Technology innovation hubs and policy engagement

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RESULTS FOR DEVELOPMENT

IDS Institute of Development Studies

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Acknowledgements

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Summary

Many technology innovation hubs are developing impactful, locally relevant civic tech solutions to pressing commercial and social issues. Given that most hubs' 'double bottom line' approach to their communities and the impact they aspire to, they are faced with becoming political animals. Many of the challenges they tackle require negotiating or renegotiating power relationships, and co-creating public sector policy solutions.

There is latent, but recognised, potential for tech innovation hubs in the global South to play a more overt role in promoting social change through contributing to the 'thickening' of local democratic space and policy co-creation. Unfortunately, in many cases, the mutual trust, understanding of incentives and shared buy-in that would facilitate this co-creation and collaboration between tech innovation hubs and public sector partners are lacking. Often, hubs avoid policy engagement altogether, or are constrained to doing so in ad hoc, superficial or premature ways. Five emerging types of engagement can be identified.

Still, there are some telling and inspiring micro-exceptions. Many hubs have started establishing long-term, strategic advisory and advocacy relationships with policy-makers. Further, hubs' asks to policy-makers are solidifying around becoming more open, providing less restrictive financial support, procuring locally developed innovations as opposed to foreign imports, and general policy reform to support the innovation ecosystem.

In sum, the full potential of tech innovation hubs to contribute to a more vibrant local policy ecosystem is yet to be achieved. Changes in attitude, strategic outlook and partnership-building are required for tech hubs, funders and policy-makers to jointly fulfil that vision. These changes would help hubs take the next step from innovative communities to influential political actors, should they so choose.

Introduction and background

What are technology innovation hubs?

Tech innovation hubs are one embodiment of a larger 'lab' conceptual space, which encompasses everything from incubators and accelerators, through action labs and living labs, to co-working spaces. Prior research has provided numerous definitions and typologies of these entities, attempting to differentiate between 'hubs' and 'labs', or 'incubators' and 'accelerators'. While the exact wording hanging above their front door can be important in shaping hubs' identities – and indeed, part of our study included asking hubs to self-identify – this research did not seek develop neat, static definitional boxes (Whitt 2016). Rather, we were interested in any space and community that:

- lowers barriers to co-creating solutions, is embedded in its local context and encourages collaboration and 'creative clashes' through shared physical and digital space (Toivonen and Friederici 2015; UNICEF 2012)
- provides opportunities to 'experience participatory culture' and build technological skills and literacies (Gathege and Moraa 2013)
- applies technological know-how and entrepreneurial energy to problem-solving
- includes a focus on social innovation, through human-centred development, community empowerment or other concepts beyond purely market-based measures like profitability (Jimenez Cisneros and Zheng 2016; Bloom and Faulkner 2015; Bridgespan Group, Reos and the Rockefeller Foundation 2014).

Within this 'big tent' approach, we sought to collaborate meaningfully with each hub to better understand their constraints and opportunities with policy engagement in furthering their missions, and share these insights across the hubs, and with policy-makers and funders working in this space.

What is policy engagement and co-creation?

Policy engagement can take a wide variety of forms. It could be advocating for a specific technical solution or policy change. It could be participating in the development or execution of policies. Or it could be more generally "a learning process to change perspectives and encourage new practices and behaviors" between governmental and non-governmental actors (Grupo Faro 2012: 17).

Within that broad concept is co-creation. For this research, we considered co-creation as any collaboration between the government and a hub, whereby the government incorporates the hub's work, services, expertise or outputs in the design or implementation of policy goals. This practical definition was derived from a more theoretical one:

> In a public sector co-creation initiative, a public sector entity opens its value chain to the stakeholders whom it serves. In effect, it outsources to its constituents some of the work—and hence some of the cost—of designing and delivering certain services. Stakeholders, typically organized in communities of interest, insert themselves into the public service value chain and become active participants in it. As a result, public sector employees and stakeholders essentially co-create the public sector value proposition. In its optimal form, co-creation has the dual benefit of reducing public sector costs and increasing stakeholder satisfaction. (Gouillart and Hallett 2015: no page)

We employed a purposefully broad definition of co-creation, and readers will note that we use this term in a variety of ways throughout this report. For example, hub engagements in innovation policy overhauls, government agricultural extension programmes using apps developed in a tech hub, or hub-led workshops to strengthen local access to government information regimes all qualify as 'co-creation'.

Why research tech innovation hubs?

Tech innovation hubs have proliferated in recent years. In 2015, the World Bank counted 117 tech hubs in Africa (Kelly 2015). As of 2016, the GSMA Ecosystem Accelerator suggested there are 314 active tech hubs in Africa, and 287 in South and Southeast Asia (excluding India) (Du Boucher 2016). A phenomenon that exhibits such growth deserves analysis in its own right.

More interesting, however, is the impact these hubs are having. Many of the narrative boxes in this report feature impactful projects from the hubs

that participated in our research, confirming an insight from the early stages of this work: hubs are achieving transformational things, but much of the evidence of this impact is anecdotal. The explanation for this lack of firm evidence is well understood. First, it is often unclear what type of impact a hub should focus on achieving. Is it the number or significance of the innovators or start-ups the hub helps to create? Is it the number of imitators or specific policy or business innovations? Or is it the larger effects of the lab's work on the wider social narrative or ecosystem (Tiesinga and Berhout 2014)?

While it is relatively easy for hubs to measure the former two types, it is much more complicated to capture and communicate the latter, which are more interesting to potential donors and investors (Akinyemi 2014; Quaggiotto 2014). Most hub leaders of course understand this need[1] but, as one hub leader we interviewed explained, "I know our website is a disaster, but I haven't had the resources or the time to fix it. I know I need to tell the awesome stories from our work on the ground, but I've had to focus on actually delivering that work first."

Why tech innovation hubs and policy engagement?

Proponents of tech innovation hubs often tout their ability to break down barriers between traditionally siloed communities (Bridgespan Group et al. 2014). This 'silo thinking and silo working' exists not only between government, civil society and business, but also within those entities: from different government departments separately developing similar online platforms, to sectoral civil society organisations (CSOs) foregoing to learn from others outside their thematic focus (Civil Exchange and DHA Communications 2011). As is often the case, the private sector led some of this silo-busting through hubs, founding several spaces across the world to support the development of new technologies or commercial start-ups and provide fodder for the profitable, commercial innovation pipeline.

Increasingly, however, many hubs have moved beyond being homes for business people hoping to find a cheap workspace to develop, for example, the next Uber. Instead, they are becoming homes for entrepreneurs who are using geographic information systems to

map taxi routes and visualise the lack of safe, legal taxi stops and other issues around public transport.[2]

This real example highlights the primary characteristic of a growing number of tech innovation hubs and the innovations they support, particularly in the global South: the 'double bottom line'. A double bottom line means combining normal profitability and market sustainability incentives with a goal of positive social impact and a belief in the power of community creativity to leverage technology (Whitt 2016; Kozlowski 2012). To meet this double bottom line, the work of many tech innovation hubs increasingly requires reshaping how citizens (and especially the hubs' members or constituents) interact with the public sector and with public policy processes. Policy-makers and government officials have also pointed to their support of technology innovation hubs as examples of government commitment to civic innovation.

Many hubs themselves, or the organisations that supported their launching, include commitments to policy engagement or implicit assumptions that hubs' work will improve policy outcomes. The Indigo Trust, a foundational player in the hub space and an early supporter of iSpace in Ghana and a number of other co-working spaces and communities in Africa, has shifted its portfolio to support only projects and communities focused on government transparency, accountability and citizen empowerment. Open Data Lab Jakarta has public sector engagement as a pillar of its mission. Similarly, part of ccHub's core activities is a commitment to

> partnership between citizens, social entrepreneurs, subject matter experts, businesses and public authorities … [that] empowers citizens, as end-users, to influence the development of innovation services and products that eventually could benefit the whole society, [and also] allows government, industry and entrepreneurs to develop, validate and integrate new ideas through partnerships that increase their chances of success.[3]

This rhetoric is likely to reflect an innate, but perhaps not always operationalised, understanding of the overlaps between a 'good' governance ecosystem and an 'ideal' innovation ecosystem. Figure 1 helps to illustrate this point.

