society."[3]

Nature and science author, Sharman Apt Russell, discusses citizen science with a group of University of Idaho students, professors, and members of the general public.

The box on the following page provides two examples; other examples, some taken from among the winners of the C. Peter Magrath & W.K. Kellogg Foundation Community Engagement Scholarship Awards, are provided online in Appendix 5.

[3] Biennial Report to Congress 2017-2018: Investing in Diverse Community Voices p.7

Long-term Reciprocal Partnerships Generate Public-Impact Research that Benefits Universities and Communities

Portland State University and the City of Portland's Bureau of Planning and Sustainability have committed to a multi-faceted partnership that engages faculty and students from a variety of disciplines in education, research, and service. The partnership supports the Bureau of Planning and Sustainability's mission to "develop creative and practical solutions that enhance Portland's livability, preserve distinctive places, and help plan for a resilient future." For more than 25 years, Portland State and Bureau of Planning and Sustainability have engaged in this reciprocal relationship.

So far, the partnership has yielded:

- Collections of longitudinal data that shape citywide waste management policy.
- Climate change research and education that informs the regions' Climate Action Plan.
- Planning and development activities that promote an "Age Friendly City" agenda.
- "Smart Cities" research and development focused on transit access and livability issues.
- Placement of Portland State capstone students and interns in support of neighborhood-level activities which enhance livability for residents.

The partnership has garnered national and international recognition and support. For example, the Bureau of Planning and Sustainability's innovative waste management practices are frequently cited as national best practices and the "Smart Cities" work has generated additional funding opportunities. Portland is a test case for how smart urban transportation systems can reduce carbon emissions and improve equity.

Every facet of the partnership supports the Portland State mission by connecting faculty and students with the larger community in engaged scholarship that leads to applied learning. The partnership also embodies Portland State's motto "Let Knowledge Serve the City" while exemplifying the unique value of a Portland State education.

3.2. Guiding Principles for Engagement

As PIR can describe a wide variety of program and project types, it is not possible to prescribe a generic developmental process for institutions. Instead, this report seeks to lay out guiding principles, highlighting tools that have been successfully used in the past and collecting examples of PIR projects. Given the diversity of PIR, these guiding principles need to be adaptable to ensure PIR can achieve a long-lasting societal impact.

This is certainly not the first-time university leaders have called upon the academy to become more engaged in their communities. In February 1999, the Kellogg Commission on the Future of State and Land-grant Universities issued 6 reports, under the title Returning to our Roots, responding to the need for higher

education reform. The commission, comprised of presidents and chancellors of 25 major public universities, called upon public and land-grant universities to become "engaged institutions." They made recommendations regarding five key strategies for becoming engaged institutions and developed a seven-part test for benchmarking an engaged institution (see online Appendix 5). Two decades later, these strategies and tests still hold true, and although many APLU members have employed these strategies and meet many of these seven tests, applying these principles to research may be, for some, an extension of their existing engagement efforts.

Many APLU member institutions are also involved in institution-wide designations such as the Carnegie Community Engagement Classification and the Innovation and Economic Prosperity (IEP) Universities designation that recognize commitment to community and economic engagement. Campuses with these designations have strong capacity for engagement and faculty and staff that can provide professional guidance to the PIR engagement process. Campuses launching PIR efforts should enlist these resources to help them develop effective engagement processes.

Guiding Principles

We can embed and adapt the Kellogg Commission's test of an engaged institution with the following guiding principles for PIR programs and projects:

1. **Leadership must embrace engagement as a critical part of PIR.** Community members will respond more positively to university efforts to engage when the value of their partnership is signaled by the president or chancellors of the university, as well as those leading the research projects.
2. **The need or challenge to be solved should be identified in true partnership** with the community. It cannot be unilaterally identified by the research institution. There are many instances where an institution, with best intentions, "identified" a problem to be solved in the community without truly understanding the needs of that community or the long-term impact that the intervention may have. This does not lead to effective or sustainable initiatives.
3. **PIR programs and projects must have relevance to the institution's mission and capabilities.** While it is true that the institution cannot, alone, define the need, it is also true that the development of a solution must build on the strengths of the institution for PIR to successfully bring university expertise to bear on communities' pressing needs.
4. **PIR program and project partners must agree on transparent, achievable, defined goals at the outset, and progress toward those goals must be measured and shared.** If all partners are not on the same page, the program is unlikely to be sustainable. These goals must be worked

MetroLab

The **MetroLab network** was formed in response to a White House conference on smart cities in 2015. It is founded on the belief that partnerships between local governments and universities are critical to effectuate that transformation of cities in meeting challenges such as transportation, energy needs and climate change. The first national meeting was held in San Diego in 2016, which led to the expansion of the network to its current state. It is currently a network of 44 cities, 6 counties, and 60 universities focused on civic innovation

MetroLab acts as a clearinghouse for university-city partnerships. The network has catalysed multiple partnerships between cities and their local universities, along with multi-city collaborations.

through with appropriate participation and a project governance structure that includes community members.

