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Philippines Innovation Ecosystem Assessment: Executive Summary

Science, Technology, Research and Innovation for Development (STRIDE)

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INTRODUCTION

According to the US National Science Foundation, the term innovation ecosystem refers to the "economic...dynamics of the complex relationships...between actors or entities whose functional goal is to enable technology development and innovation." (Jackson, D. 2011) Growth of the innovation ecosystem requires that two distinct but interdependent systems—the knowledge economy (driven by fundamental research) and the commercial economy (driven by the marketplace)— work together to move innovation from laboratory to marketplace. In this cycle, a fraction of profits from business is, either directly or through government spending, channeled to support research activities. In turn, investments in research generate innovation-induced growth in the economy, creating greater profits in the commercial sector through new products and services. When new profits are reinvested in research activities, the cycle becomes self-reinforcing, and sustained technology-led economic growth is the result.

The USAID/Philippines Science, Technology, Research and Innovation for Development (STRIDE) Program is implemented by RTI International with partners Rutgers University, Florida State University, Philippine Business for Education (PBEd), and the William Davidson Institute at the University of Michigan. The mission of USAID's STRIDE is to spur inclusive economic growth by boosting the capacity of Philippine universities to conduct science and technology research aligned with the growth requirements of the private sector, building up the innovation ecosystem for the benefit of the country.

STRIDE has conducted this assessment of the Philippine Innovation Ecosystem to identify critical strengths and weaknesses as identified by Philippine stakeholders, and interpreted by STRIDE. It is intended to be an opportunity for a representative cross-section of Philippine stakeholders from government, university, and industry to provide perspective and direction to STRIDE in its efforts to improve the research and innovation environment. The assessment is not intended to be an authoritative statement on the innovation ecosystem, or to reflect the opinions of STRIDE or USAID, nor to substitute for data-driven assessments. It is, to our knowledge, the first known attempt to understand how specific challenges originate and ripple through different areas of the ecosystem and how these cross-cutting chains of impacts can be addressed from the underlying causes to achieve durable improvements in innovation performance.

In particular, the assessment was prepared to inform the activities of the Philippine Government University Industry Research Roundtable (P-GUIRR), a new consultative body supported by STRIDE which intended to provide a neutral forum for stakeholders in the science, technology, and innovation to discuss critical challenges and collectively devise locally-appropriate solutions. The assessment is being released on the occasion of its first meeting in November of 2014. The full version of this assessment can be accessed at http://www.stride.org.ph.

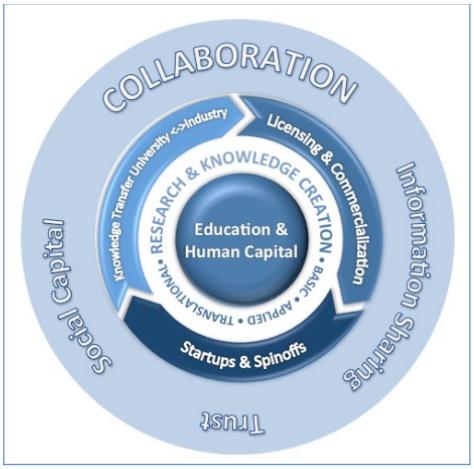

Figure 1. STRIDE's Innovation Ecosystem Model.

ASSESSMENT MODEL

This assessment uses a model of the innovation ecosystem developed by STRIDE implementer RTI International in its worldwide work helping governments, businesses, and universities harness innovation for economic growth. This model, illustrated in Figure 1, encompasses five dynamic processes and one contextual factor. The five processes are (1) education and human capital development; (2) research and knowledge creation; (3) direct collaboration between universities and industry, particularly but not exclusively through industrial extension and direct service provision; (4) intellectual property: protection, licensing and commercialization of technology; (5) startup and spinoff companies based on technology and innovation. These processes occur in the context of (6) the environment for collaboration, including information sharing, trust, and social capital, which is represented by the outer circle.

STRIDE has focused this innovation ecosystem assessment on the supply, demand, and enabling environment for each of the first five dynamic factors and on the overall context for collaboration. This allows us to construct a scorecard reflecting all relevant factors in the model in sufficient depth to identify the source of strengths and weaknesses in the innovation ecosystem at a granular and actionable level.

ASSESSMENT PER AREA

This section provides summaries of our most important findings in each of the six factors we assessed. More complete definitions of the factors assessed in each area are presented in Annex B of this document and in the full report, while more in-depth discussion of the findings appear in the full report.