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[1] Our interviews at key gatherings of hub leaders in 2016, hosted by AfriLabs and Making All Voices Count, reaffirmed insights from a similar 2015 gathering hosted by the Indigo Trust, 'How to Best Support Innovation Spaces: A Gathering of Funders and Supporters'. See http://bit.ly/2iEpN1k

[2] See the project Nowhere to Stop, a winner of the Re-Imagine Storytelling campaign hosted by {code}bridge in South Africa: http://codebridge.org.za/storytelling/safer-taxi-stops.html

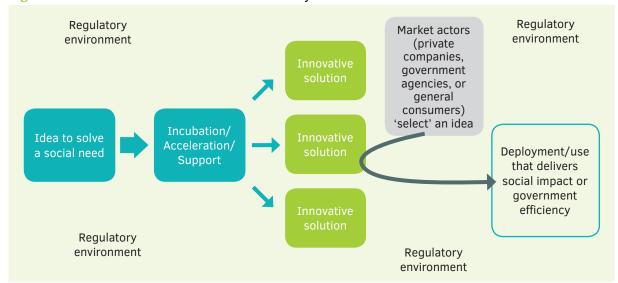[3] See http://cchubnigeria.com/our-approach

Figure 1 An outline of an 'ideal' innovation ecosystem

Source: Authors' elaboration on ideas from J. Mtambalike (2017).

All of the hubs cited in this report have activities in at least one, and often many, of the boxes or arrows in this diagram of an ideal tech innovation ecosystem. For example, some hubs help cultivate ideas to solve a social need and accelerate those into concrete innovative solutions (the blue boxes and arrows at the beginning of the chart leading to the column of green boxes). At the same time, the quality of the governance ecosystem influences how effectively this process operates. At a direct level, 'better' governance systems will be more likely to take up innovative ideas from citizens and deploy those ideas to improve the way they operate or help deliver concrete improvements to peoples' lives – the latter two parts of Figure 1.

What is more, all of the activities that hubs could engage in are surrounded and shaped by the regulatory environment. This means that government policies and actions around innovation in general, or certain sectors like health and education more specifically, can either help or hinder an idea's progress. Thus, the opportunities and challenges of direct tech hub engagement in policy co-creation are important to all stakeholders.

Yet the potential of tech innovation hubs to play an important role in transforming broader governance ecosystems is an area that has not been investigated extensively. Despite this rhetoric and recognised need and potential, little is known about what impact hubs are having on the technology, entrepreneurship or social sector policies necessary to deliver impact aligned with their mission and rhetoric, or on the more fundamental need to change how governments and non-state actors work together to solve problems jointly. As the findings of this report will show, this potential ideal of engaged co-creation between tech innovation hubs and their public sector counterparts is far from reality.

Project background

We conducted this research with the aim of assessing these questions, and to further the scope of research into tech innovation hubs. We sought to assess if, when and how tech innovation hubs are creating new ways for citizens to interact with government; whether policy-makers see value in hubs' contributions (both commercial and non-commercial); and if there are roles in forging value-added connections between government and non-state actors – whether for policy co-creation or other ends – that tech innovation hubs are well-suited to perform.

This research project therefore aims to do more than just uncover new insights about the work of tech innovation hubs. For that reason, this research report does not focus on case studies of the impactful work these hubs are doing, even though each certainly merits this. Rather, it aims to identify the trends of shared interests, challenges and opportunities for collaboration across lines dividing diverse stakeholders, including civil society activists, technologists, researchers, social entrepreneurs and policy-makers. As relevant, it therefore cites short examples from the combined input of our interviewees on key questions regarding (1) hubs' self-perceptions of their identities as actors in larger policy and political ecosystems; (2) hubs' current and potential participation in the policy process; and (3) hubs' common and ideal asks for policy-makers. The report concludes with ideas for hubs, policy-makers and donors to consider to improve policy engagement and co-creation in the future.

Methodology

By its nature, this exploration of how tech innovation hubs are (or are not) impacting governance and public policy co-creation called for a collaborative research design. Therefore, we combined desk research and key informant interviews with both hub leadership and government officials, using a set of co-designed research questions, as detailed below.

Desk research

First, we conducted desk research to understand the ways in which tech innovation hubs currently frame their understanding of social purpose and their organisation's approach to engaging in public policy discussions and debates. We also reviewed the state of the literature on tech innovation hubs, especially with regard to their impact, design, challenges and evolution. This process led to the project's first external output, a blog post (Whitt 2016), as well as the annotated 'litscape' we made available to the public.[4]

Hub selection

In selecting the hubs to target for this research, we prioritised the tech innovation hubs sponsored by Making All Voices Count, which helped to facilitate our access to key informants.[5] Additionally, we engaged the Innovation Hub (Pretoria) and ccHub (Nigeria), which are not currently supported under the programme but were interviewed because of their participation in the Afrilabs initiative[6] and their rich experiences and willingness to engage. In total, our sample included the following nine hubs from seven countries:

- Buni Hub (Tanzania)
- ccHub (Nigeria)
- HiFi[7] (Philippines)
- iBizAfrica (Kenya)
- iSpace (Ghana)
- m:lab East Africa[8] (Kenya)
- Nailab (Kenya)
- Open Data Lab Jakarta (Indonesia)
- The Innovation Hub (South Africa).

Participatory research question design

Based on initial conversations with hub leadership at the outset of the research, both virtually and in person at a learning event hosted by Making All Voices Count in Manila,[9] we developed a series of questions around how hubs formulate and articulate their community's orientation towards achieving the double bottom line, how they see their relationship to the broader public policy environment, and their perceptions of policy-maker interest in their work and potential for collaboration. Using those responses, we drafted a research guide outlining the research background and objectives, expectations from tech innovation hub participants and policy-makers, as well as commitments from the research team.

We then shared this research guide with the project stakeholders, in order to refine our questions to ensure they were pertinent and well framed. It immediately emerged that a key set of definitions was necessary to ensure that otherwise broad terms would be well understood in the context of this research. As such, we defined the following key terms:

- **Co-creation:** considered as any collaboration between the government and a hub, whereby the government incorporates the hub's work, services, expertise, or outputs in the design or implementation of policy goals.
- **Policy-makers:** politicians or civil servants at any level or position of decision-making within a country's public sector governance structure, whom the participating hubs have identified as a (potential or actual) stakeholder in their work.
- **Tech innovation hubs:** shared physical spaces bringing technological know-how and entrepreneurial energy to social problem-solving.

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4 See http://bit.ly/2jhYFUH
5 Making All Voices Count has made grants to HiFi, Open Data Labs, iHub, iSpace and Buni Hub.
6 Afrilabs is a network of and support structure for African tech innovation hubs, and is supported by Making All Voices Count among other donors. See http://afrilabs.com
7 HiFi stands for Hub of Innovation for Inclusion.
8 m:lab East Africa is now the incubation arm of the iHub in Kenya. See http://bit.ly/2jowsLM
9 See http://transforming-governance.makingallvoicescount.org

Key informant interviews

The research guide offered general themes along which in-depth engagements with the various stakeholders would follow. For hubs, these themes were how tech innovation hubs engage with public sector policy ecosystems and debates (if at all) and how they may have evolved with regard to policy engagement. For policy-makers, the main themes were their knowledge of hub efforts and how they view (and value) tech innovation hubs.

Using the guide, we carried out key informant interviews and site visits with government officials and hub leadership, from July to December 2016. During this process, we engaged the nine hubs in our sample. In addition to hubs, our methodology attempted to involve their corresponding policy-maker partners, by asking the hubs to introduce the research team to the policy-makers they had engaged or who they knew to work in technology innovation and entrepreneurship in their domestic contexts. However, the research team was unable to secure responses from many of the targeted policy-makers. Most hubs made these requested introductions, but most introductions went unanswered by the targeted policy-makers. Only government representatives from Kenya, the Philippines and Tanzania were very responsive, and graciously offered key insights.