5. **PIR programs and projects must have an agreed-upon vision for long-term community impact.** As described by the examples successful engagement in PIR is based on partnerships that are sustained over a long period and track long-term results.
6. **The need for additional resources for engagement must be recognized and met.** As articulated by the Kellogg commission and emphasized by many APLU members engaged in their community, long-term sustainable partnerships require resources. And although some may fear diverting resources from other research activities, the benefits of engagement, articulated above and recognized by the Broader Impacts statements now required by federal funding agencies, justify the use of resources for engagement.

3.3. Measuring Community Engagement and Impact

As public universities, we are cognizant of the need to assess the benefits of research and to compare those benefits against the costs. Measuring engagement within the context of PIR and measuring its impact is difficult because each project has different goals and it is challenging to track the ultimate outcome or even to identify the intermediate outcomes that provide early indicators of long-term impact. Building blocks and rubrics are available—two are mentioned below, and more are provided online in Appendix 5. Although there are current efforts underway to develop common databases and measures of engagement and its impact, no existing framework adequately meets the need to measure PIR in terms of long-term impact on the community or return on investment of time and money. There is an opportunity now to build on past efforts to develop such a framework. Any such effort cannot be done unilaterally—it must include input from the community to ensure that the extent to which community's goals for engagement are met and are adequately assessed.

National Community Change Network

Communities across the U.S. struggle to bring about lasting community changes designed to address social and economic issues. Even with efforts for community visioning and strategic development, they encounter difficulties making changes to over the long term lead to better quality of life, social justice, sustainability and other goals. Northern Illinois University's Center for Governmental Studies (CGS) provided leadership to establish a group of university personnel and economic development practitioners across the U.S. to find ways to help interested community leaders make their planning efforts more effective in bringing improvements.

The Community Change Network (CCN) has for more than a decade worked with community leaders, foundations, and other groups to study best practices and improve the outcomes from foundations funding local projects designed to improve the quality of life and other goals. Currently, CGS is coordinating a national survey of community foundations to examine how they value return on investment from grants made to communities, improved ways to prepare communities to use grant funds, and best practices.

Existing Frameworks and Efforts to Measure the Impact of Engagement and Engaged Research

APLU's "New Metrics Field Guide" offers a set of potential metrics that institutions might ask to understand how their economic engagement is affecting the economies of their local communities in the following areas. The guide defines twenty metrics that span the following areas of economic impact:

- Relationships with industry.
- Developing the regional and national workforce.
- Knowledge incubation and acceleration programs.

It also points to other metrics frameworks developed by other organizations, describes logic models that can be used to assess economic impacts of specific projects, and discusses how impact metrics might be used to add value to their economic engagement activities and to communicate the value of that engagement.

The Center for Advancing the Societal Impacts of Research (ARIS) is housed at the University of Missouri and is supported by a $5.2 million grant from the National Science Foundation (NSF). The ARIS Center will work with scientists and engagement practitioners to build capacity, advance scholarship, grow partnerships and provide resources to help them engage with and demonstrate the impact of research in their communities and society.

The work of the center will be beneficial to researchers who are responsible for driving discovery, to practitioners who collaborate with researchers and community stakeholders, and to the public who benefit from research and education advancements. The ARIS Center will emphasize support for serving traditionally underserved populations while providing inclusive public engagement to ensure a diverse science workforce.

See: https://www.researchinsociety.org/

3.4. Recommendations

1. Before launching a PIR initiative, consider whether the program meets the test proposed by the Kellogg Commission as the benchmark for an engaged institution and develop a plan for improving your engagement practices.
2. Identify key research strengths and how they align with important issues and needs within communities, with appropriate attention to special needs of diverse populations. Universities and partners ought to work closely with communities affected by these issues.
3. Work with partners to assess the cost of engagement as part of a PIR initiative and ensure that those costs are covered by project budgets.
4. Work with partners to develop goals for PIR initiatives and determine how progress toward those goals and the project's community impact will be measured.

