EXECUTIVE SUMMARY

LAUNCH is a unique US government public-private partnership program supported by founding partners the National Aeronautics and Space Administration (NASA), the US Department of State, the United States Agency for International Development (USAID) and Nike, Inc. The program was founded in 2010 on the belief that combining US government agency networks and technical skills with a powerful “innovation accelerator and incubator” program model can successfully accelerate innovations that help solve global challenges. LAUNCH’s programmatic focus is on key human and environmental sustainability issues at the core of humanity’s largest 21st Century problems.

The LAUNCH valuation report aims to capture the impact of LAUNCH as a social entrepreneurship enterprise beyond conventional return on investment. To better understand the value impact of LAUNCH, the valuation model developed for LAUNCH explores the underlying motivations, approaches, and impact of innovation, collaboration, and sustainability – the core of LAUNCH. Using innovation, collaboration and sustainability as lenses, we assess how LAUNCH creates social capital, intellectual capital and social and environmental benefits.
The economic value of LAUNCH consists of both market and non-market values. Market values are those that involve goods commonly traded in markets (including wages, in-kind offers of goods or services, etc.). Non-market values are those values for assets that are not commonly traded in markets, such as the value of social capital and environmental benefits produced or preserved through LAUNCH activities. Collaboration value is another intangible non-market value that emerges from LAUNCH activities. Non-market values are much more difficult to measure than market values, but several common methods exist for measurement of social and environmental components of the model.
RETURN ON INVESTMENT

All market values can be placed under this category. Return on Investment (ROI) can be measured in many ways. In its simplest form, ROI represents the net gains from undertaking an investment divided by the cost of the investment. The resulting percentage is the return on investment. All costs that can be assigned a monetary value should be used in this calculation. This includes the value of the time of all participants in LAUNCH activities as well as services and technology contributed or any other in-kind contributions. Investments made in LAUNCH innovators by council members or as a direct result from the Accelerator process are also included in the ROI calculation.

SOCIAL CAPITAL

Social capital is a measure of the social value of an activity. Social capital can be defined and quantified in a number of ways, but no standards exist and experts disagree over how to assign economic value, if at all. Social capital may be widely defined as the stock of social ties, reciprocity norms and networks that may be drawn upon to solve problems. LAUNCH creates, brokers, and shares social capital in the process of designing a collaborative environment to embrace and nurture LAUNCH innovation space.
INTELLECTUAL CAPITAL

Intellectual capital consists of the knowledge and knowing capability of individuals or a social group. Intellectual capital is described in the management literature as the central dimension of competitive advantage and not simply another resource, but the only meaningful resource a firm possesses. Knowledge and knowing are difficult to appropriate or replicate, rendering strong intellectual capital a rare and extremely valuable resource.

ENVIRONMENTAL AND SOCIAL IMPACT

Environmental impact values include any non-market value for environmental goods and services that are created, preserved, or saved through LAUNCH activities. Examples of environmental goods and services include climate regulation, waste treatment, genetic diversity and wildlife. Some environmental values can also overlap with social impacts in areas of recreation (such as the non-market value of hiking trails) and cultural values (for example, the non-market value of Yellowstone National Park). Social impact is also distinct from social capital; for example, improvements in healthcare access have social impact through improvements in human health and quality of life, which are not directly reflected in the social capital measurements described above. Non-market environmental values can be measured through a variety of techniques. The LAUNCH team explored four of these before settling on the benefit transfer method described in the report.
Collaboration refers to the act of shared creation or discovery by individuals, groups or organizations; it involves the systematic creation of new value in the pursuit of a common goal. In recent years, significant attention has been paid to the development of more effective collaboration among diverse individuals or entities within organizations. Collaboration under LAUNCH focuses on creating public or social value, rather than private profit. While in most cases the purpose of collaboration within and between organizations is to yield direct organizational benefits, in the case of LAUNCH, organizations and those individuals who choose to collaborate do so not only for direct organizational benefits, but for broader social good. LAUNCH provides a platform through which thought leaders and leading organizations can learn about and contribute to the acceleration of sustainability innovations from around the globe, inspiring organizational innovation. From new product concepts to the impact rotation process, from the non-competitive nature of the innovators to the overall culture of LAUNCH, participants return to their organizations to implement new ways of doing things.
The value generated by LAUNCH from its inception has been significant. Results of the impact include:

**RETURN ON INVESTMENT**
- This exceeds a 2x1 return on investment per cycle, applied to all the partners equally in an 8x2 return
- Leveraged capital- 40x1
- Cost efficiency (value comparison)- >500x1

**SOCIAL CAPITAL**
- 100% of Resource Partners say value derived from LAUNCH is networking, new connections, strong relationships, involvement in a visionary group
- 77% of Innovators say “major contributions of LAUNCH is a result of connections, exposure, relationships
- 70% of Beyond Waste Forum participants included references to social capital outcomes such as trust in the motives of council members, strong collaboration and support generated
- LAUNCH participants added on average 4 significant connections to their network as a result of the Forum.

**INTELLECTUAL CAPITAL**
- 1000 + global thought leaders and innovators have a deeper understanding of global challenges and potential solutions that will transform these systems

**SOCIAL AND ENVIRONMENTAL IMPACT**
- 4.4 million people have access to clean water
- 130 million gallons of water conserved
- 200 fruit trees grown in the desert
- 2000 asthma patients reached
- 100,000 new healthcare patients in Bangladesh, Nepal, India
- Energy efficient cook stoves in 853 schools and 20,000 homes
- 3,000 people have access to energy
- 5050 MtCO2e offset/yr

**COLLABORATION IMPACT**
- Innovators indicate strong impact of collaboration with government and industry leaders on the social and environmental impact of their innovations
The LAUNCH valuation report aims to capture the impact of LAUNCH as a social entrepreneurship enterprise beyond traditional return on investment.
LAUNCH is a unique US Government and public-private partnership program supported by founding partners the National Aeronautics and Space Administration (NASA), the US Department of State, the United States Agency for International Development (USAID), and Nike, Inc. The program was founded in 2010 on the belief that combining US government agency networks and technical skills with a powerful “innovation accelerator and incubator” program model can successfully accelerate innovations that help solve global challenges.