Education and Human Capital Development

While the quality of science, technology, engineering, and mathematics-(STEM-) related training in the Philippines is acceptable by global standards, the supply of STEM graduates continues to exceed local demand, leading to continued out-migration of skilled people and under-employment of many locally trained scientists and engineers. At the same time, there are reported shortages of training for critical innovation-driven fields, particularly in high-demand IT fields. The higher education environment—including both public and private—is perceived to be working, as evidenced by strong global demand for Filipino graduates, but could be more aggressively coordinating with employers to ensure that course content and professional licensing keep pace with emerging technology trends. Additionally, important questions have been raised about whether the lack of a strong research culture in universities leaves students ill prepared for the most demanding aspects of science and technology innovation.

Research and Knowledge Creation

Although the Philippines is widely perceived as lacking a strong culture of research, young researchers in particular are seen as interested in and capable of important innovations and offer great hope for building a stronger ecosystem. An important and largely hidden concentration of multinational engineering research centers also suggests that more applied research happens in the Philippines than is typically acknowledged. Unfortunately, the university system lacks the appropriate incentives, both for individuals to consider research as a career, and for institutions to produce globally competitive and commercially relevant research outcomes. In particular, more strategic targeting of government research funding priorities and critical improvements in the enabling environment for research are necessary to unleash the system's potential.

Knowledge and Know-How Transfer between Universities and Industries (Extension)

With notable exceptions, universities perceive direct collaboration with industry as yielding neither publications nor prestige, nor patents. Industry also sees direct collaborative relationships as complicated relative to their other options —principally consulting arrangements with faculty—because of universities' competing priorities, unrealistic expectations of future patenting revenue, and burdensome administrative procedures. Effective models for structuring such collaborations do exist, and nothing in the enabling environment directly prohibits the formation of productive direct relationships. However, the lack of a legally sanctioned payment mechanism for companies to contribute financially to government-funded research projects introduces unacceptable risk for some businesses, further diminishing their interest.

Intellectual Property: Protection, Licensing, and Commercialization

A recent period of intensive focus on intellectual property catalyzed by the Intellectual Property Office of the Philippines (IPOPHIL) has drastically expanded patenting activities and broadened awareness of the potential value of scientific discoveries that are properly protected. Yet universities in general do not possess the specialized expertise to effectively market their patent portfolios for commercial use. There is also very little current demand from local companies and industries due to a widely expressed desire for total control of intellectual property as an element of business strategy, and due to lack of familiarity with and trust in legal mechanisms for licensing. In most respects, the regulatory environment, currently attuned to international standards, is not an obstacle to licensing, though companies report that they do not always trust that confidentiality can be maintained in the patenting process. Some also report the need for legislation to establish an officially sanctioned payment mechanism for acquiring rights to, or licensing, government-funded innovations from universities and agency laboratories.

Startup and Spinoff Companies

Rapidly growing demand from venture capitalists and Philippine conglomerates for profitable technology startups and spinoff companies outstrips the current supply, which is concentrated in small but coherent ecosystems principally in Metro Manila and Cebu. While there remains a dearth of experienced technology entrepreneurs, and a general aversion to risk among professionals, interest among potential entrepreneurs is being stimulated nationwide through deliberate efforts by entrepreneur education and support organizations such as Science and Technology Advisory Committee (STAC), Kickstarter, Ideaspace, PhilDev, and numerous corporate initiatives. Enabling conditions related to finance, mentoring, matchmaking, and incubation are also improving rapidly through strategic efforts of domestic and international stakeholders. Yet, basic business regulation issues remain very challenging to growth companies, and many of the entrepreneur-specific business services and much of the expertise necessary to grow the startup ecosystem remain absent.

Collaboration: Knowledge Sharing, Trust, and Social Capital

The national innovation ecosystem is characterized by widespread mutual mistrust and dismissiveness between university and industry communities, and by more competition than collaboration, perhaps reflecting the historic conglomerate structure of the Philippine economy. Government was also singled out by several interviewees as generally resistant to collaboration and sharing of information and resources. These factors introduce significant friction into the innovation ecosystem, limiting the growth of innovative research and businesses. There are, however, pockets of excellent collaboration among high-level business, government, and university executives (who collaborate more willingly around concrete opportunities), within scientific professions and networks, and among returned (Balik) scientists, entrepreneurs, and executives. Collaboration among key stakeholders also appears to be more routine in less well- resourced communities outside of Metro Manila.