Section 4. Communicate About PIR to All Stakeholders to Better Convey Significant Public Dividends

APLU institutions that conduct research have made paradigm-changing discoveries and advances for generations. However, the story of that collective positive impact has often not been told in a way that resonates with the general public and helps people internalize the connection between support for research funding and a higher quality of life for everyone. A robust, cohesive, and—most importantly—shared communications strategy supporting PIR would not only build understanding among the general public, but would also help engage community partners, grow trust, and weave together and maintain teams capable of tackling even the most complex and intractable societal challenges. It also would help build grassroots support from the citizens whose lives we impact every day. Such a strategy does not require a new and separate communications organization. Indeed, it will achieve the greatest success through the infusion of supportive messaging and strategic efforts on PIR into the core of each institution's overall communications and marketing plans.

If each institution conducting PIR research implements a communications strategy and a shared vocabulary that embeds the concept of PIR in communications, promotions, and marketing already being done around this type of research, the collective impact will be significant and measurable. In fact, of universities with a PIR initiative on campus, 70% of respondents to the APLU PIR Survey conducted in Spring 2019 have strategic communications specifically supporting such initiatives. However, only 55% of respondents with strategic communications feel that the efforts have been successful.

Recognizing that an emphasis on PIR must not just be a portfolio of projects, but also a key element of the institutional culture, the shared strategy should focus on two key elements: dedicated resources and institution-wide training support. The effort must provide a solid foundation for both the announcement stage of the program as well as the ongoing resources and support that will ensure a lasting increase in awareness of and support for critically important PIR work. It must involve listening, learning, and adjusting as necessary to ensure that the communications efforts are effective and efficient, and it must be a key element of the broader, overall organizational plan.

Today's research questions can best be addressed by diverse research teams that transcend the boundaries of disciplines, institutions, ways of knowing, status, and culture. The scale and complexity of these teams requires collaboration and coordination, making a well-developed communications strategy that includes a PIR pillar essential to success.

4.1. The Benefits of Investing in Communications

Good communication is imperative and can make or break the success of research initiatives. However, the research enterprise often fails to adequately invest in communications staff or to appropriately support those professionals who possess the knowledge, skills, and dispositions necessary to effectively build and implement successful communication strategies. Institutional leaders must dedicate the resources necessary to plan, build, implement, measure, and continuously adapt the creative approaches that will ensure the inclusion of stories that share why PIR matters to everyone as part of the overall institutional communication strategy. These strategies cannot stand apart from other institutional communications and marketing efforts but must be woven into the very fabric of all institutional messaging. They must be directed not just externally, but should

also work to build ambassadors within the institution—among administrators, faculty, staff, and students (see online Appendix 6).

In addition to robust staffing levels dedicated to supporting communications, investments should be made in tools, technology, data, and equipment required to successfully implement communications plans that include sufficient support of and attention to PIR. The authority to lead and the resources to respond to emerging trends and drive engagement are crucial.

4.2. Communications Training

Strengthening the connection of public and land-grant institutions to the communities they serve demands innovation in communications. The current and next generation of leaders need to be empowered with sound communications knowledge, skills, and practices. Institutions are embracing pedagogical training and professional development to support improved and more equitable student learning. Similarly, communications training to support PIR must be prioritized. Faculty who are able to describe their work in terms that lay audiences can understand are able to build support among key stakeholder groups not only for their particular work but for all of higher education. Aside from preparing the next generation leaders, PIR is, by definition, the most publicly accessible work APLU institutions do. The skills to serve as ambassadors to the general public are increasingly vital for our future academic workforce in order to tackle innovation and discovery with a public impact focus. Training for graduate students, postdocs, faculty, professionals, and administrators is needed and should aim to develop competencies in three major areas: 1) Public outreach/inreach communications; 2) Communicating for engagement and partnership; and 3) Communicating within diverse and robust research teams.

Many institutions are emphasizing in their mission and value statements that public impact and engagement are a critical function of the academy. Recent initiatives in team science and convergence are elevating the value of interdisciplinary work. These efforts, along with PIR, can move the research community beyond investigator- and discipline-driven research to more meaningful public impact. This is only possible with sound and prioritized communications as foundational to PIR initiatives and with a sophisticated understanding of how to reinforce the value of PIR in every interaction with stakeholders. There is much to gain from investing in the people and tools to effectively communicate and in preparing current and future leaders to leverage all we know from communications and organizational systems research to support PIR. Success could restore public trust in academic institutions and build support for the long-term research infrastructure to collaboratively address the most intractable societal challenges of the 21st-Century and beyond.

4.3. Recommendations

1. Invest in communications—human capital and tools.
2. Weave communications training into the fabric of institutions.
3. Involve stakeholders (in content and, if possible, delivery) in highlighting the importance of PIR.