LAUNCH’s programmatic focus is on key human and environmental sustainability issues at the core of humanity’s largest 21st Century problems. NASA originally envisioned LAUNCH as a series of sustainability forums to select innovations poised to solve intractable global problems that mirror the resource constraints faced by humans living onboard the International Space Station – water, energy, health and waste. LAUNCH partners expanded the focus from yearly topic-based challenges to a multi-year systems transformation approach. The idea is simple: human potential is maximized by transforming existing human systems into ones that are more sustainable, accessible, and empowering.

The implementation, however, is daunting. For 2013 through 2020, LAUNCH is seeking innovations in materials and the “making” of things – to ensure equitable access to healthy ecosystems and resources for all global citizens. Nike provided critical leadership and insight into the system mapping process for the sectors that influence the materials supply chain.
LAUNCH in its essence is a social entrepreneurship enterprise that breaks new ground with public-private partnerships to bring about shared value outcomes by advancing innovative solutions to sustainability challenges around the world. Shared value concepts bring business, nonprofit, and government to the table in the common application of value principles, a process which generates social capital. Like other forms of capital, social capital is an asset that we can attempt to measure. Unlike conventional forms of capital, social capital is not diminished, but rather augmented with use. Social capital is unique, because its value comes from relationships between individuals and organizations. By building social capital, LAUNCH enables the advancement of collaboration in service to shared value in the space of human and environmental sustainability.
MODEL BACKGROUND

Just as LAUNCH is breaking new ground, so is the valuation model for this novel form of collaboration. To better understand the value impact of LAUNCH, the valuation model explores the underlying motivations, approaches, and impact of innovation, collaboration, and sustainability – the core of LAUNCH. Using innovation, collaboration and sustainability as lenses, we assess how LAUNCH creates social capital, intellectual capital and social and environmental benefits.

Most often, program or relationship effectiveness is assessed using quantifiable outcomes, such as the total number of applications, innovations selected, brokered deals or patents filed. In the academic literature, collaboration effectiveness has been measured by governance, administration, organizational autonomy, mutual-
The economic value of LAUNCH consists of both market and non-market values. Market values are those that involve goods commonly traded in markets (including wages, in-kind offers of goods or services, etc.). Non-market values are those values for assets that are not commonly traded in markets, such as the value of social capital and environmental benefits produced or preserved through LAUNCH activities. Collaboration value is another intangible non-market value that emerges from LAUNCH activities. Non-market values are much more difficult to measure than market values, but several common methods exist for measurement of social and environmental components of the model.
To get inspiration and come up with strategies for some of the biggest issues facing mankind: growing population, climate change, water, disease.
The LAUNCH contributors are the key actors in the valuation model. These individuals and organizations contribute tangible inputs that generate intangible values such as trust. They benefit directly from LAUNCH social capital, which is created collaboratively within the LAUNCH ecosystem. LAUNCH contributors represent a range of engagement from one-time or occasional participant to committed capacity partner to featured innovator. A description of the various ways in which LAUNCH contributors participate is listed below. The values derived by each actor are illustrated below. A description of the various ways in which LAUNCH contributors participate follows.

### CONTRIBUTORS

<table>
<thead>
<tr>
<th></th>
<th>ROI</th>
<th>SOCIAL CAPITAL</th>
<th>ENVIRONMENTAL &amp; SOCIAL IMPACT</th>
<th>Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARTNERS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>RESOURCE PARTNERS</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>INNOVATORS</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>COUNCIL MEMBERS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WORLD</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

### VALUE BENEFICIARIES

<table>
<thead>
<tr>
<th></th>
<th>MARKET VALUES</th>
<th>NON-MARKET VALUES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SOCIAL CAPITAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ENVIRONMENTAL &amp; SOCIAL IMPACT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaboration</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Innovators are selected through a rigorous evaluation process. Reviewers include subject matter experts across multiple disciplines who join together with the LAUNCH team members to select ten promising innovations to disrupt the challenges identified during the Big Think.

The LAUNCH Council is the multi-disciplinary set of experts (approximately 35 people) who are convened to advise the LAUNCH innovators. Council members represent policy and research, engineering, design, financial/venture capital, communications, and international development fields from government, corporate, academic, multilateral, NGO and start-up organizations.

LAUNCH convenes a “Big Think” brainstorm and knowledge-capture session with topic experts and stakeholders. This day-long session helps the LAUNCH team define the problem-set and innovation space in a given sector. The outcome informs the LAUNCH challenge statement which is used to seek disruptive innovation solutions by the international community.

Stakeholders and experts from multidisciplinary fields convene to engage in moderated discussions around the issue problem set which is revealed as the challenge statement. These participants may choose to engage further through the Innovator Selection, Forum, or Accelerator.
ACCELERATOR

The LAUNCH team harvests the recommendations, commitments, and connections generated at each Forum and creates a custom-designed accelerator plan for each LAUNCH innovator. Many of the LAUNCH participants continue as capacity partners to help propel the innovators from discussion to results. Additional potential capacity partners are identified.