Draft results presentation and review

In the final stages of the project, we presented our draft results in Nairobi at a meeting attended by many of the hubs listed. Also in attendance were {code}bridge South Africa, Afrilabs and a number of expert mentors in tech innovation, community building and business development. This provided an opportunity to test whether our findings would resonate with the key stakeholders and target audiences of our research.

Finally, we provided all involved hubs, as well as staff at Making All Voices Count, with an advance copy of the final report. We invited each hub to provide comments and feedback, and to verify that their experiences had been accurately represented.

Findings

This section captures the rich findings from our research, grouped into three categories: (1) how hubs categorise themselves; (2) how they have engaged with policy; and (3) how the different types of policy asks hubs convey.

Finding 1. Tech innovation hubs categorise themselves in mixed ways

We first asked the tech innovation hubs to classify or categorise themselves, explain why they use that classification or categorisation, and describe if / how that impacts the type of work they do, including the thematic areas they address. We started with this question to establish a shared baseline on nomenclature, rather than trying to impose an external understanding from the literature.

This proved to be a valid starting point, as the hubs we interviewed identified themselves in varying and sometimes surprising ways. Though most used classifications widely familiar in 'hub-speak', their day-to-day operations differed along important dimensions from what the buzzword might lead one to expect. Furthermore, almost every hub in the sample spoke about evolution – sometimes quite rapid – in their design or mission.

For example, Nailab, iBizAfrica, iSpace and m:lab East Africa all described themselves as either incubators, accelerators or both. In the literature, these two terms are sometimes used interchangeably, but incubation is usually offered to start-ups in the idea stage, while acceleration focuses on start-ups with a minimum viable product ready for the market or already in business. Both have to be relatively selective with the start-ups they admit, since the selected projects receive structured support and then 'graduate' to survive or fail in the marketplace. Some hubs and accelerators are backed by for-profit investors, while others are themselves essentially investors in their start-ups, sharing in their successes or failures (Roberts, Lall, Baird, Eastman, Davidson and Jacobson 2016; Friederici 2015a and b).

In reality, those characteristics alone would lead to a poor understanding of the four hubs mentioned above. Funded by the World Bank through the Kenyan Information and Communication Technology (ICT) Authority, Nailab recently completed a detailed

review of one of its incubation programmes, and – by extension – the Kenyan tech start-up ecosystem. More than just graduating start-ups that survived in the marketplace, they found that:

> In terms of influencing the [small and medium enterprise] sector and the socio-economic environment, the program has registered substantial progress in employment and wealth creation; capacity development; social inclusivity, [and] gender mainstreaming … Furthermore, the incubator has successfully utilized the complementarity of various organisations in a collaborative manner to improve its performance and create networks. (Nailab 2016: 78)

Similarly, iBizAfrica, through its association with Strathmore University, Kenya, has a strong focus on start-ups for social good, and also carries out community development programmes to immerse children in technology and innovation. iSpace started as a co-working space before evolving towards incubation, and further differentiates itself from the likes of the Meltwater Entrepreneurial School of Technology, often cited as the archetype of an incubator (Friederici 2015a). The same goes for m:lab East Africa, whose brand name indicates its origin as a World Bank / infoDev pilot lab, but has more recently evolved to take on incubation and training. In short: these hubs and communities see themselves as going well beyond the simple 'incubation' and 'acceleration' of individual start-ups, perceiving one of their primary roles as seeding and nurturing the entire process of local social entrepreneurship.

Other hubs in our sample prioritised other self-identified activities, even when they also engaged in acceleration or incubation. Though ccHub offers a range of incubation services, it does not primarily identify as an incubator, but rather as a social innovation centre focused on creating locally relevant solutions to local problems by applying social capital and innovation. Buni Hub classified itself as a co-working space focusing on innovation and technology entrepreneurship, but also offering extensive acceleration and prototyping services. HiFi, constituted in January 2016 and the newest hub in our sample, is primarily a shared innovation space, but most of its activities so far have focused on advocating for changes to the curriculum of the university that hosts it. Finally, the Innovation Hub in Pretoria is a science and technology park with a strong focus on attracting research and development industry heavyweights. But recently, it has begun to focus on setting up 'eKasi labs' in various townships;

these local labs will be walk-in co-creation spaces to catalyse entrepreneurship, and will offer Internet access and incubation services.

The hub in our sample that most matched its 'standard' definition was the Open Data Lab in Jakarta. It identifies as a lab for experimentation addressing a specific theme (open data) and at a specific level (sub-national). Indeed, one of its flagship programmes seeks to "provide a space and a platform for activists, social entrepreneurs and civic hackers to come together" (Cañares and Pawelke 2015: 3). This clearly echoes Labcraft, the most current detailed study on innovation labs, which identifies a lab as a space that "creates a dialogue, listening carefully with an open mind to all the voices, and then tries to translate them, mix them, and amplify them to prototype and develop alternatives" (Tiesinga and Berhout 2014: 17).

Two final elements of interest emerged from the self-classification exercise. First, though all of the hubs varied in their specific thematic areas, all of their work was underpinned by a sense of social purpose, and by aiming for social impact. While a shared social commitment is not in itself surprising – as described, we selected hubs for the sample in part based on that variable – the intensity of this commitment was noticeable. Open Data Lab Jakarta pursues open data specifically for social impact and public good. HiFi Philippines is keen to support innovations for social good. Even those hubs focusing more specifically on incubation include a social problem focus in their consideration of possible incubatees; initiatives housed at ccHub, for example, are expected to focus on solving social problems across many sectors.

Second, how hubs see 'technology' entering into their work provoked surprisingly rich discussion. Some, like Buni Hub, the Innovation Hub and m:lab East Africa, anchor at least some of their activities in technology, tech entrepreneurship and tech for social good. iBizAfrica, for example, supports entrepreneurs with an ICT focus, but technology is still seen as an enabler of innovation, not necessarily as the innovation itself. Others, like HiFi or ccHub, focus more on leveraging technology 'when appropriate' to drive social innovation efforts. In short: in contrast to external perceptions, technology takes a backseat in the self-perceptions of these hubs and communities.

Similar to the previous warning against trying to place hubs in neat theoretical boxes, this final point speaks to a general wariness on the part

of these organisations to being bundled as 'tech hubs' without an open exploration of the details of their work. This exercise thus proved very useful in unearthing the nuanced ways in which these centres of innovation prefer to describe their vision, mission and structures, offering insight into the diversity of spaces that are often reductively described as one specific 'type' of 'tech' hub.

Finding 2: Hubs are engaging in policy-making in five emerging ways

Overall, most hub operational models either ignore or only indirectly include policy-makers as key stakeholders. Instead, they tend to focus efforts on local entrepreneurs and problem solvers, and funders drawn primarily from the non-governmental space. One explanation for this bias could be that hubs are still a relatively new phenomenon, and as such have focused on more direct clients and funders in the private sector. But our research found that policy and government processes are consistently perceived as murky, restrictive, time-intensive and – in many cases – associated with corruption or partisan politics that could harm these hubs by association. This perception often led to non-engagement.

Still, there were several informative examples of policy engagement from the hubs we interviewed, which allowed us to develop four additional broad types of emerging engagement. Many of these engagements were sub-optimal. But, as the following vignettes will show, there are some interesting and inspiring exceptions, as well as clear potential for the future.

1. Indirect or non-engagement

With this approach to policy engagement, by far one of the most common, tech innovation hubs prioritise their 'core' activities without explicitly targeting policy-makers as key stakeholders to engage. On occasion, they may invite policy-makers to events or other activities taking place at the hub, but in many cases hubs make the conscious decision not to engage due to the risk of being painted with a tainted reputation, as many counterpart government agencies suffer from reputations as being corrupt. This is an understandable stance for nascent entities trying to carve out their niche in the field, especially since more than one hub provided real, recent examples of corruption in counterpart public sector agencies.

This reluctance is also an understandable starting point in terms of sustainability and mission. Several of the hubs interviewed do not take on direct government financial support, explaining it as a way for hub operations to be corrupted to suit political interests. There is also an aversion to any engagement with government that could shift the power dynamics, where control on activities and direction at the hub is swayed depending on government representatives' whims. According to the literature, this concern is completely valid. A focused mission with the freedom to try new things is key to hubs' long-term success (infoDev and World Bank 2014), and over-reliance on funding from a specific entity that your innovations are likely to disrupt is a surefire way to lose the creativity and mission-specificity that make hubs so impactful (Whitt 2016; Quaggiotto 2014).