Section 5. Build Specific Campus and Stakeholder Structures and Policies to Encourage PIR

Many barriers and challenges face campuses working to enhance PIR on campus. Key among the challenges are: securing appropriate funding; recognizing the value of PIR; cultivating a culture that promotes it; and addressing the deficiency of metrics for measuring success.

5.1. Overcoming Funding Challenges

Research funding has always played an important role in spurring new research directions and new fields of study. Government agencies and foundations have often defined funding priorities or initiatives in areas where they believe profound intellectual challenges need to be addressed (e.g., dark matter) or in response to a great societal need (e.g., new energy sources). Funding opportunities will be key to the success of PIR. More than half the respondents to the APLU survey identified the lack of internal funding as a major barrier to conducting PIR. Online Appendix 7 highlights some of the agency, foundation, and institutional support available to researchers interested in conducting PIR.

PIR projects can be funded by public, corporate, and philanthropic sources, and the potential for PIR funding is growing dramatically. Cultivating this funding requires that universities communicate effectively about their contributions to addressing critical national and global challenges.

Over the past two decades, the merit review criteria used to evaluate research proposals has evolved toward favoring PIR. While "intellectual merit" will always be the primary metric for a successful proposal, there is now a greater emphasis on the potential benefits the research will have on society, or public impact. Government agencies have demonstrated considerable interest in supporting PIR through such initiatives as the National Science Foundation's "broader impacts"[4] review criterion (which dates back to 1997), and more targeted approaches such as the "Cancer Moonshot" and "Precision Medicine" initiative of the National Institutes of Health, and the Big Data projects of the National Endowment for the Humanities, among others. Likewise, private foundations are an important source of funding for use-inspired research in such fields as healthcare, poverty reduction, expanding educational opportunities, and technology innovations, to name only a few.

It is critical to recognize the essential role of university support in encouraging PIR, often in the form of seed funding. Institutional funding not only helps with the costs of launching socially-relevant research and demonstrating the capabilities of the institution, but signals much-needed acceptance, early adoption and endorsement of the validity and significance of such work to both internal and external stakeholders.

[4] See the work of the National Alliance for Broader Impacts NABI @ https://broaderimpacts.net

5.2. Broadening P&T Guidelines to Recognize the Value of PIR

The assessment of faculty members' success throughout their careers is anchored in an institution's promotion and tenure (P&T) policy and guidelines, typically via the department's disciplinary interpretation of those guidelines. While there are some exceptions, broadly speaking, P&T policy and departmental interpretations have historically reflected a narrow lens on the value of scholarly products. The most common metric is that a scholar should demonstrate the capacity to publish single-authored or lead-authored articles in a prestigious disciplinary journal. This standard is often upheld by senior faculty in the department who may have matured under a different scholarly context than is currently experienced by many early-career faculty members.

However, this approach to scholarly assessment is increasingly at odds with today's 21st century research landscape, both in terms of how scholarship is incentivized by agencies and the approaches needed to address significant, highly relevant and often times high profile interdisciplinary questions and societal challenges. In particular, many research sponsors prioritize interdisciplinary collaborations, sometimes involving cross-institutional and cross-sector partners. Sponsors ask that research programs incorporate translation of fundamental discoveries to application contexts, commercial products, or engagement with communities. In addition, sponsors and federal funding agencies often ask researchers to incorporate activities that broaden participation of underrepresented groups and encourage pre-college students to consider fields that would benefit from broader inclusion of these groups.

Finally, different forms of dissemination have become increasingly significant in order to improve transparency, rigor, and reusability (e.g., shared research data); to increase the public's understanding of complex topics and societal impacts of research discoveries (e.g., public presentations and op-eds); or to ensure that research results are made available as soon as possible (e.g., open access).

5.3. Cultivating an Institutional Culture that Promotes PIR Across All Disciplines

As stated elsewhere in this report, PIR is a mode of research and creative activity that is relevant to every academic discipline. However, it is important to emphasize that academic institutions have the potential either to encourage PIR across the disciplines or, either intentionally or inadvertently, to discourage such work in certain fields. In highlighting particular research topics and models of PIR for the purpose of motivating researchers, the aim should be to include a broad array of examples that will encourage PIR efforts encompassing the arts, humanities, social sciences, STEM, and professional disciplines such as business and law.

This approach is consistent with the aims of the ARISE II report published by the American Academies of Arts and Sciences in May 2013[5]. This report emphasized the need for research collaboration among academia, industry, and government and the need to cross disciplinary boundaries to generate more powerful research results. This type of approach to research is essential to meeting the aspirations of PIR.

