

## **Problem Sets: A Guide**

### ***What is a Problem Set?***

A “problem set” as defined and implemented by the Lab is a significant challenge in development for which there is not yet a viable solution that shows promise for scaling. The most significant unsolved problems in development often remain unsolved because of their complexity and the need to solve several underlying problems at once. Typically these are longstanding problems for which traditional methods have resulted in incremental progress, but have fallen short in identifying scalable solutions for the problem as a whole. The aim of the Lab’s engagement on a problem set is to address a significant barrier in solving the problem and to explore or identify, and test the efficacy of, solutions that can then be taken to scale.

### ***Defining characteristics of a problem set***

Our engagement on any specific problem set must:

- **Be evidence-based**  
Activities undertaken as part of the Lab’s work on a problem set will be selected on the basis of a reliable evidence base that shows the necessity of the work being undertaken and that can guide the decisions that must be made in implementation. Where that evidence base is incomplete, the first aim will be to fill the gap in understanding.
- **Engage non-USAID partners**  
Addressing interdisciplinary problems in development that span sectors and geographies will require bringing a wide-range of different viewpoints, expertise, and financing options to the table. Leveraging external resources will maximize the value we receive from our own resources and will bring attention to the problem from others who may not be formally engaged (or even traditionally thought of as part of the development community) but whose expertise could be catalytic.
- **Tackle the biggest problems**  
These are problems that, if solved, would have a substantial impact on development, positively impacting tens of millions of lives.
- **Apply a cross-sectoral approach**  
The Lab’s expertise in science, technology, innovation, and partnerships will be most uniquely impactful when applied to problems that draw on the broad-base of technical expertise present within the Agency, while leaning heavily on ‘sector-agnostic’ approaches to developing and sourcing solutions.

### ***How will the Lab approach the problem sets?***

There are five stages, through which a problem set will evolve, from beginning to end:

#### **1) Sourcing and Filtering**

The goal of this stage is to identify significant development challenges that would be suitable for the Lab to take on as priority efforts. Key to identifying the best opportunities for development impact will be casting a wide net and bringing in voices from a range of partners, including USAID’s Washington-based staff and leadership, USAID Missions, the Lab’s cornerstone partners, other development agencies and foundations, academia, and USAID’s beneficiaries. Using clear criteria developed by the Lab, an initial pool of candidate problem sets will be identified.

## 2) **Assessing**

For each problem on the Lab's short list of candidates, an initial landscaping analysis will be conducted, focusing on existing work in the space, potential impact of a successful approach, feasibility, required time horizons, and required investment. Working with relevant stakeholders, each candidate problem statement will be refined to incorporate learnings from this process and maximize the potential return on investment of engaging on that problem.

## 3) **Selecting**

From the findings of the "Define" stage, Lab leadership, in consultation with Agency leadership, will select the final problem sets, taking into account budget and staffing constraints, recommendations from a technical review board (led by LAB/DAR) regarding feasibility and potential impact, and internal and external support.

## 4) **Defining**

After a problem set has been selected, deeper analysis that goes beyond the initial landscape and barrier analyses will be needed, and will feed into the final definition of the problem set so that it is defined in a way that maximizes the likelihood of substantial development impacts within a time frame that is acceptable to USAID, its partners, and its constituencies.

## 5) **Implementation**

After identifying the key barriers associated with a particular problem set (e.g. research, technology development, adoption, or education), an implementation framework will be crafted that matches those needs to features (e.g., audience reached and resources used) of new or existing tools (e.g., prizes, Grand Challenges, DIV). The partnership needs associated with that implementation framework will determine where partners can best engage to 1) further define and develop the problem set itself (definition, entry points, etc.), 2) develop a strategic plan (how to source solutions, stimulate research, etc.), and 3) execute that strategic plan (mobilizing funds and/or cross-cutting teams).

## 6) **Evaluation (throughout process)**

Collection, analysis, and dissemination of results will be a key part of achieving impact. These will be conducted on an ongoing basis during the implementation phase and immediately following, both to assess the results of our investments in a problem set and to inform decisions on what products are promising candidates for scaling.