Hubs do appreciate, however, that for long-term sustainability to be achieved, policy engagement must be factored in. One of the lessons at the end of this report addresses this point. Box 1 shares an example from Nailab on an indirect engagement that laid the groundwork for future collaboration.

Box 1. Nailab's direct, informational policy engagement

Nailab is currently running an innovation accelerator programme in conjunction with the United Nations Population Fund, which focuses on promoting youth sexual reproductive health and rights in Kenya. The initiative aims to rally engagement with tools and techniques anchored on technology to foster safe spaces for the empowerment of young people.

The National Council for Population and Development and the Ministry of Health were engaged to ensure alignment with national priorities and further contribute to the realisation of Vision 2030. The Council offers advice on how the incubated innovations can engage and plug into the health policy pipeline.

This initiative has created indirect, informational policy engagement between Nailab and health policy-makers, and is ripe for cultivating a more meaningful and sustained engagement in the future.

2. Superficial engagement

In this type of engagement, relationships are opportunistic, short term and rarely lead to impactful outcomes. More often than not, if hubs manage to convince government officials or policy-makers to engage, it is usually to serve short-term interests. Sometimes policy-makers themselves initiate engagements, such as requesting tours to understand what goes on at these spaces, but often the tours see little or no follow up. In some cases, these engagements are altogether opportunistic, leveraged for photo opportunities: almost every hub we interviewed mentioned this as a serious and discouraging problem associated with attempts at policy engagement.

At the same time, getting policy-makers to physically visit hub spaces can sometimes lead to impactful changes or productive future collaborations. Usually, less formal visits run a smaller risk of being co-opted for political opportunism, and a greater chance of delivering long-term engagement. Box 2 provides an illustration from m:lab East Africa. And even when the political opportunism is evident, some positive changes can result, as Box 3 shows. One of the lessons at the end of this report explores this point further.

Box 2. m:lab's Wireless Wednesdays as conduits for informal policy-maker engagement

Wireless Wednesdays were weekly forums that m:lab East Africa held between 2012 and 2014. These events targeted mobile innovators, entrepreneurs, industry stakeholders and thought leaders in different sectors to engage each other in focus group discussions that explored opportunities for the growth and uptake of mobile innovations in different sectors.[10] Agriculture, health, education and entertainment were the anchor themes for these forums, providing opportunities for showcasing innovations, networking and knowledge exchange, all through the promise of mobile technology.

Participants at a 2014 Wireless Wednesday focused on mobile for agriculture.

To ensure the events were a success, especially in providing industry knowledge and policy insights, the event organisers actively sought and invited government officials. Over time, they were able to bring in officials from the meteorological department, climate change experts, health sector officials and agricultural extension officers, among many others. These government representatives served as important conduits and links to government resources and knowledge. Furthermore, because they were invited to interact with stakeholders in informal settings, there was less potential for the intimidation or trepidation that are often brought on by formal set piece-style policy engagement. In addition, policy-makers were able to relax; with no external media coverage, there were fewer incentives to give sound-bite speeches.

From this initiative, m:Lab registered success in bridging government–citizen engagement gaps. Engagement with health sector officials helped pave the way for health start-ups incubated at the m:lab that needed government access. Similarly, agricultural extension officers helped link agri-tech start-ups to farmers on the ground. Many of these links remain strong to this day (Kariuki 2015).

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10 See http://mlab.co.ke/wirelesswednesday

Box 3. President Uhuru Kenyatta's impromptu visit to Kenyan tech hubs

PHOTO: iHUB

President Kenyatta with Dr Kamau Gachigi, Head of Gearbox.

Many of Nairobi's tech innovation hubs are clustered in a single large building, the Bishop Magua Centre. On a Friday in March 2015, President of Kenya made an unannounced stop at the Centre, visiting iHub, m:lab East Africa, Nailab, Gearbox, Ushahidi and Making All Voices Count, among others. As iHub explained, "In a visit devoid of most formalities, the President took his time to listen, learn and inquire about all the technology labs and hubs" (iHub blog 2015). iHub also noted that the President was particularly interested in BRCK and Gearbox, the two labs in the building working on hardware.

Multiple interviewees during our research commented that physically seeing, touching and understanding what these spaces were trying to accomplish and the challenges they face had a noticeable impact on the President. There has been speculation that the President's unofficial visit directly led to a greater understanding of the sector and, subsequently, some limited improvements to importation rules for the sector in the 2015 Kenya Finance Bill, presented a few months later.

3. Premature engagement

In this modality of policy engagement, tech innovation hubs attempt to engage on a particular issue or opportunity before the moment is 'ripe'. By this, we mean making a particular policy ask without the evidence, timing or coalitions necessary to overcome policy-maker reticence or a lack of understanding of why to prioritise the hub's request. Often, both 'sides' share some responsibility for the prematurity of a case.

Premature engagements have been common and this frequency is unsurprising. On the one hand, despite recent gains, policy-makers do not understand tech hubs well as potential contributors to their policy contexts. On the other hand, as described earlier, hubs may sometimes undertake engagements before they have reached a stage of evidence and collaboration to be able to successfully drive and demand policy changes. Box 4 illustrates a premature engagement from Kenya, and the lessons m:lab learned from that case.

Fortunately, future engagements may occur more opportunely. Box 5 shows an example of a more mature coalition ask that was able to leverage convincing evidence. As hubs and their communities mature, they are likely to continue to build coalitions and be able to capitalise on the (admittedly slow) percolation of understanding of tech innovation spaces.

Box 4. Lessons learned by m:lab on 'premature' policy engagement

In 2012, m:lab applied its curiosity and knowledge of the exports sector in Kenya to pursue engagement with the Kenyan Export Processing Zones Authority. It aimed to lobby for incubation spaces like m:lab, as well as emerging start-ups, to be placed in the tax-exempt processing zones, which would ease the potentially crippling early tax burden for new enterprises in the ICT industry. While the Authority's executives expressed strong support for the idea, m:lab found major hurdles within the legislative process that eventually stifled the engagement process.

From this experience, m:lab learned some important lessons on policy engagement. For one, not all policy-makers are equally inclined to understand innovation. Additionally, though it pursued a noble idea that sounded objectively promising, it was unable to show how this provision, if granted, would have benefitted the larger sector. Had it, for instance, taken on the lobbying efforts in conjunction with other hubs in the city, perhaps their shared voices would have gained more reception. Future engagements, like the collaborative approaches of Wireless Wednesdays discussed in Box 2, have shown that m:lab took these lessons on board.

Box 5. How ccHub scored a policy win for its community

Observing the organic emergence of a tech cluster around their neighbourhood in Yaba, Lagos, in 2012, ccHub started a project to assess these groupings and to explore what drew them to the same location. It aimed to contribute to a public pool of information and help inform the refashioning of government policies towards innovation support.[11]

At the time, ccHub's Internet service provider, MainOne, did not have the necessary permission to lay fibre-optic cables and could only provide a slower, microwave connection insufficient for the hub's connectivity needs. Understanding that the other tech-oriented businesses in its vicinity would also require fast, dedicated Internet connections, ccHub enlisted MainOne as an ally in their engagement with the Lagos State Infrastructure Maintenance and Regulatory Agency. Through this research and engagement, it was able to convince the Agency to waive the costs and grant the licenses to lay fibre-optic cables in the neighbourhood. ccHub and companies in Yaba now enjoy a high-speed Internet connection from MainOne.

ccHub opted for this approach because it could make the case that its policy ask would not cost the government any money, and could navigate that process on its own terms, something that informs its assessment of when and how to engage with government. ccHub continues to explore ideal ways to engage various government agencies without compromising its independence, and has even opted out of other policy-maker engagements due to impositions from government.

4. Client-based engagement

Fundamentally, this type of engagement is project monitoring and reporting rather than strategic policy engagement. We noted this type of engagement in those hubs financially supported by a government agency, or from which a government agency directly procures services.