CAPACITY PARTNERS

Organizations and individuals who accompany the LAUNCH team and contribute to more than one LAUNCH activity (Big Think, Summit, innovator selection, Forum, Accelerator) in the form of offering in-kind expertise for challenge statement development, pro-bono technology platform usage, innovator vetting, Forum logistics and Accelerator support.

---

LAUNCH TOUCHPOINTS

D I S C R E E T P E R C Y C L E

<table>
<thead>
<tr>
<th>SMALL THINK</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIG THINK</td>
<td>20</td>
</tr>
<tr>
<td>RESOURCE PARTNERS</td>
<td>7</td>
</tr>
<tr>
<td>INNOVATORS</td>
<td>10</td>
</tr>
<tr>
<td>INNOVATOR VETTING</td>
<td>40</td>
</tr>
<tr>
<td>COUNCIL</td>
<td>35</td>
</tr>
<tr>
<td>COUNCIL ACCELERATORS</td>
<td>20</td>
</tr>
<tr>
<td>INVESTORS</td>
<td>4</td>
</tr>
<tr>
<td>INNOVATOR APPLICANTS (in hundreds)</td>
<td>18</td>
</tr>
<tr>
<td>WEBSITE VIEWERS (in thousands)</td>
<td>26</td>
</tr>
</tbody>
</table>
Data for the model was collected through a series of surveys and interviews. The most comprehensive and useful datasets were generated on the Health, Energy and Beyond Waste topic cycles. The most useful data to assess environmental and social values are derived from the Water, Health and Energy topic cycle innovators, because they have been active in the market longest.

**BIG THINK, FORUM COUNCIL AND CAPACITY PARTNER RESPONSES**

The valuation study started in 2012 prior to the Beyond Waste cycle; therefore, survey questions and instruments were designed to be included in the process. Nine of the Beyond Waste Big Think participants responded to the valuation survey – for a 33% survey response rate. The survey conducted at the Beyond Waste Forum was completed by 38 council members and participants, which exceeded a 95% completion rate. Onsite polling was conducted at the Forum with 25% of the Council members.

Big Think participants, capacity partners and council members from Water and Health were surveyed in June 2012. Email surveys were sent to 58 people with 15% responding to the request. Of the 58 people surveyed, one-third of those participated in the LAUNCH Water Forum two years prior, which may have resulted in distorted survey responses. This fact, combined with the relatively low survey response rate prevents statistically rigorous analysis of responses.

In-depth phone interviews were conducted with capacity partners from each of the Forums. Ten interviews were conducted in total representing 50% of the capacity partners. Three organizations were capacity partners for the last three Forums.
Innovator responses were gathered as part of the Energy Accelerator exit interview process. Phone interviews were conducted with Water and Health innovators. Innovator responses for Beyond Waste are being gathered at the time of this report.
DRIVERS FOR COLLABORATION

In addition to identifying non-market value factors for LAUNCH – social and intellectual capital and environmental and collaboration value - the surveys gathered data on specific reasons why participants engaged with LAUNCH events. Surveys, in both email and interview format, solicited responses through open-ended questions. Reasons for participating are categorized below.

**SOCIAL CAPITAL**
- Relationship Strengthenener
- Networking
- Expert Access
- Contribute to Social Good
- Pro-bono Mandate

**INTELLECTUAL CAPITAL**
- Industry Capital
- Industry Trends
- Enhance Point of View
- Inform R&D
- Generate Revenues
- Acquire Technology

**SOCIAL & ENVIRONMENTAL IMPACT**
- Aligns with Org Mission / Objectives
- Business Model Knowledge

**COLLABORATION VALUE**
- Accelerate Innovation
- Increase Brand Visibility
- Enhance Brand Reputation
- Partner Association
- Employee Motivator/Retention
- Inspiration
RETURN ON INVESTMENT

All market values can be placed under this category. Return on Investment (ROI) can be measured in many ways. In its simplest form, ROI represents the net gains from undertaking an investment divided by the cost of the investment. The resulting percentage is the return on investment. All costs that can be assigned a monetary value should be used in this calculation. This includes the value of the time of all participants in LAUNCH activities as well as services and technology contributed or any other in-kind contributions. Investments made in LAUNCH innovators by council members or as a direct result from the Accelerator process are also included in the ROI calculation.

ROI figures were calculated from survey data. The LAUNCH founding partners invested approximately $500,000 per forum cycle in procurement dollars. In addition to this investment, the LAUNCH program attracted and leveraged approximately $1,004,300 in in-kind advisory and support services from participating corporations, non-profit organizations, academic institutions, and government agencies. This exceeds a 2x1 return on investment per cycle, applied to all the partners equally in an 8x2 return. This, however, is only a portion of the return on investment calculation as noted throughout the report.

Financial benefits of public-private partnerships are typically captured as reduced cost of service delivery and/or capital investments. This information is captured in detail for LAUNCH in the section on Social and Environmental Impact Value Comparison. The return on investment for creating social and environmental impact has ranged from a factor of 40x to 500x, which is a strong return for investments of this nature.
Survey respondents pointed to the brand power of NASA as the strongest lever in attracting LAUNCH contributions. Other organizations would require a larger up-front investment to garner the in-kind support enjoyed by LAUNCH. The depth of relationship among the LAUNCH team members also generated participation in LAUNCH cycles.