[5] https://www.amacad.org/project/arise-ii-advancing-research-science-and-engineering-role-academia-industry-and-government

5.4. Recommendations

1. Build commitment among potential funders for research that addresses important social issues.
2. Continue to change the disciplinary-publication-focus of faculty advancement guidelines. Incentivize transdisciplinary research through explicit funding of cross-college/cross-unit activities; examples include seed grants and provision of funds to the VPR to support transdisciplinary faculty hiring. Develop and share guidance for evaluating the quality and impact of non-traditional forms of academic outputs and work with stakeholders through APLU.
3. APLU and its member institutions should discuss with sponsors the possibility of using PIR and its associated typology as a means to provide consistent guidelines for measurement and evaluation of broader societal impacts.

Section 6. Recommendations

We recap our guidance to help universities use the PIR rubric to clarify the importance of their research activities and public partnerships, appreciate the current and potential societal impact of university research, and tell the story of these efforts to internal and external stakeholders. As mentioned above, we face a dizzying and daunting array of local, national, and global challenges at this time in history, and at the same time, ironically, we are grappling with diminishing public trust in academic institutions. We find in the PIR initiative the potential to revive public appreciation and support for the vital contributions of academic research in confronting society's greatest concerns. Here, again are our essential recommendations.

1. **Adopt the overarching term "PIR"** to better demonstrate value of university research to the public.
    - APLU and its member institutions should integrate PIR into advocacy for government support for academic research, showing how PIR relies upon and feeds fundamental research.
    - APLU ought to compile and share examples of how institutions use PIR in their messaging on the benefits of research to their multiple stakeholders.
2. **Conduct PIR more purposefully** by adopting a variety of institutional approaches.
    - Choose your PIR approach and initiatives to reflect the culture of your institution and partnering stakeholders.
    - Adapt lessons from the experiences of other institutions:
        - Consult the UCLA report on Grand Challenge Research, the APLU HIBAR resources and visit the HIBAR Research Alliance (HRA) website to gain from the experiences of other institutions.
    - APLU should continue providing examples of PIR projects, including underscoring the importance of international collaborative PIR addressing global challenges.

3. **Engage stakeholders broadly and across the entire spectrum of PIR activities.**
    - Before launching a PIR initiative, consider whether the program meets the test proposed by the Kellogg Commission as the benchmark for an engaged institution and develop a plan for improving your engagement practices.
    - Identify key research strengths and how they align with important issues and needs within communities, with appropriate attention to special needs of diverse populations. Universities and partners ought to work closely with communities affected by these issues.
    - Work with partners to assess the cost of engagement as part of a PIR initiative and ensure that those costs are covered by project budgets.
    - Work with partners to develop goals for PIR initiatives and determine how progress toward those goals and the project's community impact will be measured.
4. **Communicate about PIR to all stakeholders** to better convey significant public dividends.
    - Invest in communications—human capital and tools.
    - Weave communications training into the fabric of institutions.
    - Involve stakeholders (in content and, if possible, delivery) in highlighting the importance of PIR.
5. **Build specific campus and stakeholder structures and policies** to encourage PIR.
    - Build commitment among potential funders for research that addresses important social issues.
    - Continue to change the disciplinary-publication-focus of faculty advancement guidelines. Incentivize transdisciplinary research through explicit funding of cross-college/cross-unit activities; examples include seed grants and provision of funds to the VPR to support transdisciplinary faculty hiring. Develop and share guidance for evaluating the quality and impact of non-traditional forms of academic outputs and work with stakeholders through APLU.
    - APLU and its member institutions should discuss with sponsors the possibility of using PIR and its associated typology as a means to provide consistent guidelines for measurement and evaluation of broader societal impacts.

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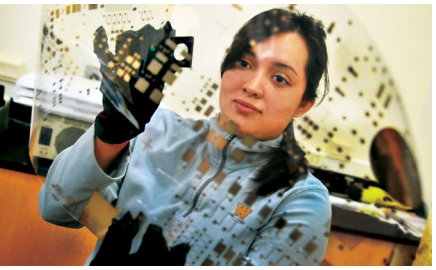



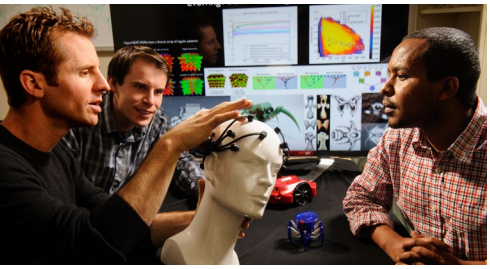


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