One starting hypothesis for the potential associated with this type of engagement was that a client–principal relationship would naturally lend itself to more collaborative or co-creative citizen–hub–government engagements downstream. However, we found that the potential to transform the relationship from a transactional client–consultant dynamic to policy co-creation is, at best, tenuous. The following boxes offer two possible explanations. Box 6 shares an example from the most directly government-supported hub in our sample, the Innovation Hub. This 'provincial government agency' indirectly represents private

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11 See http://cchubnigeria.com/innovation-in-lagos

sector innovators in government strategy processes, but has yet to fully embrace co-creative engagement. Box 7 shares the experience of the government-supported Buni Hub, where a shared strategic understanding between one high-level government official and hub leaders still struggles to percolate throughout the rest of government.

Box 6. The Innovation Hub, Tshwane, as a provincial government agency

Participants at a July 2016 event at eKasi Soweto.

The Innovation Hub, described as Africa's first science and technology park, was established in 2001 by the Gauteng Provincial Government in South Africa. So far, it has taken on the role of an association, representing (through evidence-based case studies) the industry leaders in the park in national processes of ICT policy and procurement (see engagement type five, page 17). Currently, the Innovation Hub is repositioning itself as a Provincial Innovation Agency for the city of Tshwane, to implement the Gauteng Innovation and Knowledge Economy Strategy.[12] It is presently involved in provincial strategic planning, though this is yet to be viewed as policy engagement and rather more as traditional project management.

Through this strategy, the Innovation Hub is piloting physical innovation spaces in township areas to deploy services and facilities currently accessed solely at the Innovation Hub itself. eKasi Labs are walk-in spaces offering Internet access, incubation, mentoring, temporary desk rental, builder spaces and training for non-tertiary graduates in computer programming. Based on the uptake and community response, the Innovation Hub aims to support a larger roll-out in its jurisdiction.[13]

The hub representative we interviewed acknowledged both their privileged position to engage in policy co-creation, and that this is an opportunity that their Hub has yet to fully tap into. The interviewee pointed out the limitations a government agency faces, which partially inhibit more direct policy engagement. For example, it must be cautious with the government resources it stewards, and cannot engage in some of the higher-risk experimentation that is central to other hubs. It must also be meticulous with the evidence base for its asks and the language it uses.

12 See http://bit.ly/2jnKnlv
13 See http://bit.ly/2jKAGNH

Box 7. Ministerial champions and civic tech at government-supported Buni Hub

Buni Hub was set up in 2011 as part of the TanzICT project, and thus draws support from the Tanzanian Government.[14] In particular, it is physically housed in the Tanzania Commission for Science and Technology (COSTECH), a government parastatal. Buni Hub thus enjoys a certain proximity to policy-makers and speaks of having constant interaction with the policy space.

Currently, one of Buni Hub's roles is to suggest issues and solutions around technology innovation and entrepreneurship policy to government, through COSTECH.

PHOTO: HATUA PROJECT

COSTECH Director General, Dr Hassan Mshinda, at a Chukua Hatua event.

For instance, Buni Hub helped in pointing out that Tanzania's 2016 National ICT Policy made no mention of supporting the innovation, technology and entrepreneurship ecosystem; this is now being improved, according to interviewees.

Through many of its supported projects, Buni Hub also frequently acts as a convener of key stakeholders for collaborative co-creation sessions aimed at surfacing improvements to policy. One interesting example is the Hatua project for civic tech for improved governance, which seeks to engage citizens in the 'civic hacking' of Tanzania's health and education challenges.[15]

The project's results so far are promising at the local level, with communities and local governments collaborating to identify technological solutions to governance issues (Malaki 2016a and 2016b). Initial Hatua events hosted by Buni to crowdsource national-level concrete problems and solutions have seen enthusiastic and productive participation from citizens and civil society stakeholders. However, the involvement of the key public sector agencies whose involvement would support actual co-creation appears lacking (Malaki 2016c).

Other challenging experiences largely mirror this dynamic. For example, Buni tried – but was ultimately unable, due to conflicting working cultures – to collaborate with the University of Dar es Salaam. At the same time, the Ministry of Local Government has expressed interest in expanding Buni's work outside the capital.

One exception at the national level is the Director General of COSTECH, where Buni is housed. In our interviews and publicly, the Director General has expressed informed praise and a keen understanding of Buni's work specifically, and the innovation ecosystem more generally. Yet in spite of his leadership and work to establish inroads with other key policy-makers, and Buni's proximity to and constant interaction with policy-making, Buni still struggles with limited understanding and appreciation of their work and value beyond this one public sector champion. As one interviewee put it, "the public sector is inherently not innovative, and is very slow to change."

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14 TANZICT stands for 'The Information Society and ICT Sector Development Project'. It is a bilateral collaboration between the Ministry of Communications, Science and Technology of Tanzania and the Ministry for Foreign Affairs of Finland. The project's overall objective is a strengthened Tanzanian information society with enhanced capacities to contribute to the achievement of the Government's socio-economic development goals. See https://tanzict.or.tz

15 Making All Voices Count also supports this project. See http://hatuaproject.org

5. Strategic engagement

This final category of engagement includes longer-term relationships where hubs advise policy-makers, or convene regular moments of advocacy between citizens and policy-makers. In our opinion, this category shows the most promise for tech innovation hubs to contribute to policy co-creation. While these engagements are the exception and not the norm, the two types of engagements in this category are inspiring.

Some hubs have managed to enter into long-term, consultative relationships with governments. These set-ups often start with successful initial engagements that build the hub's reputation, and develop over time into an advisory relationship, like those described in Box 8.

Tech innovation hubs that specifically take on governance or civic engagement work can find themselves engaging in a second way. At its simplest, this includes lobbying or advocating on issues that require specific policy interventions to resolve, or intentionally sharing final outputs with policy-makers with the intention of influencing future policy. At a more advanced level, however, these hubs can proactively pursue policy-makers to acquire shared buy-in and understanding. Box 9 illustrates this proactive, open, intentional engagement with an example from Open Data Lab Jakarta.

Box 8. iBizAfrica and the role of a tech innovation hub as an ecosystem advisor

iBizAfrica's engagement with policy and policy-makers is, in part, informed by the strong brand reputation of Strathmore University, in which it is housed. For many policy-makers, the role of academic institutions and their centres is more familiar than that of technology innovation hubs, which could be considered as fringe spaces of innovation, and within the informal sector. To this effect, iBizAfrica has had different levels of policy engagement, often starting at the university level, then trickling down to its centre of ICT excellence, iLab (for which iBizAfrica carries out entrepreneurship and incubation activities).

iBizAfrica has tried to leverage its academic reputation to initiate policy engagements that serve its interests. Many of these have fallen through, such as an engagement to try and secure government support for incubatees innovating in agriculture. But while co-creation with the national government has been difficult to establish, iBizAfrica has found success engaging at the county level. For example, a solution it helped develop for one county's revenue collection tracking and management has started to pique the interest of other county governments. One of the lessons at the end of this report addresses this beneficial competition between clients.

In addition, iBizAfrica has built its reputation as an advisor on ICT issues. The Ministry of Trade and Cooperatives in Kenya sought iBizAfrica out for recommendations on how to work with innovators and entrepreneurs. Similarly, iBizAfrica has been involved in supporting the ICT Authority's initiative to organise a National ICT Innovation Forum. One of the Forum's outcomes was a pledge to set up the Enterprise Kenya initiative (Mulligan 2015) to support technology innovation; iBizAfrica has been further consulted in the process of setting up this entity. Finally, iBizAfrica was one of the hubs that worked with the ICT Authority in setting up the government's open data portal, the Kenya Open Data Initiative, and worked with the Kenya National Bureau of Statistics on its data visualisation portal.

Thus, even though this advisory engagement is ad hoc and based on the needs arising within these various government agencies, over time the relationship has spiralled towards greater policy engagement and, perhaps, co-creation.