“We get on-the-ground exposure to ten very different dimensions of advanced thinking on a major global issue. We need to stay updated on the technical implications/enablers to grand human challenges. Nothing like LAUNCH to keep us updated. Passive uptake of information does not compare to active intake of information, where one needs to be prepared. We learn about deep issues in a way that we can’t anywhere else.”
According to one investor:

“What I have access to at LAUNCH is a highly vetted and coached group of entrepreneurs. This is invaluable. This is not my normal investment area, but because of the platform I am able to help innovators and have an impact on the world that I might not otherwise have.”

And another investor:

“We pay upwards of $500,000 for services that LAUNCH provides. And this is just for innovator vetting and expert guidance. It doesn’t include all of the networking and partnerships that stem from the event.”
LAUNCH seeks to find innovations that, when accelerated and incubated, will have transformative effects on solving global challenges. Those selected by LAUNCH are considered “impact” innovators, individuals and organizations who seek social and environmental outcomes as well as financial gain. The challenge for the LAUNCH accelerator team is designing a springboard to success for each innovator, based on their current status and the point to which the LAUNCH council members believe they can grow. Understanding, identifying and navigating the capital and impact investment requirements to create an action plan for each individual innovator is a complex endeavor.

The impact investing market itself is nascent and growing. In a survey by JP Morgan, $8B was invested in impact investments in 2012 with a compounded annual growth rate of 78%. The majority of impact investments exhibit the following characteristics (Emerson, 2011):

- They solve social and environmental challenges that government and philanthropy alone cannot solve, that is, those that need a market based-solution
- They generate financial return for investors
- Mainstream investors will not back their business models

LAUNCH innovators fit squarely within the impact investment profile.
The LAUNCH valuation survey responses indicated that rigorous LAUNCH selection and Forum preparation processes reduce the risk of investing in the chosen innovator – a significant benefit to the innovators and investors alike. LAUNCH also provides a platform to encourage investments that generate social and environmental returns.

Past LAUNCH Innovators have enjoyed approximately $40M in private capital investments directly supporting their progress through further development and/or deployment of technologies and programs aligned to social and environmental developments. This figure includes equity investments in LAUNCH innovator companies, bridge loans provided to them, Series A seed rounds of investment, and payment for the sale of worldwide licensing rights.

For detailed review of investments, read the USAID LAUNCH Impact Report.
Social capital is a measure of the social value of an activity. Social capital can be defined and quantified in a number of ways, but no standards exist and experts disagree over how to assign economic value, if at all. Social capital may be widely defined as the stock of social ties, reciprocity norms and networks that may be drawn upon to solve problems. LAUNCH creates, brokers, and shares social capital in the process of designing a collaborative environment to embrace and nurture LAUNCH innovation space. A survey of the literature reveals that social capital may be categorized into two functional types: bonding and bridging. Bonding social capital exists within close, homogenous groups or networks and is conducive to maintenance level network activities. Bridging social capital occurs as weaker ties between heterogenous groups or networks and is utilized when resources are needed for change, expansion, or collective action on a larger scale (Putnam, 2000; Lin, 2001). For our purposes, bonding social capital is stabilizing; bridging social capital is disruptive. LAUNCH activities are unique in that they intentionally create bridging social capital by using the existing social capital of its supporters to develop a new heterogenous network. Research into social networks shows that it’s often these bridging ties that are most important for diffusion of ideas and innovations. LAUNCH creates social capital where bridging ties were nonexistent and the bridging nature of this capital makes it more conducive to disruptive change in the sustainability space.
Social capital can be measured through surveys or interviews that include contingent (hypothetical) valuation which essentially asks respondents to ascribe value (in dollars) to the social capital of an activity. Subjective assessments can also measure the outcomes of social capital such as trust and increased collaboration through survey or interview. Social network analysis, a novel measurement tool, can investigate the number and/or the quality of the ties between individuals or organizations. The data for social network analysis are collected through surveys and/or interviews by asking participants about their social ties: who they know, who they talk to about LAUNCH related activities, and who they talk to for business or innovation related advice.

Social capital enhances economic outcomes by increasing business opportunities; providing informal access to resources, such as credit assistance, knowledge, business advice and information; decreasing the cost of business transactions; and reducing the need for formal, and often costly, programs of support. Scholars link social capital to the creation of intellectual capital, as discussed more fully below (Nahapiet & Ghoshal, 1998). All of these benefits of social capital, though not directly measurable economically, enhance the value of LAUNCH participation.
Our preliminary surveys and interviews indicate the following:

- LAUNCH participants added an average of 4 significant connections to their networks. Significant connection is characterized by a network contact that results in multiple follow-up conversations, collaboration on existing work of common interest, or co-creation of new initiatives.
- Of 7 innovators surveyed who participated in the Energy Accelerator program, 800-1100 direct referrals to LAUNCH were generated, with an estimated additional “1000’s plus” referred through media.
- 77% of innovators surveyed who participated in the Energy Accelerator program, reported that the major contributions of LAUNCH to enterprise success were the results of social capital, i.e. connections, exposure and relationships developed in LAUNCH forums.
- 10 of the capacity partners and council members surveyed indicated that their organizations derive value from LAUNCH in social capital currency. Respondents identified the importance of the networking, new connections, strong relationships, and involvement in a visionary group as important reasons to engage in LAUNCH activities.
- In the Beyond Waste Forum survey, 21 out of 30 responses (70%) given to the question “How does LAUNCH differ from other programs in which participants had attended,” included references to social capital outcomes such as trust in the motives of council members, strong collaboration and support generated.
- In the Beyond Waste Forum survey, of 35 descriptions given of the “best experience” of the forum, 22 (63%) cited social capital outcomes: interactions, networking, relationship-building, forming connections, etc.
INTELLECTUAL CAPITAL

Intellectual capital consists of the knowledge and knowing capability of individuals or social group (Nahapiet & Ghoshal, 1998). Intellectual capital is described in management literature as the central dimension of competitive advantage and not simply another resource, but the only meaningful resource a firm possesses (Kogut and Zander, 1992; Bontis, 1998). Knowledge and knowing are difficult to appropriate or replicate, rendering strong intellectual capital a rare and extremely valuable resource.