Overall Performance

The aggregate results of the 2014 innovation ecosystem scorecard (Table 1) suggest positive momentum in several directions and a few clear strengths upon which to build, but also point to several issues that must be addressed for a more smoothly functioning innovation ecosystem to emerge in the Philippines.

Table 1. Philippines Innovation Ecosystem Scorecard Results, 2014

Factor	Supply	Demand	Enabling Environment
Education and Human Capital Development			
Research and Knowledge Creation			
Transfer of Know-How between Universities and Industries (Extension)			
Intellectual Property: Protection, Licensing and Commercialization			
Startup and Spinoff Companies			
Collaboration: Knowledge Sharing, Trust, Social Capital			

We reiterate that this scorecard constitutes a baseline report on stakeholder opinions of the Philippine innovation ecosystem, rather than an authoritative diagnostic. It is intended to provoke discussion among interested stakeholders and to provide the opportunity for open dialog. Future versions of this scorecard may include momentum and/or direction indicators to ensure that progress towards a healthier ecosystem is appropriately recognized and celebrated.

RESULTS AND DISCUSSION

STRIDE identified several issues that originate in a specific areas of the ecosystem—represented by a "cell" of the report card)— but that create, or contribute to, a negative chain of causality that permeates several other areas of the ecosystem. In describing these "chains of causality," we attempted to understand how specific challenges ripple through different areas of the ecosystem and how these system-wide impacts can be addressed from the underlying causes to achieve durable improvements in innovation performance. In each section, the progression of these impacts throughout the innovation ecosystem is illustrated in an accompanying table, which serves as an abbreviated version of the scorecard. The original issue is presented as "zero" **0** in its appropriate domain (cell of the table) and each subsequent step in the causal chain of impacts is represented by the subsequent number [**1 2 3 4 5**] in the relevant impacted domain (cell of the table).

Reform of procurement rules for research activities needed to achieve speed, efficiency, and relevance

Key Cross-Cutting Finding

One-size-fits-all procedural requirements under Republic Act 9184 make procurement of equipment and consumables for research extremely slow and unnecessarily complex, diminishing research productivity, publication potential,

and the speed with which innovations can reach the market through licensing or spinoffs. This issue originates in the research enabling environment **0**.

Impacts across Domains of the Ecosystem

In the context of single- or two-year research grants, the delays introduced into the research process can be significant, slowing or stopping research progress altogether **1**. Where government funding supports university-industry research collaborations but falls under national procurement regulations, universities report that they are unable to deliver results in a timely manner due to these requirements, undermining private-sector confidence and interest in collaboration with universities **2 3**. Finally, the global research "marketplace" is hyper-competitive, with success determined by speed of obtaining results. Researchers and companies alike have reported to STRIDE that procurement-related delays in research often make Philippine innovations "late to market" for licensing **4** and/or spinoff **4** and result in missed opportunities for researchers to be the first with results in top publications. In this environment, it is easy for researchers to become discouraged, in some cases reportedly abandoning the profession entirely **5**, or moving abroad in search of a friendlier research-enabling environment. This chain of impacts is illustrated in Table 2.

Table 2. Chain of Impacts: Procurement Regulations

Domain	Supply	Demand	Enabling Environment
Education	**5**		
Research	**1**	**2**	**0**
Extension		**3**	
Licensing		**4**	
Startups		**4**	
Collaboration			

Recommended Action(s)

Stakeholders could work through the Philippine Government-University-Industry Research Roundtable (P-GUIRR) to build consensus around a *legislative strategy for procurement reform* to devise transparent mechanisms to acquire grant-stipulated research equipment and consumables at a pace more conducive to the research enterprise, while maintaining transparency and accountability with public funds. Providing input into the current Department of Science and Technology- (DOST-) led process of drafting a *science and technology bill* may offer one timely option.

Changes in counterpart funding in research grant structures are needed to align university-researcher incentives and potentiate research and development (R&D)

Key Cross-Cutting Finding

Government research grants do not compensate universities for the salary of teaching faculty members' research activities (a practice rare outside of Philippines). This "counterpart funding requirement," as it is known, creates unnecessary financial competition between research and teaching missions within universities. It forces administrators to choose between (1) requiring faculty to do research in addition to a full teaching load, which virtually guarantees poor quality research; or (2) de-loading faculty members to allow them to conduct effective research and then facing an institutional budget crisis due to the lack of funds to pay for replacement teachers. Because it relates to specific conditions of funding the origin of this issue straddles the domains of research demand and enabling environment **0**.