Box 9. Ingrained, proactive policy-maker engagement for opening data and building collaboration

Engagement with government is one of Open Data Lab Jakarta's four central pillars, and is integral to their work. As they explain on their website, they focus on "building evidence around how open data can solve complex challenges that benefit citizens. Then, we use this evidence to advocate for greater openness. Our regular workshops and events provide safe environments to facilitate dialogue among different stakeholder groups, encouraging partners to learn from each other."[16]

PHOTO: OPEN DATA LAB JAKARTA

Civil society and education agency representatives discuss newly opened data at a project event in Banda Aceh.

As such, almost all of the lab's projects involve explicit, cultivated, proactive policy-maker engagement. In one 'action research intervention', Open Data Lab Jakarta set out to understand and improve the context of open data in the education sector of Banda Aceh state in Indonesia. As a fundamental part of the project, it proactively worked with local civil society and officials in the education department. In both one-on-one sessions and town hall-type meetings with these actors, the Open Data Lab team was able to:

- understand the existing data management and disclosure processes, as well as challenges to reform, uptake and data use on both sides
- unearth government officials' apprehension around the concepts of open data
- build both sides' capacity and understanding of the utility and importance of open data
- achieve improved data releases of civil society's prioritised data
- engage in a participatory, open dialogue that catalysed these previous successes into co-created, priority next steps to improve the accountability of resources in the sector.

As the Open Data Lab shared in the project's lessons learned paper, "the keys to success were a participatory, bottom-up process in which interested groups (including the media, researchers, and civil society organisations) identified which data sets would be most valuable to them, coupled with close collaboration with the government to build the trust needed to release that data." (Cañares and Pawelke 2015: 3)

The Lab is currently exploring how to sustain such engagement over the longer term, based on this success. In May 2016, they launched an Open Cities project with Making All Voices Count to "provide a space and a platform for activists, social entrepreneurs and civic hackers to come together" and "open opportunities for learning and influencing policy-making" on open data and city-level challenges.[17]

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16 See http://labs.webfoundation.org/labs
17 See http://bit.ly/1TVXZOb

Finding 3: Policy asks are solidifying

Finding 2 discussed the specific types of engagement we noted across the sample of interviewed hubs. This finding discusses the most common requests that hubs make of governments, both concretely during their engagements and more generally.

1. Governments that are more open

The apprehension expressed by most hub interviewees about engaging their governments cannot be overstated. Most interviewees initially interpreted 'policy' as partisan politics, and several even saw government engagement as 'selling out'. Therefore, a fundamental request was for their governments and policy-makers to be more transparent, collaborative, participatory and accountable. Because they saw these characteristics as lacking in their government counterparts, many hubs in the sample explicitly limited their engagement.

As a starting point, the hubs we interviewed wish policy-makers would be more accessible, would consult with their community members, and would interact with the community and engage in a non-partisan way. Every hub was able to cite failed collaborations, partnerships they avoided, or unanswered requests for information – results that made hubs less likely to seek strategic collaboration with government in the future. This challenge also manifested itself in the difficulty of identifying relevant policy-makers to engage in this study, as described in the methodology section.

2. Less restrictive financial support

Usually contingent on the first ask, hubs wished that additional government funding could be injected into activities across the innovation ecosystem, and / or to scaling successful initiatives within tech innovation hubs. This kind of financial support would ease the infrastructure cost burden borne by hubs, such as rent and telecommunications. Such financial support could also be impactful by making more funding available for the hubs to seed their incubated innovations and support experimentation in early and growth stages. According to hubs, this would boost

their impact on many measures of importance to government, from employment to improving social challenges.

Importantly, however, all hubs were cognisant of the risks to their independence associated with taking in government financial support, and wary of cumbersome bureaucratic requirements. To balance out those risks, multiple hub representatives suggested that governments could set up more agile, semi-independent funding agencies. The Tanzanian example, especially the involvement of international donors in TanzICT and COSTECH, was particularly striking (see Box 7).

3. Government as a consumer of local tech innovations

This was perhaps the most common ask brought up by hub managers in our interviews. They consistently indicated that procuring locally developed solutions is one way that government could both demonstrate its commitment to supporting the tech innovation ecosystem and, given the strong social focus underpinning so much of these hubs' work, contribute to solving pressing social issues.

Governments in the hub countries we assessed tend to be the single largest consumer of goods and services in the economy.[18] As a result, if a government were to consume tech products and services produced locally, this would stimulate the market and allow for start-ups in the space to grow and extend their impact. Importantly, though, the goods and services should be – and often are – innovations where a keen understanding of local context adds value. Otherwise, this prioritisation could become neo-protectionism or inefficient reinventions of the wheel.

Kenya's 'Access to Government Procurement Opportunities' is one policy example that supports this type of potential public sector nurturing.[19] This policy has been in effect since 2013, and commits the government to 30% procurement of services from women, youth and people with disabilities in Kenya. As assessments of the policy begin to be published in the near future, it will be worth assessing if and how local technology start-ups, through hubs or directly, have managed to take advantage of the 'buy local' opportunity.

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18 See, for example, the World Bank's data on this subject: http://data.worldbank.org/indicator/NE.CON.GOVT.ZS
19 See http://agpo.go.ke

4. Policy reform for tech innovation ecosystems

Hubs frequently cited larger policy issues as significant barriers to their work. According to our interviewees, tax regimes and intellectual property protections such as copyrights and patents are most in need of policy reform to encourage the growth of local technology companies.

Furthermore, many respondents noted that in their ecosystems, a wide disconnect exists between the current education systems and the market's need for technologically fluent innovators and entrepreneurs. Interviewees blamed rote learning education systems for stifling a culture of curiosity and enterprise, and they feared that current solutions to stimulate such a culture can often be too little, too late. This means that a significant proportion of those expected to be the entrepreneurs and innovators of tomorrow lack the requisite skills and attitudes to take on the challenges and opportunities of tech innovation and entrepreneurship. As one hub manager put it, "it is difficult to teach someone to be an entrepreneur".

Hubs were frequently able to point to their own programmes as options for governments to consider for support. In addition to efforts to incorporate innovation and entrepreneurship into tertiary education programmes, hubs like iBizAfrica and iLab run programmes and holiday bootcamps for primary school children. These events seek to provide an engagement framework for children to experiment with being immersed in technology and innovation. Though they exceed their capacity for every event, managers pointed out that to achieve lasting impact, these are programmes that should be undertaken in primary schools, and skills that should be encouraged at home. Similarly, ccHub has taken note of the demand for tech talent within its ecosystem, and realised the need to 'boil the ocean' to stimulate the tech talent pipeline (Nke Ise 2013). Its spaces in Lagos and Abuja are available to anyone focusing on developing their technological talent.[20]

A way forward towards policy engagement and co-creation

As the previous sections have demonstrated, the full potential of tech innovation hubs to contribute to policy co-creation in their local communities is yet to be realised. In many cases, mutual trust, understanding of incentive, and shared buy-in are lacking, and will require active shifts to really move forward. In this section, we offer some ideas and 'soft lessons' for possible ways forward that hubs, funders and policy-makers can consider.

The primary and overarching lesson from this report applies to all stakeholders that care about tech innovation hubs:

Policy engagement should not mean, but all too often is interpreted to mean, partisan politics. At the same time, successful policy engagement does sometimes require 'politicking' and getting political.

The work of tech innovation hubs that seek to address social challenges is, in itself, a renegotiation of power dynamics; the solutions to pressing social challenges that are envisioned and designed in these spaces aim to renegotiate the power relationships between duty bearers and the people facing those challenges. While an aversion to politicking, and proximity to or engagement with political actors, is understandable, political problems cannot be avoided in the hope that a parallel system of operation can bypass them. Of course, many social sector issues that arguably should be apolitical can become partisan points of debate, from natural resource management to public health. But as Ory Okolloh, Ushahidi's co-founder and director of investments for Omidyar Network, deftly put it, one "can't entrepreneur around bad policy" (Kuo 2015).

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20 For example, ccHub runs re:learn, an open-living lab focused on helping schools apply technology to enhance learning in Abuja. See http://relearn.ng

Policy engagement is often tedious, usually frustrating and sometimes risky. But the successful innovation ecosystems that all hubs envision require navigating government processes, in some way or other. We hope that the following ideas can help ease this process.