Collective knowledge is gained in two ways: a) learning by its members; and b) absorbing new members who bring with them new knowledge. Both methods of knowledge acquisition are fostered by the LAUNCH team. LAUNCH participants derive significant intellectual capital from access to high level technical thinking. Capacity partner interviews have indicated that LAUNCH is unique in its ability to provide multiple dimensions of advanced thinking on major global challenges. In drawing together a large number of innovators, LAUNCH gives a wide overview of the current landscape for R&D, allowing participants to “connect the dots” to a broader perspective of the work being done in the challenge areas and share these insights with colleagues.

Measurement of intellectual capital has traditionally been done via survey using Likert-type scales (see Bontis, 1998 and Bontis & Fitz-enz, 2002). Survey questions gathered data to better understand the degree to which R&D decisions of partners
and the council were informed and influenced by exposure to knowledge through the LAUNCH process, as well as how LAUNCH contributed to the public and private sector discourse surrounding each challenge area.

Responses as to the financial value of the intellectual capital gained from participating in LAUNCH varied greatly from the low end of $2,500 to the high end of $500,000. The larger the organization, the more valuable the brand, and the greater the alignment of the challenge to the organization’s core business the higher the financial value.

“We would pay $400,000 for this forum to help us inform our investments. We do pay the equivalent of that for subject matter experts to advise on potential and portfolio companies, $10,000 per year per expert. With 40 Council members that’s worth $400,000. But it’s actually worth more than that individually because we get the benefit of them all being in the room at the same time discussing topics.”

Because a large part of intellectual capital consists of tacit knowledge, it is not easily measured through archival or economic data. However, a common approach to measuring intellectual capital is by using patents, and in particular patent citations, for measuring long term impact of sequential and complementary innovations. To date, there have been no patents as a direct result of LAUNCH activities, however continued tracking of patents may be a worthwhile activity, especially given the systemic approach taken by LAUNCH for “making.”
For R&D and market intelligence we pay anywhere between $20K- $2M for access to information on innovations and start-ups for our markets. The innovator vetting was very valuable, easily worth $50K.
Environmental impact values include any non-market value for environmental goods and services that are created, preserved, or saved through LAUNCH activities. Examples of environmental goods and services include climate regulation, waste treatment, genetic diversity and wildlife. Some environmental values can also overlap with social values in areas of recreation (such as the non-market value of hiking trails) and cultural values (for example, the non-market value for Yellowstone National Park).

Non-market environmental values can be measured through a variety of techniques. The LAUNCH team explored four measurement options, the most common of which is contingent valuation. Contingent valuation data is collected via survey and would need to be conducted for each environmental value, or at least a separate contingent valuation question would need to be asked for each environmental value. The survey would also have to be administered to the population targeted to receive the environmental benefit. This effectively would mean at least one survey per innovator. Such a survey would be both costly and time consuming. LAUNCH, at this time, has selected not to conduct contingent valuation surveys. An alternative approach, benefit transfer, is a way to save both time and expense over a contingent valuation study and as such is what LAUNCH has employed.
COMPARISON OF ENVIRONMENTAL AND SOCIAL IMPACT

Through rough benefit transfer analysis the value of LAUNCH environmental and social benefits are estimated and compared to what other entities are paying to receive similar benefits. In the table below, LAUNCH innovations in the areas of water, energy and health are compared to similar activities and corresponding values calculated.