### ***How do we know when we're done?***

The Lab's engagement on a problem set reaches its end point when a clear, justifiable 'off-ramp' exists for the problem set. We envision this happening in one of two ways, both of which will rely heavily on an evaluative framework put forward by the Lab's Office of Evaluation and Impact Assessment:

- 1) **We have delivered one or more evidence-backed Solutions to the beginning of the global scaling pathway.** This can be a scaling pathway either through the Lab's Center for Global Solutions<sup>1</sup> or through a non-Lab entity or organization that has made a commitment to take the solution forward to global scale;

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<sup>1</sup> Before any potential solution could be handed to another party to take forward, there will need to be a significant evidence base for efficacy levels and returns on investment that suggests that wide-scale deployment is desirable. For potential solutions that address the central challenge of the problem set and may have potential to scale, the Lab's scaling team, OEIA and its Impact and Scaling Review panel would be called upon to make a final recommendation of whether the Lab should continue to invest resources in those solutions.

- 2) **We have filled a major gap in the available evidence**, such that programming decisions (including both those made by USAID and by others in the development community) and approaches to innovation will rely on the evidence produced by the Lab and its partners.

Independent of the conditions spelled out above, relevant knowledge produced via work on the problem set, including the evidence base used for our decisions and any innovations developed, should be spun out to any relevant communities of practice. This will increase the impact of our own work by helping to inform the decisions that are made by others in the field.

### **Problem Sets: An Internal Lab Guide**

#### ***Role of problem sets in achieving the Lab's mission***

The Lab aims to fill the high-risk/high-reward gap in USAID's portfolio through a global platform that will discover, test, and transition solutions to global scale. At its core, the Lab aims to be

- Long-term and future-oriented, i.e. addressing the most significant development challenges of the next fifty years (e.g. the Presidential priorities of climate change and food insecurity as well as other concerns such as urbanization);
- Interdisciplinary and systemic in nature, cutting across sectoral boundaries;
- Aligned to USAID's mission and strategic priorities, as articulated by core policies (e.g. USAID Policy Framework, sectoral strategies and policies);
- Large-scale and/or transnational in scope; and,
- The leader among international development agencies in science, technology, innovation, and partnerships.

The Lab's approach starts with identifying specific development challenges – or “problem sets” – that science, technology, innovation and partnership can play a powerful and catalytic role in solving. These problem sets will be core to the Lab's strategy and will provide clarity of focus to its research agenda, investments, and selection of partners.

#### ***Mobilizing Problem Sets in the Lab – Issues for consideration***

How we mobilize the Lab's resources to support a problem set will depend in large part on the nature of the problem being addressed (e.g. solid existing research base points to more of an innovation-focused problem set, whereas a largely unexplored focus area would lend itself to a more research-heavy space). In order to operationalize this model, we must first have answers to some of the key questions regarding the nature of the problem set and its landscape. What is the existing research base that supports our decision making? What solutions have already been identified and implemented, and what have we learned from those experiences? What trends will be shaping this problem in coming decades? Depending on the answers to those questions, and the gaps highlighted in the absence of clear answers, the method of addressing a problem -- and the goals a problem set team will ultimately be aiming to achieve -- will emerge and shape the means of implementation.

If the nature of the problem is such that there are outstanding research questions that have stymied the development and academic communities, we would first want to turn to the Lab's research-enabling resources, namely HESN, PEER and the RI Fellows, to identify existing networks

and expertise that can be drawn upon, as well as potential programs for future buy-in to directly support the problem set's goals.

For a problem which is more mature in the research space but lacking in innovative or cost-effective solutions that address the underlying causes of the problem, it will be necessary to lean on the Lab's Center for Development Innovations, potentially incorporating Prizes, Grand Challenges, LAUNCH, or DIV, both to source innovative solutions, but also to develop evaluative criteria for the sustainable scalability of output solutions.