Lessons for hubs

1. Tell your stories

Tech innovation hubs, and the new models of innovation they represent, are gaining policy-makers' attention. The hubs we interviewed provided extensive anecdotes describing the views that policy-makers have expressed of their or other hubs' work. Stories capturing the work taking place in these hubs can be leveraged and packaged as evidence of impact, or to showcase challenges and opportunities for policy-maker intervention. Such stories can also be tailored into policy briefs or other consultative instruments that policy-makers are familiar with; showing how hubs address the specific visions or policy priorities of government institutions could make an even stronger case for strategic engagement.

Most hubs, of course, already understand this need. Indeed, at a gathering of many of the hubs in this sample, when the authors posed the question "could someone find the most interesting project you are currently working on if they went to your website right now?", the most common reaction was a knowing look of understanding coupled with a negative shake of the head. It is a question of prioritisation and overcoming the challenges to measuring and communicating impact described in the first section of this report.

For inspiration, two useful examples are Open Data Lab Jakarta's practice of capturing and publishing its lessons learned,[21] and {code}bridge's Reimagine Storytelling campaign.[22]

2. Engaging at a local or subnational level could be a good first strategy

The majority of the tech innovation hubs that reported success in policy engagement achieved that success by targeting local governments or specific agencies, not national governments. The hubs reported that their national governments were often difficult to penetrate directly. Conversely, local governments and certain sub-agencies within executive departments (those with very specific mandates) are often more open to, and interested in, the types of innovations that tech innovation hubs can drive.

m:lab and iBizAfrica's experiences of engaging local county governments as clients has generated interest from other counties, a boon to the prospective wider uptake of their products. Local governments also seem more likely to engage in healthy competition among themselves, wanting to be considered the most innovative, open or tech-savvy. This competition presents a great opportunity to deepen policy engagement and spread hubs' innovations.

3. Don't do only one thing well – but also, don't try to do everything

This lesson emerged from conversations on the (in-)efficiency of hubs' specific innovation ecosystems, as depicted in ideal form in Figure 1.

As described in Finding 1, many of the hubs we interviewed had started operating at one particular box or arrow in the ecosystem, but had begun to shift and take on additional activities. Hubs usually explained these shifts by pointing out that either the necessary proceeding step (for example, a minimum viable product ready for acceleration) or the following step (for example, a process to deploy an innovative solution) were missing from their ecosystem. This is rational, and not uncommon (infoDev and World Bank 2014). However, hubs must critically consider when they have stretched their capacities too thinly.

At the same time, as Figure 1 illustrates, all of the activities that hubs could engage in are surrounded and shaped by the regulatory environment, and characteristics of the governance ecosystem will inevitably interfere with the smooth flowing of this process. As they help start-ups and innovative solutions emerge and enter markets, hubs have to confront cases where the policy environment in which they operate is not conducive to the growth and scale of innovations. In these cases, it is important not to succumb to the 'ostrich effect' and ignore or avoid the system's issues, but rather engage and improve the system as necessary.

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21 See http://labs.webfoundation.org/resources/lessons-learned-papers
22 See http://codebridge.org.za/storytelling

4. Get policy-makers into your space and identify champions

Finding ways to attract policy-makers into tech innovation hubs' physical spaces is a very useful starting point for cultivating relationships. Informal visits seem especially powerful, as Box 2 showed with m:lab's Wireless Wednesdays. With high-profile government officials in particular, their presence may at first appear to yield little more than photo opportunities, absorbing valuable time and resources, and generating risks whereby politicians claim credit where none is due.

Yet, the experience of several hubs where such individuals came through their doors and saw the great ideas, solutions, products and services being created show this can be key to getting policy-makers to understand the hubs' work and how to support it. As Dr Mshinda, the Director-General of COSTECH put it, "politicians who care about youth employment, for example, need to see all the productively occupied youth in these hubs". Similarly, according to Femi Longe from ccHub, "the best way to influence policy is to show policy-makers what works … policy-makers are less likely to listen when you tell them what to do; rather, show them what you're doing".

Drawing policy-makers to hub spaces often helps identify champions who can broadcast the hub's successes to a larger audience. Buni Hub, for instance, has a strong champion in Dr Mshinda (see Box 7), who amplifies Buni Hub's successes at the highest policy levels and encourages colleagues in the public sector to consider hub-friendly investments in innovation rather than focusing solely on traditional research and development expenditures. In other cases, in-person visits can help recruit new champions, as Box 3 showed with the President of Kenya's surprise visit. Furthermore, high-profile visits can be a form of legitimisation; once the president, for instance, has visited a hub, it is likely to be much easier to convince and engage with technocrats that have the expertise and experience necessary for meaningful co-creation with the hubs.

In identifying and working with a particular public sector champion, hubs must factor in the risk posed if such an individual leaves office or the position of influence changes; the policy engagement tactics built around that relationship could collapse, leaving hubs having to start from scratch. As far as possible, therefore, hubs should work with these champions to acquaint and network within public sector institutions in the policy space to broaden their base of support and influence.

5. Explore policy engagement as a collective

Tech innovation hubs in the same country could explore engaging in policy as a collective to help mitigate some of the perceived risks of individual engagement, and to make policy asks with a stronger, unified voice. The successful model of the OpenGov Hub in Washington DC, USA, and replicated in Kathmandu, Nepal, is an extreme version of this collectivisation: the physical co-location of hubs. In addition to Box 5 about ccHub, the Yaba tech innovation cluster recently scored promises of electricity and grant support from the State's Employment Trust Fund, due in part to its collectivisation (Shera 2017).

The potential shared benefits include:

- information aggregation: hubs can more easily see how other hubs have achieved sustainability; similarly, each hubs' start-ups can share experiences
- cost-sharing: a 'hub of hubs' shares the costs of rent and infrastructure, and lowers the unit costs – the same idea as a technology or innovation 'district'
- client access: potential investors, donors or procurers, including governments, know exactly where to go when they are in the market for innovation
- branding bonuses: less name-recognised hubs have a better chance of growing their reputations and recognisability by virtue of being a 'member' of the same 'space'.

Promisingly, there are cross-national initiatives starting to push forward in supporting hubs to take on these collective activities. AfriLabs, for example, while still in its early stages, promises a shared learning and support that could facilitate some of the potential shared benefits described earlier. In fact, its statement of strategic priorities makes this clear: "To better serve their communities, hubs need to learn from each other through knowledge sharing and collaboration, achieve sustainability by creating solid business models and bolstering team capacity, and build the broader tech innovation community through partnerships".[23]

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23 See http://afrilabs.com/about-us

While easier said than done, unhealthy competition among hubs, or resistance to taking mutually beneficial opportunities, could jeopardise the sustainability of all. Hubs should consider participating in collective activities, even in the form of just sharing 'lessons learned papers',[24] whenever possible.

6. Engage on your own terms

Deciding how to engage with policy-makers without jeopardising hub independence or being exploited requires some tactful approaches, especially when resources are involved. The ccHub example of engaging only on its own terms, with a specific, single ask, and refusing larger support with strings attached, offers one way to mitigate risk. Already having a strong value proposition before engaging, with evidence of impact and a plan for how to attain sustainability, also allows for engaging from a position of strength and confidence. This could help inoculate hubs from being co-opted into political agendas, or from having their mission forcibly shifted. iSpace used this strategy in their Women in Tech programme, only reaching out to policy-makers once the programme was well established and operating successfully.

Lessons for funders

Much of tech innovation hubs' success over the years is attributable to the support of philanthropic funders from various backgrounds. Many of these funders offer this support "with the aim of having a catalytic effect on the number and quality of [tech innovation] projects being developed in-country", because they believe such projects "have the potential to dramatically impact upon all spheres of development, including health, education, agriculture, democratic transparency, human rights, economics and finance".[25] For hubs to achieve these goals means that they will need to engage in negotiating – or renegotiating – power relationships, as well as co-creating public sector policy solutions. Therefore, as the hub space matures, the individuals and organisations that support hubs should also evolve to support policy engagement. Here, we provide some specific ideas to help guide this evolution.