<table>
<thead>
<tr>
<th>Innovator</th>
<th>Innovator Description</th>
<th>Similar Projects</th>
<th>Value Comparison</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Water</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manna Energy</td>
<td>Provided over 4.4 million people with clean drinking water in Rwanda</td>
<td>Similar NGOs have provided water to 26,000 people for a cost of $1.4 million and well water to 3000 for $30,000 per well. (“Charity: Water Project” &amp; “The Water Project”, 2012)</td>
<td>Scaling this up, water for 4.4 million would cost $44 million.</td>
</tr>
<tr>
<td>Affordable Soil Moisture Sensors</td>
<td>Conserved 100 million gallons of water</td>
<td>A Pacific Institute study (2010) finds that the cost of water per acre-foot (325,851 gallons) is about $185 for agricultural uses or $99 for urban uses. This represents only market values. According to a UNFAO report, non-market values range from $28/gal for agricultural uses to $240/gal for urban uses. (Aylward, Seely, Hartwell, &amp; Dengel, 2010)</td>
<td>Cost savings for 100 million gallons would range from $30,382 to $56,774.</td>
</tr>
<tr>
<td>Aquavue Barnacle</td>
<td>Conserved 30 million gallons of water</td>
<td>as above</td>
<td>The savings for 30 million gallons of water would range from $9,115 to $17,032. Non-market value would range from $840 million to $7.2 billion.</td>
</tr>
<tr>
<td>Innovator</td>
<td>Innovator Description</td>
<td>Similar Projects</td>
<td>Value Comparison</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Energy</td>
<td></td>
<td></td>
<td>Time savings due to less time spent on fuel collection and cooking are valued at about $88 billion. Time savings due to adult illnesses prevented resulting from poor indoor air quality associated with efficient wood stoves is valued at about $520 million. If 50% of the population cooking with solid fuels in 2005 switch to cooking on an improved stove by 2015 = $65m in health care savings and $13,560m is the value of death averted among children and adults. (World Health Organization, 2006; Clean Cookstoves Alliance, 2011)</td>
</tr>
<tr>
<td>Turbococina</td>
<td>Energy efficient cook-stoves In 853 schools and 20,000 homes, using 96% less fuel.</td>
<td></td>
<td>The 96% reduction means only about 2 pounds of fuel per day are needed rather than 20 pounds per day.</td>
</tr>
<tr>
<td>Gram Power</td>
<td>Provided 3,000 people with access to energy in India</td>
<td></td>
<td>Energy access for 3000 people at $340 per household is a total value of $1,020,000.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The per capita investment in energy per capita in India was $0.723 USD in 2005. The Government of India has spent over 5.8 billion dollars since 2005 to connect 17 million households to the grid (about $340 per household). (Jain &amp; Srinivas, 2012; “NationMaster.com”, 2005)</td>
</tr>
<tr>
<td>Innovator</td>
<td>Innovator Description</td>
<td>Similar Projects</td>
<td>Value Comparison</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Health</td>
<td></td>
<td>Asthma cost the US about $3,300 per person with asthma each year from 2002 to 2007 in medical expenses. Additionally, on average, in 2008 children missed 4 days of school and adults missed 5 days of work because of asthma. (Asthma and Allergy Foundation of America, n.d.; CDC, 2011)</td>
<td>Taking $3,300 per year as a rough estimate, the total value of asthma resources to 2000 patients is $6,600,000.</td>
</tr>
<tr>
<td>Asthmapolis</td>
<td>Providing asthma management resources to over 2000 patients and professionals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frontline SMS</td>
<td>Providing access to medical information for over 100,000 people in Bangladesh, Nepal, and India</td>
<td>In Bangladesh, public spending on health for the period 1998–2003 averages $12 per capita. In Nepal, total expenditure on health as % of GDP (2009) was 5.8%. In India, less than 1% of India’s GDP is spent on public health, or roughly $18 million. (GIZ, n.d.; Mahmud, 2008; Azad, 1997; Ministry of Health and Population- Nepal, 2009; “Wikipedia”, 2013; Bangdiwala et al., 2011; Metcalfe, Chanani, &amp; Reinsch, 2010)</td>
<td>Taking $12 per person as a benchmark, the total value of providing public health information to 100,000 people is $1,200,000.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Collaboration refers to the act of shared creation or discovery by individuals, groups or organizations; it involves the systematic creation of new value in the pursuit of a common goal. In recent years, significant attention has been paid to the development of more effective collaboration among diverse individuals or entities within organizations. However, such intra-organizational collaboration is often encouraged merely to enable an organization to compete more effectively against other organizations for access to scarce resources, markets, profits, and so forth. Likewise, some attention has also been paid to inter-organizational collaboration, but largely for the same reasons: to enable partner organizations to compete more effectively against rivals.

LAUNCH activities take a different approach to collaboration with a focus on creating public or social value, rather than private profit. The self-interested view of collaboration is maladaptive when considering situations of high social and ecological interdependence. Under these conditions, the well-being of every individual and group is increasingly dependent on the well-being of the whole. These new conditions therefore require us to adopt a conception of social and economic relationships that views society as a complex living system, or an organic whole, rather than atomized individual actors (Karlberg, 2012). In this context, we believe that collaborative dynamics – in the organic sense of the term – will increasingly characterize market interactions, particularly those involving innovation.
Collaboration, as we are referring to it, is the least well understood of all the valuation measures in this model. A limited body of literature exists on how to quantitatively capture non-market values of collaboration. Generally, these values are captured at the “end of pipe” when products reach market, thereby absorbed into ROI calculations. However, with a public-private collaboration such as LAUNCH, we expect non-market values of collaboration to be significant.

Scholars agree that collaboration is multidimensional and thus the value of collaboration is multi-dimensional. Organizations that collaborate must experience mutually beneficial interdependencies based either on differing interests or on shared interests—usually based on homogeneity or an appreciation and passion for an issue that goes beyond an individual organization’s mission (Thomson, 2007). In the majority of cases the intended purpose of engaging in collaboration will be to yield direct organization benefits. However in the case of LAUNCH, organizations and those individuals who choose to collaborate do so not only for direct organizational benefits, but for broader social good.

Survey results captured the notion of collaborating for a broader social good in 95% of the responses. While not consistently the primary driver for collaborating with LAUNCH, the intangible benefit of contributing to a more sustainable future was widely present. Inspiration is a fundamental element of innovation driving the transformation to a more sustainable future. As stated by a capacity partner “the collective genius of LAUNCH inspires organizations to think new thoughts and for the process to also inspire others.” LAUNCH provides a platform where thought leaders and leading organizations can learn about and contribute to the acceleration of sustainability inno-
vations from around the globe, inspiring organizational innovation. From new product concepts, to the impact rotation process, from the non-competitive nature of the innovators to the overall culture of LAUNCH, participants went back to their organizations and implemented new ways of doing things. A specific collaborative behavior that was identified as a cultural attribute of LAUNCH is the use of the “yes, and” vocabulary instead of “no, but” which is commonly used when diverse stakeholders come together to solve a problem.

Specifically measuring the adoption rate of the overall LAUNCH process and elements of LAUNCH by other organizations was not feasible with this report, however it is known that initiatives have been “born at LAUNCH” and “born from LAUNCH.” Leaders from both USAID and NASA that participated in LAUNCH returned to their organizations and initiated efforts such as the USAID Grand Challenges and the NASA Human Health and Performance Center. Several participants commented on the process of LAUNCH inspiring innovations to improve organizational productivity. Yet other capacity partners highlighted LAUNCH as a way to recognize and engage employees in the innovator vetting process and forum itself that leads to employee retention. It was sighted that for participants who were newer in their career collaborating not only increased individual credibility and visibility, but also hope and inspiration for public private partnerships driving sustainability.