Impacts across Domains of the Ecosystem

In addition to directly reducing the supply of research **1**, this requirement sets up a chain of "behavioral" impacts throughout the innovation ecosystem. Faced with this conundrum, administrators rightly seek other options to recover funds. Potential future licensing and commercialization revenues from research discoveries are one area in which Philippine universities have begun to look, developing expectations for revenue recovery that are extremely optimistic relative to world benchmarks. They are also counterproductive because the resulting contentiousness in research and licensing agreement negotiations with potential private sector partners continues to hamper relationship development between universities and the private sector **2** and makes industries increasingly reluctant to enter any joint research **3** or licensing relationships **4**. This chain of impacts is illustrated in Table 3.

Table 3. Chain of Impacts: Counterpart Funding Structures

Domain	Supply	Demand	Enabling Environment
Education			
Research	**1**	**0**	
Extension		**3**	
Licensing		**4**	
Startups			
Collaboration		**2**	

Recommended Action(s)

STRIDE recommends that P-GUIRR and other research system stakeholders work to build a coalition to make small but important changes in counterpart funding practices in key funding agencies, which we understand to be administrative practices rather than legislative mandates. A first step could be for STRIDE to document successful alternative counterpart funding models that are better aligned with promoting the university research mission.

More appropriate expectations of university patent licensing revenue based on global benchmarks facilitate better industry-academe collaboration

Key Cross-Cutting Finding

The demand for both public and private universities to find new sources of revenue, a feature of the enabling environment for education **0**, has created a set of apparently unrealistic (In the United States for 2012, universities active in licensing earned only 3.76% of the value of their research portfolios back in fee and royalty revenue from licensing of patents, net of legal expenses.) expectations about the potential for monetizing university research, particularly anticipated revenue derived from licensing of patents. The expectations create behavioral incentives for university administrators that undermine several possible forms of collaboration between universities and industry.

Impacts across Domains of the Ecosystem

This misunderstanding of the potential of licensing revenues appears to be one cause of universities' demanding disproportionally large shares of IP ownership in (simple) industry-led joint research and technical services projects. In turn, this leads businesses to favor the use of faculty members as consultants rather than the pursuit of institutional research relationships **1**. By alienating potential industry partners with unrealistic financial expectations, universities lose the chance for significant direct service **2** and licensing/royalty revenues **3**. This, in turn, stunts the growth of the university research enterprise as a whole **4**, since both direct private sector funding and political support are diminished. Additionally, in the absence of proactive university policies that provide clear and reasonable frameworks for benefit sharing between inventors, investors, and universities, potential spinoffs are also discouraged **5**. The chain of impacts is illustrated in Table 4.

Table 4. Chain of Impacts: inflated patent licensing revenue expectations

Domain	Supply	Demand	Enabling Environment
Education			**0**
Research	**4**	**1**	
Extension		**2**	
Licensing		**3**	**0**
Startups		**5**	
Collaboration			

Recommended Action(s)

STRIDE recommends that stakeholders work to bring university expectations of patent licensing (fee and royalty) yields in line with global benchmarks. An overarching goal should be to re-focus incentives within universities on core competencies related to producing knowledge through research. Where revenue replacement is sought, focusing on more productive partnerships with industry for direct provision of technical services consistent with the universities' research mission can serve as a foundation for more productive longer-term collaborative research relationships.

Building stronger university-industry relationships around shared missions and goals

Key Cross-Cutting Finding

Widespread mutual distrust and disregard between universities and industry introduce significant friction into the environment for collaboration **0** upon which the innovation ecosystem is built. Most universities perceive assisting companies as outside of their core missions, and faculty members are acutely afraid that relationships with business might lead to the "theft" of their ideas, resulting in severe financial and reputational consequences. Public university leaders also may risk vocal criticism for engaging in relationships with business, even where positive financial results are generated. Businesses, in turn, report difficulty in convincing universities of their shared interests, resent the suspicion harbored by academia, and may not trust universities to deliver commercially relevant research in a timely fashion.