The scope and impact of the problem set, and the nature of the community of stakeholders impacted by a problem (and its potential elimination), will to some extent dictate the degree to which external partners are brought into the conversation, and the point in time at which such a conversation is initiated. Several factors will contribute to deciding both the degree of engagement with external partners, the nature of partnership, and the timeline for initiation of partnership. One strong benefit of the cornerstone partner model is the availability of expertise from non-traditional development sources, which can be useful in developing the problem definition as well as understanding opportune points of entry from different perspectives. On the other hand, partnership with a more traditional type of engagement (for USAID -- e.g. PPP, GDAs) can unlock critical types of funding to support problem set investigation and solving, and the initiation of these partnerships should be far more grounded in a well-developed, watertight plan rather than through co-ideation and co-development (the cornerstone partner model). A thorough understanding of the nature of the problem set, and the partnership needs associated with that nature, should inform a strategic engagement plan that spells out at what point partners should enter into the 1) development of a problem set (definition, entry points, etc.), 2) development of a strategic plan around a problem set (how to source solutions, stimulate research, etc.), and 3) execution of a strategic plan around a problem set (mobilizing funds and/or cross-cutting teams).

### ***Stage 1: Sourcing and Filtering***

#### Selection process

The goal of this stage is to identify significant development challenges that would be suitable for the Lab to take on as priority efforts. Key to identifying the best opportunities for development impact will be casting a wide net and bringing in voices from a range of partners, including USAID's Washington-based staff and leadership, USAID missions, the Lab's cornerstone partners, other development agencies and foundations, academia, and USAID's beneficiaries.

Though the Urban Sanitation problem set is now underway, the next problem sets identified will be the first ones that allow us to pilot a new process for sourcing problem sets. **Though in the future problem sets will be sourced by drawing upon the full set of potential partners, this next group of problem sets will draw from a more limited group of those with whom we already have partnerships, which will allow us to better control communication and expectations while we develop these processes.** In particular, the next set of ideas should emerge from input from USAID staff and leadership (including our overseas missions), the Lab's cornerstone partners, and our partners in academia, specifically those connected to the Lab through the HESN and PEER programs.

Keys to success will be very clear criteria for what we are looking for at this initial stage (though these criteria should be less extensive than will be used for final evaluation), and clear communication about both the process and the goal for those partners from whom we solicit input.

*Cornerstone Partners*—Initial input will be solicited through a poll sent to partners, with one-on-one conversations to refine problem statements where necessary. Resources required: ~2 months to solicit and organize input. No budget required, but time will be required from the Lab lead POCs for each cornerstone partner (~0.2 FTE).

*Academia*—Initially, ideas will be solicited through a contest mechanism run by UC-Berkeley, focusing on the PEER and HESN networks. Because students as well as faculty can submit ideas, there is potential for a large number of submissions, which will require a well-defined judging process, significant resources to manage that process, and significant outreach will be required as well. **In order to expand input for future calls, a similar contest mechanism should be used in the future that would allow broader outreach to universities beyond our PEER and HESN networks.** Resources required: Budget of ~\$100K, plus ~0.2 FTE for three months.

*Missions*—Ideas could be solicited either through a separate poll or (recommended) we could leverage the contest mechanism and platform used to reach out to academic partners. Assessment of submissions from missions would need to be handled separately, and judging would be done by Lab staff. Additional resources required: ~0.3 FTE for ~4 weeks.

*USAID/W*—Communication from Lab leadership to senior bureau leadership, who would have the opportunity to solicit and forward ideas from their own staff. Resources required: Targeted meetings between Lab leadership and bureau leadership.

From the initial input from academia, USAID, and cornerstone partners, a short list of up to four high-potential problems will be identified by LAB/DAR in two stages using specific criteria and with input from the rest of the Lab in the second stage (this second stage being similar to the process used to identify the pilot problem sets). Resources required: ~1 month, 1 FTE.