Through joining together in an unlikely collaboration, the founding partners demonstrate the success of a public private social entrepreneurship enterprise. With a combined annual average research and development budget for founding partners and repeat capacity partners greater than $15 billion, align-
ing these organizations on a sustainability challenge by accelerating innovators has transformative potential. The brands of NASA, USAID, the State Department have significant draw for collaborators as cited throughout survey results. Like any collaboration, the effectiveness of LAUNCH has and will continue to increase as the partners develop lofty goals that align with the mission of each organization and are conducive to a more sustainable future. Collaboration effectiveness increases as governance, administration, and norms are instituted. Measuring the effectiveness of LAUNCH as a vehicle for collaboration, will evolve as a systems approach is being applied and relationships are harmonized.

Looking more longitudinally, collaboration value might also be measured through the sequential and complementary innovations which emerge from LAUNCH activities in the medium to long term.

There are several limitations to calculating market values for LAUNCH. First, a very short time has passed for seeing real return on investment from innovators. Real financial impact may not occur for several more years. Second, innovators enter the LAUNCH Accelerator at different levels of maturity, and therefore will start producing returns at different times and rates, complicating the return on investment calculus. Third, LAUNCH lacks a mechanism to actually gather the data required for this calculus. LAUNCH does not engage with innovators in the same manner that venture capital (VC) investors would; VCs become financial partners with innovators, giving them privileged financial information. Last, as LAUNCH moves forward with a systems approach, calculating market values will
will become even more difficult when 2nd, 3rd and 4th order financial effects of LAUNCH are considered.

The calculation of non-market values faces several limitations and trade-offs not faced in relatively straightforward calculations of market values, such as ROI. A state-of-the-art valuation of environmental, social, or collaboration values would be difficult to implement, time consuming, and expensive; yet vulnerable to measurement errors and biases common to non-market valuation. The trade-off in non-market valuation is between expense (both time and money) and accuracy.

The non-market values created by the LAUNCH ecosystem are atypical with imprecise measurements – further adding to the limitations of this model. Any dollar values resulting from this model should be considered as good-faith estimates that better characterize the monetary value LAUNCH generates than conventional ROI analysis alone. The valuation of this unique enterprise will break new ground for future practitioners and researchers interested in evaluating similar collaborative efforts.

Looking specifically at calculating environmental values achieved by LAUNCH activities, the state-of-the-art valuation consists of a contingent valuation study on each environmental good or service provided by LAUNCH innovators. This type of study requires detailed knowledge of environmental benefits provided and clear identification of the populations affected by the change in environmental benefits so that a subsample of that population may be sampled. Contingent valuation studies require several months to complete – both time consuming and costly. The state-of-the-art approach is also more difficult to use predictively, as each case is normally considered ex post. The cheaper, faster but less
accurate benefit transfer method can result in large transfer errors, as described above. An advantage to benefit transfer method can be developed as a “toolkit” of values that, if developed broadly enough, can be used for future valuations, as well as for predictive models.

Relative to those of calculating environmental values, the limitations of calculating social values (via social capital) are much less severe. The primary limitation of measuring social capital is that no consensus exists on appropriate tools for measurement though social network analysis has emerged as a valid method to quantitatively measure social capital. Social network analysis measures the number and the quality of bridging and bonding the ties between individuals or organizations by asking people to recall connections made in the past, resulting in potential recall bias.

Collaboration value is conventionally measured in terms of its contribution to “end of pipe” values. Very little research has addressed how to best measure the non-market values of collaboration, particularly those associated with organizational goals towards social good. This is both a challenge and an opportunity. No validated method for calculating the value of collaboration of this type exists; therefore, the challenge lies in developing convincing methods. Our challenge is pioneering the development of a metric for determining the value of collaborative activities, like LAUNCH.
RESULTS TO DATE

RETURN ON INVESTMENT

• This exceeds a 2x1 return on investment per cycle, applied to all the partners equally in an 8x2 return.
• Leveraged capital- 40x1
• Cost efficiency (value comparison)- >500x1

SOCIAL CAPITAL

• 100% of Resource Partners say value derived from LAUNCH is networking, new connections, strong relationships, involvement in a visionary group
• 77% of Innovators say “major contributions of LAUNCH is a result of connections, exposure, relationships
• 70% of Beyond Waste Forum participants included references to social capital outcomes such as trust in the motives of council members, strong collaboration and support generated
• 63% of Beyond Waste Forum participants cited best interactions, networking, relationship building, forming connections
• LAUNCH participants added on average 4 significant connections to their network as a result of the Forum.
INTELLECTUAL CAPITAL

• 1000 + global thought leaders and innovators have a deeper understanding of global challenges and potential solutions that will transform these systems

SOCIAL AND ENVIRONMENTAL IMPACT

• 4.4 million people have access to clean water
• 130 million gallons of water conserved
• 200 fruit trees grown in the desert
• 2000 asthma patients reached
• 100,000 new healthcare patients in Bangladesh, Nepal, India
• Energy efficient cook stoves in 853 schools and 20,000 homes
• 3,000 people have access to energy
• 5050 MtCO2e offset/yr

COLLABORATION IMPACT

• Innovators indicate strong impact of collaboration with government and industry leaders on the social and environmental impact of their innovations
• Innovators also indicated that the opportunity to collaborate with government and business leaders during the LAUNCH Forum increased creativity, motivation and inspiration
CONCLUSION AND RECOMMENDATIONS

To conduct a full valuation of LAUNCH activities both market and nonmarket values must be calculated. As outlined above, calculating market values is relatively straightforward, but calculating non-market values face several limitations. Future LAUNCH cycles should incorporate valuation metrics and instruments into the cycle design process. The following paragraphs provide some recommendations on how this might be achieved.