Impacts across Domains of the Ecosystem

From this nucleus of mistrust spring several negative consequences for the innovation ecosystem. The first result of a poor collaboration environment is reduction in both the supply **1** and demand **1** for direct collaboration and know-how transfer. The result is mutual ignorance and, most damagingly, a lack of knowledge about current industry trends and concerns among professors—yielding educational experiences for students that are less relevant to the labor market **2**. Universities' research agendas are, in turn, formed without regard for the scientific and technical needs of Philippine industry **3**, since *the relationships in which these needs are articulated, communicated, and translated into viable research projects do not exist*. Inevitably, then, research results **4** and resulting patents are perceived by businesses as less valuable, the current situation of depressed domestic industry demand for licensing is perpetuated **5**, and financial returns on licensing of university patents continue to underperform (even in relation to realistic benchmarks). *Ironically, faced by this situation, universities are reported to negotiate even more tenaciously when any commercial interest is shown in licensing their patents, creating a self-reinforcing cycle of mistrust*. This chain of impacts is illustrated in Table 5.

Table 5. Chain of Impacts: Environment of Distrust

Domain	Supply	Demand	Enabling Environment
Education	**2**		
Research	**3**	**4**	
Extension	**1**	**1**	
Licensing		**5**	
Startups			
Collaboration	**0**		

Recommended Action(s)

Stakeholders can promote better sharing of success stories through P-GUIRR and other public dialog mechanisms, and can encourage spending on R&D through institutions. They can also work to create alternative narratives and showcase win-wins, for example, celebrating Balik/returnee scientists who have successfully engaged in creating commercial ventures in partnership with the private sector, and revealing the specific financial terms of these relationships to the extent possible, in order to adjust expectations. Stakeholders could also work to develop (voluntary) national revenue-sharing guidelines and protocols outlining reasonable university-industry revenue-sharing arrangements for each type and phase of research to provide guidance and "political cover" to administrators and researchers engaged in developing public- private partnerships.

CONCLUSION

STRIDE hopes that this study will stimulate better informed and more productive approaches to building Philippines' science, technology, and research enterprise. The assessment model and resultant scorecard are intended to highlight the complex interactions between supply, demand, and the enabling environment in each of the key areas comprising the innovation ecosystem. The assessment results emphasize the need for participatory solutions that address key challenges at the root causes and along the identified causal chains, and with an appreciation for the perspectives and experiences of all involved stakeholders.

Each of the major issues reported by STRIDE—especially the cross-cutting chains of impacts— also invite solutions emanating from different domains of action. For example, procurement rules may need to be addressed at the legislative level, through specific and careful changes to Republic Act 9184, although there may also be scope for the Government Procurement Policy Board to define changes in implementing rules and regulations. Others are clearly a matter of departmental regulations, as in the case of DOST and CHED counterpart funding requirements. Still others may be more issues of culture than of policy, but will benefit from changes in formal practices from across the spectrum of organizations involved in the ecosystem.

Our findings should also provide a modicum of caution even about the ability of key STRIDE initiatives to provide "magic bullets" or quick fixes. Among other objectives, STRIDE aims to create more PhDs, stimulate more public and private research funding, and bring about more accurate costing of research overheads. Each of these is a necessary ingredient in the recipe for a stronger, more innovative university-based research system in the Philippines. Yet these efforts must be part of a holistic, stakeholder-led effort to build relationships, mutual understanding, and feedback loops that can make the system self-sustaining and self-correcting. The potential of a neutral consultative body such as P-GUIRR to support such efforts can be realized if it becomes a stakeholder body truly representative of the diversity of interests and perspectives in Philippine innovation.

REFERENCES

Jackson, D. (2011). What is an innovation ecosystem? Arlington, VA: National Science Foundation. Internet Retrieval: http://bit.ly/1yTOPcq.