#### Broader crowdsourcing for future problem sets

Recognizing that great ideas and great insights can come from anywhere, the Lab should cast as broad a net as possible in sourcing ideas for the problem sets it takes on. The first problem sets (urban sanitation and intractable undernutrition) were identified by canvassing USAID operating units, particularly senior leadership, for their best ideas. As described above, the next problem set identified will broaden the set of stakeholders from which ideas are drawn by reaching out not only to USAID/Washington operating units, but also to USAID missions, the Lab's cornerstone partners, and members of the PEER and HESN academic communities. While this represents a substantial expansion of those whom we will reach out to, it also will build on the existing processes in a manageable way, focusing on those with whom we have existing relationships. For future problem sets, additional mechanisms will be deployed to ensure that a much larger cross-section of stakeholders have the opportunity to submit ideas based on their experiences. Mechanisms such as prize competitions open to the public and targeted outreach to community discussion boards, Innocentive, Big Ideas at Berkeley, and small grants to develop the evidence base for certain ideas could be used. Key to this will be specifying criteria for their evaluation, building other "customers" for these ideas, and being open about the purpose of such engagement.

## ***Stage 2: Defining***

For each problem on a short list, an initial landscaping analysis will be conducted by an external contractor, focusing on existing work in the space, potential impact of a successful approach to the problem, feasibility, required time horizons, and required investment. During this process, each candidate problem statement will be refined to maximize the potential return on investment of engaging on that problem, and keeping in mind the final selection criteria that will be applied.

This stage will also require close coordination with any partner who will play a significant role in the implementation stage to ensure that they are comfortable with the problem as it is being defined and that there is a clear role for them that is consistent with the problem definition.

Products from this stage could be passed to relevant bureaus and interested outside organizations, particularly for those problem sets not ultimately selected.

Resources required: ~2 months and ~\$50K per “deep dive” conducted by an outside contractor. 0.25 FTE during this period to ensure adequate communication with the contractor and potential partners.

## ***Stage 3: Selection***

Lab leadership, in consultation with Lab and Agency technical staff and Agency leadership, will select the final problem sets, taking into account budget and staffing constraints, recommendations from a technical review board (led by LAB/DAR) regarding feasibility and potential impact, and internal and external support.

### Criteria for final selection

*Evidence for scale & impact.* This criterion will reflect the number of beneficiaries any potential solution might impact, the impact it would have on their lives, and the feasibility of achieving such impact. Does the proposed problem address the most significant development challenges of the next fifty years? Problem sets will be selected to focus on well-defined, data-driven problems where there is both clear evidence of a need and well-established research that will allow us to apply a strong evidence base in defining and developing approaches.

*Value-add of the Lab.* To align with core competencies and technical expertise of the Lab, problems must include a significant science, technology, innovation, or partnership component. Work that is cross-cutting, spanning multiple units in the Agency, and that would benefit from the Lab’s ability to play a convening role, are most appropriate for the Lab to take on.

*Alignment with available resources.* Existing relevant tools and programs within the Lab or Agency, as well as current expertise of Lab staff will be considered. Where there is no current expertise in house, the Lab will seek to second staff from elsewhere in the Agency or where necessary, externally. Partners (corporate and academic, as well as Missions and other communities of solvers) who can provide strong collaboration and expertise not present in USAID will be considered here.

*Likelihood of success.* An important factor in selection will be the time frame required to deliver visible results, in the short-term (6-12 months), medium-term (12-24 months), and long-term (beyond two years). Additionally, estimates of the human and financial resources required, and our confidence in those time and resource estimates, will be taken into account.

#### ***Stage 4: Further definition and implementation***

After a problem set has been selected (with approval from Lab and Agency leadership), deeper analysis that goes beyond the initial landscape and barrier analyses will be needed, and will feed into the final definition of the problem set so that it is defined in a way that maximizes the likelihood of substantial development impacts within a time frame that is acceptable to USAID and its constituencies. Example areas that would be part of such an analysis include identifying why certain solutions have worked or failed, where (geographically or sectorally) they have been, and identifying the first steps for possible “global scaling pathways”—logical next places to try programs that have worked elsewhere. An aspect of this is to examine not only where specific solutions have worked or failed, but where scaling has worked or failed.

Ongoing work on the Urban Sanitation problem set will inform the basic framework for implementation of future problem sets. Key steps will be 1) to identify budget, likely partners, and required time line; 2) to staff the team, including technical and management positions; and 3) to identify and/or build the tools that will be most effective in addressing the key barriers to progress on the selected issue.