A benefit transfer approach is recommended for the calculation of environmental values. A benefit transfer will require collecting previously researched environmental values for the environmental goods and services provided by LAUNCH innovations. Ideally, values should be determined for a wide enough variety of goods and services to develop a toolkit such that values could be drawn on and inserted into valuations of different events. This toolkit could also allow for predictive models to be developed where environmental goods and services can be anticipated.

Social value would best be measured as social capital. Surveys should be developed for LAUNCH participants in order to map social ties (both bridging and bonding, with special attention to bridging). These surveys should be implemented pre- and post-participation to avoid recall bias. Surveys should ask people to identify the people with whom they would discuss LAUNCH related activities, and who they approach for advice and support in dealing with complex problems. Surveys should also ask how frequently these discussions take place. If possible, the survey will track ties formed via third
party data, such as Linkedin or other network tools.

Collaboration value should be measured first through qualitative and contingent valuation surveys. Qualitative components of surveys can be developed surveys to ask about collaborator motivation, inspiration of innovation processes, adoption of collaborative approaches and benefits derived from the creation of social bridging capital through the collaborative platform. Contingent valuation is the most viable method for determining collaboration value. While a contingent valuation study for environmental values would most likely be prohibitively expensive and time consuming, a study of collaboration values would be much simpler. The survey population consists of LAUNCH participants, and collaboration value is much less heterogeneous than the environmental benefits derived from LAUNCH innovations. LAUNCH participants are also much more available making the valuation survey much easier to implement than it would otherwise be.

Existing surveys should be quantifiable using Likert scales, if ratio scales are not possible. Third party data should be used to validate survey responses (such as using LinkedIn for generating social network ties). Survey questions should also be phrased to address specific valuation items in the model. For example, current iterations of the survey ask, “What was the estimated dollar value of the time you invested in attending the Big Think?” Instead, the question should direct responses toward specific model components (market value in-kind contributions, or non-market collaboration values).
Survey questions should be consistent with valuation survey methods in behavioral economics and/or social psychology. Some suggestions include:

- Incorporate an information component to the surveys before the quantitative questions are asked. This is done so that respondents share a uniform vision when assigning value to non-market good or service.
- Ask quantitative questions so that the value desired is unambiguous, with a clear request for the value for water preservation, for instance, and not a market value or even another non-market value (such as recreational value).
- Ask neutral qualitative questions and avoid ‘loaded’ or leading questions.
- Incorporate ‘cheap talk.’ Cheap talk is designed to counteract the bias that occurs when people are asked to value something hypothetically.

It involves a preamble to the valuation questions, which describes the phenomenon of hypothetical bias, discusses some reasons why it may occur and it solicits responses “as if” they were binding. A sample ‘cheap talk’ script can be found in the appendix.

- Separate the quantitative surveys from more qualitative interviews. Circumstance dictates whether surveys or interviews come first. If qualitative information is needed to inform quantitative questions, the interviews should come first followed by surveys. If interviews are conducted to add richness to quantitative data, they should be conducted after the surveys in order to prevent bias in quantitative responses.
REFERENCES

Granovetter, M. “The Strength of Weak Ties.” American Journal of Sociology. 73.6 1973:1360-1380.
Sample “cheap talk” script for valuation surveys:

“… in a recent study, several different groups of people voted on a referendum just like the one you are about to vote on. Payment was hypothetical for these groups, as it will be for you. No one had to pay money if the referendum passed. The results of these studies were that on average, across the groups, 38 percent of them voted “yes.” With another set of groups with similar people voting on the same referendum as you will vote on here, but where payment was real and people really did have to pay money if the referendum passed, the results on average across the groups were that 25 percent voted yes. That’s quite a difference, isn’t it?

We call this a “hypothetical bias.” Hypothetical bias is the difference that we continually see in the way people respond to hypothetical referenda as compared to real referenda . . . .

How can we get people to think about their vote in a hypothetical referendum like they think in a real referendum, where if enough people vote “yes,” they’ll really have to pay money? How do we get them to think about what it means to really dig into their pocket and pay money, if in fact they really aren’t going to have to do it? Let me tell you why I think that we continually see this hypothetical bias, why people behave differently in a hypothetical referendum than they do when the referendum is real. I think that when we hear about a referendum that involves doing something that is basically good—helping people in need, improving environmental quality, or
anything else—our basic reaction in a hypothetical situation is to think: sure, I would do this. I really would vote "yes" to spend the money . . . .

But when the referendum is real, and we would actually have to spend our money if it passes, we think a different way. We basically still would like to see good things happen, but when we are faced with the possibility of having to spend money, we think about our options: if I spend money on this, that's money I don't have to spend on other things . . . we vote in a way that takes into account the limited amount of money we have . . . . This is just my opinion, of course, but it's what I think may be going on in hypothetical referenda.

So if I were in your shoes . . . I would ask myself: if this were a real referendum, and I had to pay $10.00 if the referendum passed: do I really want to spend my money this way? If I really did, I would vote yes; if I didn't, I would vote no . . . . In any case, I ask you to vote just exactly as you would vote if you were really going to face the consequences of your vote: which is to pay money if the proposition passes. Please keep this in mind in our referendum."