Annex A. Stakeholder Organizations Interviewed for this Assessment

Ateneo de Manila University
Awesome Labs
Ayala Innovation Group
Boysen
Cagayan Electric Power and Light Company, Inc. (CEPALCO)
Carmen's Best
Cebu Educational Development Foundation for Information Technology (CEDFIT)
Chemical Industry Association of the Philippines (SPIK)
Commission on Higher Education (CHED)
De La Salle University (DLSU)
Del Monte Fruit
Department of Science and Technology, Region VII (DOST-VII)
Department of Science and Technology, Region X (DOST-X)
*Department of Trade & Industry (DTI)**
Enterprise Project
Entrepreneurs' Organization (EO)
Far Eastern University
*Farmers Community Development Foundation International (FCDF)**
HGST (Western Digital)
HOLCIM
IBM ISV and Developer Relations Group
IBM Systems & Technology Group
IDEASPACE
Independent Technology Consultant
Institute of Electronics Engineers of the Philippines (IECEP)
Intellectual Property Office of the Philippines (IPOPHIL)
Microsoft
Mindanao State University- Iligan Institute of Technology (MSU-IIT)
Mindanao University of Science and Technology (MUST)
MITE Asia
*NarraVC**
National Competitiveness Council of the Philippines
Nestles
Pascaual PharmaCorp
Philippine Business for Education (PBED)
Philippine Council for Industry and Energy Research and Development (PCIERD), DOST
Philippine Development Foundation (PhilDev)
Philippine National Academy of Sciences (P-NAS)
*Philippines Institute for Development Studies (PIDS)**
Science and Technology Advisory Committee (STAC) Silicon Valley
Semiconductor & Electronics Industries in the Philippines, Inc. (SEIPI)
Sigmatech
Technological Institute of the Philippines (TIP)
Technological University of the Philippines (TUP)
Texas Instruments (TI)*
*University of East Asia**
University of San Carlos (USC)
University of the Philippines- Cebu
University of the Philippines- Los Baños
University of the Philippines- System
USAID COMPETE Project
*USAID IDEAS Project**
USAID STRIDE Project
Whoosh 3D

*Indicates that the interviewee had affiliations with multiple organizations listed here.

Annex B. Detailed Assessment Criteria by Factor

EDUCATION AND HUMAN CAPITAL		
Supply	**Demand**	**Enabling Environment**
Quality and quantity of training: *Postgraduate STEM Training *Undergraduate STEM Training *Technical Training (TESDA) *Foundational STEM education	Demand for STEM skills: *Returns to education *Student & family preferences *Employers- Filipino *Employers- Foreign in Philippines *Employers- Overseas	Rules, regulations, and enablers, including: *Accreditation and standards *Results-based quality control *Labor market information (occupational & demand) *Education finance
RESEARCH AND KNOWLEDGE CREATION		
Supply	**Demand**	**Enabling Environment**
Researchers, Graduate Students, University research labs, Research networks and COEs, Research management capabilities, Corporate/business R&D, Private research entities; Government research centers International research networks including Philippines.	Government funding agencies Domestic Private Sector funders and collaborators International Private Sector funders and collaborators International academic / foundation / multilateral funders and funding networks.	Regulatory framework; specific regulatory barriers (procurement/purchasing) Institutional support systems and rules/incentives (e.g. costing of research), and about Inter-university networks for research collaboration
KNOWLEDGE AND KNOW-HOW TRANSFER BETWEEN UNIVERSITIES AND INDUSTRY (EXTENSION)		
Supply	**Demand**	**Enabling Environment**
*Applied research services *Technology extension services *Other services to industry	Technology users/acquirers in Industry: – Filipino – International i(n Philippines)	*Legal/ institutional framework (permission and rewards) * Quality of the relationship framework.
INTELLECTUAL PROPERTY: PROTECTION, LICENSING, AND COMMERCIALIZATION		
Supply	**Demand**	**Enabling Environment**
* Commercially viable IP *Assessment of market viability *Marketing expertise *Inclination to patenting *ITSOs and peers *IP Protection Expertise (disclosure through international protection)	*Technology users/acquirers (PH and Int'l). *Businesses' licensing expertise *Open innovation strategies *Entrepreneurs- PH and Int'l)	STRIDE Assessed: *Patenting regime *IP Law *IP Enforcement *Court/judicial system
STARTUP AND SPINOFF COMPANIES		
Supply	**Demand**	**Enabling Environment**
People *Potential entrepreneurs (pipeline) *Experienced entrepreneurs (existing talent) *Companies* *Firm creation and growth *Churn (entry/exit) *Basic Capabilities *Business Planning *Execution	"Opportunities" that can be accessed (OECD definition) *Opportunities in local supply chains for new ventures? *Opportunities in regional/ int'l supply chains for new ventures? *Opportunities in local final markets (e.g. retail channels) for startups?	STRIDE assessed: *Supporting Actors & Services* *Angels *Mentors *Venture Capital *Incubation/Acceleration *Business services *Procedural/Legal aspects of startup & exit, including:* *Administrative requirements *Bankruptcy *Barriers to exit *University regulations *Cultural issues and risk appetite*
COLLABORATION: KNOWLEDGE SHARING, TRUST AND SOCIAL CAPITAL		
STRIDE assessed the culture of openness, inclination to share knowledge and information if relevant to others' needs and missions; responsiveness to proposed collaborations, prevalence of peer review and other forms of open or participatory knowledge creation, assumption of goodwill from peers and system participants.		