1. Hubs are critical nodes for social impact

As noted in the profile of tech innovation hubs (page 5), social impact and social innovation are strong, recurrent values underpinning hubs' missions, visions and activities. The strong desire within hubs (and their members) to improve their communities makes them great partners for meeting important societal challenges and training and imparting knowledge to local change agents. However, this potential can only be achieved through structuring funder support to accommodate longer-term processes, not just one-off events or ultra-short-term projects lacking sustainability plans. The ideas offered for hubs will only come to fruition if the funders that support hubs also support those new ideas.

Even more pressing, funders, especially official development aid partners, need to shed preconceived ideas of who 'belongs' in a tech innovation hub. Often, resources from the development aid community are some of the most readily available, but can be restrictive. In a 2014 survey of hubs, the vast majority of their projects lasted less than 12 months (Bridgespan Group et al. 2014). And according to Tayo Akinyemi, formerly of AfriLabs and now with the World Bank's infoDev project:

> Certain investors, e.g. governments, impact investors, and donors are incentivized to support activities with (at times) inflexibly defined social impact … typically, funders want to "pay for impact" but are somewhat reluctant to cover the costs of the people, assets, and processes that produce the impact ... This is especially true given the limitations on what hubs can secure support for … such as events, competitions, and trainings (Akinyemi 2014: no page).

Our interviewees frequently voiced concerns about the fact that many tech innovation hubs have emerged in 'middle class' spaces, and largely draw members from a similar background that are less common beneficiaries of development aid. However, these hubs and the innovative solutions they produce are

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24 See http://labs.webfoundation.org/resources/lessons-learned-papers
25 See 'About' and 'Why We Do What We Do' at https://indigotrust.org.uk/about

strongly driven by the desire to help make their societies better, often especially for those most in need. Examples included in this report clearly demonstrate this concern for marginalised populations, including Innovation Hub's eKasi labs initiative, iSpace's Women in Tech programme and iBizAfrica's primary school outreach events.

2. Hubs are excellent sources of local solutions

Most successful hubs emerged organically and have factored in local contexts at every step of their evolution. As a result, the solutions devised by hubs and the entrepreneurs and innovators that comprise them are necessarily local solutions to local problems.

Therefore, funders seeking to help solve societal challenges in one context should support innovations from that context, rather than imposing solutions devised elsewhere. For example, "looking to Silicon Valley for food security partners" may be inefficient and even counterproductive when ground-truthed, context-specific solutions can be formulated locally (Cheney 2016). A better way could be supporting and scaling *local* "breakthrough solutions to the world's most intractable development challenges – interventions that could change millions of lives at a fraction of the usual cost".[26]

Encouragingly, some international donors working in the tech hubs space continue to demonstrate their clear understanding that those breakthrough solutions can often be found in local tech innovation hubs. Omidyar Network, for example, recently announced that it was expanding its support to a successful former ccHub incubatee, BudgIT, whose work to expand citizen access to information on public budgets and resource allocations has been fundamental to Nigeria's governance improvements over recent years (Omidyar Network Newswire 2017).[27]

Thus, tech innovation hubs have a critical role to play as intermediaries, facilitating discussions between those searching for solutions and the local innovators leveraging technology to produce them. As the first lesson for hubs pointed out, however,

in order to attract investment or support, results and demonstrations must be of high quality and showcase an innovation's ability to handle scale.

Lessons for policy-makers

As described in the methodology section of this report, our original research plan aimed to incorporate extensive policy-maker perspectives, but establishing connections proved difficult. However, from the policy-makers we did manage to engage, and the hubs we collaborated with, we surfaced the following suggestions for policy-makers.

1.Support the organic innovation clusters already emerging, rather than creating artificial tech districts

As many developing countries seek to create science and technology parks or cities, it is worth assessing where organic clusters of innovation are already emerging and exist. The enthusiasm and infrastructure improvements comprising these tech city projects could, in many cases, be much more impactful if deployed around existing hubs, as ccHub's work described in Box 5 showed. For maximum benefit, governments should even include tech innovation hubs as co-creators or partners in these projects, on an even playing field with more traditional technological heavyweight firms. The Innovation Hub's history illustrates the potential of this parity.

In addition, to avoid 'white elephant' projects, policy-makers should only seek to create distant tech zones far from existing innovation spaces if the new districts will provide new and strong incentives for the organic clusters to migrate or replicate therein. Such incentives could include infrastructure support, or improved, direct access to key government or private sector clients. The governments of Ghana and Kenya have attempted such tech district development without considering these incentives. Kenya's Konza's Techno City "has struggled through years of delays. Now finally under construction, it still faces many problems, among them a seemingly insurmountable budget shortfall and mixed feelings in the Kenyan tech community" (Rosen 2015). Similarly, Ghana's Hope City never proceeded beyond an 'opulent'

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26 See www.usaid.gov/div
27 BudgIT has also received a practitioner research grant from Making All Voices Count. See http://bit.ly/2eC1Ozw

launch party, and leading government ministries have publicly distanced themselves from the project (Mubarik 2016).

2. Be willing to explore and engage in partnership

Policy-makers tackling innovation and entrepreneurship need to be willing to explore the practical evidence emerging from technology innovation hubs. As described earlier, attending hub events or visiting the hubs to see their innovators at work are great ways to engage and better understand what they do, and what the role of policy and policy-making is in supporting this. Further, agreeing to physically work from the hub's space is a potentially transformative innovation that policy-makers can consider. One successful example is France's General Secretariat for State Modernisation, which rents space in Superpublic, a co-working space of "free zones where it's possible and encouraged to think out of the box … with the capacity to reunite outstanding capabilities in public innovation".[28]

3. Hubs are a road map for innovation and entrepreneurship in action

As more governments undertake specific national programmes and strategies to support innovation and entrepreneurship, tech innovation hubs cannot be overlooked. In fact, much of what they currently do could be viewed as something of a road map, and at the very least inviting them to participate in co-creating such strategies would harness key local innovation experts.

Two programmes reported in an interview with a representative of the Ministry of Trade, Industry and Cooperatives in Kenya provide a useful illustration. The Ministry acknowledges the significant role of innovation through technology in its guiding principles, and the National Industrialisation Policy "presents strategies for initiating innovation and technological advancement for boosting productivity and competitiveness of the industrial sector".

The Ministry has therefore been conducting stakeholder engagement with various innovation and entrepreneurship institutions, including consulting iBizAfrica / iLabAfrica as a crucial and equal stakeholder (see Box 8). The outcome of this engagement will be a programme with a 10-year outlook and deliberative effort to grow enterprises, and the Ministry is already planning future hub outreach.

Second, the Ministry is working on standardising accreditation for centres of excellence with tech hubs, and is doing pilot work with some hubs on how to do so. This, in the Ministry's view, will help establish a clear framework to better communicate to potential funders and clients the services offered by hubs, including their role in the entrepreneurship and innovation pipeline.

Finally, a quote from Dr Mshinda of COSTECH summarised hubs' potential for policy-makers: "We cannot just talk about innovation; we need conduits to facilitate innovation towards entrepreneurship." Tech innovation hubs can indeed be these conduits.

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28 See http://superpublic.fr

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About Making All Voices Count

Making All Voices Count is a programme working towards a world in which open, effective and participatory governance is the norm and not the exception. It focuses global attention on creative and cutting-edge solutions to transform the relationship between citizens and their governments. The programme is inspired by and supports the goals of the Open Government Partnership.

Making All Voices Count is supported by the UK Department for International Development (DFID), the US Agency for International Development (USAID), the Swedish International Development Cooperation Agency (SIDA) and the Omidyar Network, and is implemented by a consortium consisting of Hivos, IDS and Ushahidi.

Research, Evidence and Learning component

The programme's Research, Evidence and Learning component, managed by IDS, contributes to improving performance and practice, and builds an evidence base in the field of citizen voice, government responsiveness, transparency and accountability (T&A) and technology for T&A (Tech4T&A).

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Results for Development Institute (R4D) is a non-profit organisation whose mission is to unlock solutions to the development challenges that prevent people in low- and middle-income countries from realising their full potential. R4D's governance practice focuses on addressing the availability, actionability and uptake of solid evidence to strengthen the impact of transparency, participation, accountability and governance on people's lives, to ultimately improve health and education systems and outcomes worldwide.

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