Experience from the Urban Sanitation and subsequent problem sets will enable us to develop a framework that will allow us to examine the needs of a particular problem set.

As we move from piloting problem sets to having gained experience, we will be able to design a framework that will allow us to identify the key barriers associated with a particular problem set (e.g. research, technology development, adoption, donor coordination, or education) and to match those needs to the features of existing tools (e.g. prizes, Grand Challenges, DIV) such as the audience reached and resources used (e.g. the research community reached through PEER and HESN would be particularly valuable for problem sets with unresolved research questions such as Intractable Undernutrition, while individual innovators could be reached through prizes for problem sets where crowd-sourced innovations could help address key issues).

Coordination of stakeholders (including cornerstone partners, Missions, bureaus, Lab leadership, technical teams, rest of Lab, rest of Agency, and the public) will be a key challenge. Missions will be particularly important, as they should serve both as implementing partners and as key beneficiaries of our work on problem sets.

#### ***Example outputs***

- **Solutions.** Interventions identified with substantial evidence to support the case for efficacy and cost-effective enough to warrant scaling. Scaling of these solutions could be passed on to other parts of the Lab or to other stakeholders such as the World Bank or DFID.
- **New community of practice** formed around the central challenge of the problem set. This could draw from existing communities of practice around related challenges or around different pieces of the problem set, or could engage entirely new stakeholders in discussions of research, best practices, and ongoing work, or in pledges to action.

- **Consortium of major stakeholder organizations** that are making shared commitments to address various aspects of the problem set.
- **A “road map” for implementation**—a clearly spelled out, evidence-based plan for developing and/or scaling solutions to the problem that would draw upon the capabilities of USAID and other development actors. A key component of this would be widespread agreement with the action plan and commitments from leading stakeholders to help it move forward.
- **Research agenda**—Identification of the highest-priority unanswered questions relevant to the problem set.
- **Sharing of any evidence generated.** For example, a “big book of urban sanitation” that could include barrier analyses; landscape analyses of current stakeholders, programming, and initiatives; and results from field trials that could shape future programming.
- **Public awareness**—Through targeted communications efforts, measurable shifts in public awareness of the problem (or shifts in awareness by other key stakeholders, not necessarily the public at large) can result in greater resources being shifted towards work on the problem set.
- **Process evaluation and mapping**—identifying and developing lessons learned that will inform future problem sets efforts.

### ***Communications strategy***

The impact of the work done on problem sets will depend on getting others to take it forward, and the quality of the work done will depend on getting others to contribute. A successful communications strategy will therefore be needed for any of the Lab’s problem sets and will have three phases:

- 1) **Startup**—The purpose of this phase is to clearly communicate internally and with potential partners the definition of the problem set (understanding that it will continue to evolve during this phase), opportunities for engagement, requirements for success, and current progress and next steps. Example products for this phase include concept notes that include a clear articulation of the problem and goals of engagement, barrier and landscape analyses, and working meetings with partners and potential partners.
- 2) **Implementation**— In this phase, key goals will be to ensure all parties have an effective working relationship, products and strategies are shared quickly and effectively, and to communicate to the public and other stakeholders the central aims of our work on the problem set, for example, through evidence summits. Reaching out to external communities should enable us to convene and collect input from experts in the field and to bring additional attention to important areas in development. Example products are intermediate analyses, progress reports, and program evaluations. A web site, speaking engagements, working sessions at conferences and workshops, and white papers will also be key for engaging a broader community.
- 3) **Learning and evaluation**—The key goal of this phase (though this will also be integrated throughout implementation) is to ensure that the work performed by the Lab and its partners is disseminated widely and to maximum effect. All analyses and project evaluations should be made public and shared directly with interested stakeholders whose work has the potential to be impacted. Communication of the value of the Lab’s engagement and of those resources from external stakeholders that have the greatest potential to produce breakthroughs should be explored with the aim of securing commitments from others to build on the work done by the Lab. Speaking engagements and publications will help disseminate the Lab’s work.