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MDG ACHIEVEMENT FUND

# Networks for Prosperity

## Achieving Development Goals through Knowledge Sharing

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Leuven Centre
for Global
Governance Studies

MDG ACHIEVEMENT FUND

# Networks for Prosperity

## Achieving Development Goals through Knowledge Sharing

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# Acronyms

| | |
|---|---|
| AACCSA | Addis Ababa Chamber of Commerce and Sectoral Associations |
| ADB | Asian Development Bank |
| AECID | Agency for International Development Cooperation |
| AFRIMETS | Intra-Africa Metrology System |
| AfrIPAnet | Africa Investment Promotion Agency Network |
| ALADI | Associação Latino-Americana de Integração |
| ASEAN | ssociation of Southeast Asian Nations |
| AU | African Union |
| CAMI | Conference of African Ministers of Industry |
| CAN | Andean Community |
| CARICOM | Caribbean Community |
| CEO | Chief executive officer |
| CEPAL | Comisión Económica para América Latina |
| CINDE | Costa Rican Investment Promotion Agency |
| CIP | Competitive Industrial Performance |
| CODOPYME | Dominican Confederation for SMEs |
| DAC | Development Assistance Committee |
| DANIDA | Danish International Development Agency |
| DCED | Donor Committee for Enterprise Development |
| DFID | Department for International Development |
| ENLACE | Enhancing Scientific Cooperation between the European Union and Central America |
| ERIA | Economic Research Institute for ASEAN and East Asia |
| EU | European Union |
| FAO | Food and Agriculture Organization |
| FDI | Foreign direct investment |
| FIA | Foreign investment agency |
| FLACSO | Latin American School of Social Sciences |
| FMLN | Frente Farabundo Martí para la Liberación Nacional |
| FTA | Free trade agreement |
| GARNET | Network of Excellence on Global Governance, Regionalisation and Regulation |
| GCR | Global Competitiveness Report |
| GDP | Gross domestic product |
| GIZ | German International Cooperation |
| GVA | Gross value added |
| ILO | International Labour Organization |
| ILPES | Latin American and Caribbean Institute for Economic and Social Planning |
| ICT | Information and communication technology |
| INCAE | Instituto Centroamericano de Administración de Empresas |
| IT | Information Technology |
| JPC | Joint programme coordination |
| KM | Knowledge management |
| KM4Dev | Knowledge Management for Development |
| KOF | Swiss Economic Institute |
| MDG | Millennium Development Goals |
| MDG-F | MDG Achievement Fund |
| MOIT | Ministry of Industry and Trade |
| MPI | Ministry of Planning and Investment |
| NCPC | National Cleaner Production Centre |
| NGO | Non-governmental organization |
| PPP | Purchasing power parity |
| PROCOMER | Promotora del Comercio Exterior de Costa Rica |
| PSD | Private sector development |
| R&D | Research and development |
| RIKS | Regional Integration Knowledge System |
| SEM | Multinational enterprise headquarters |
| SICA | Sistema de la Integración Centroamericana |
| SIECA | Secretaria de Integración Económica Centroamericana |
| SOEs | State-owned enterprises |
| SSA | Sub-Saharan Africa |
| TT-SSC | Team on South-South Cooperation |
| UN | United Nations |
| UNCTAD | United Nations Conference on Trade and Development |
| UNDP | United Nations Development Programme |
| UNECA | United Nations Economic Commission for Africa |
| UNEP | United Nations Environment Programme |
| UNIDO | United Nations Industrial and Development Organization |
| UNU-CRIS | United Nations University Comparative Regional Integration Studies |
| USA | United States of America |
| WAITRO | World Association of Industrial and Technological Research Organizations |
| WB-ES | World Bank Enterprise Surveys |
| WEF | World Economic Forum |
| WTO | World Trade Organization |

# Foreword

Soraya Rodriguez Ramos
Secretary of State for International
Development Cooperation

On 18 December 2006, the United Nations and the Spanish Agency for International Cooperation signed a landmark agreement to programme €528 million towards key development goals and related development goals in selected sectors and countries.

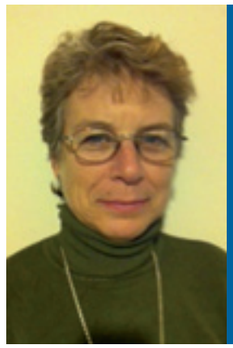
With this support, the Government of Spain is demonstrating its commitment to international development and to a strengthened multilateral system, and The United Nations, in particular.

The Spanish Master Plan for International Cooperation (2009-2012) outlines Spain's policy, advocacy and financial priorities in support of the achievement of the Millenium Development Goals. In line with these priorities, the establishment of the Spain-UNDP MDG Achievement Fund was a landmark in this expanding institutional partnership.

The private sector plays an essential role in poverty reduction in areas such as the creation of jobs, the supply of goods and services that the poor need, the engagement in policy dialogue and ensuring that business activities are aligned with key sustainability principles. In this regard, knowledge management and knowledge networks are crucial elements in order to exchange information and experiences that consolidate good practices that are generated through MDG-F joint programme implementation which can then be used for future initiatives. Global, regional and local knowledge management systems for private sector development will support developing countries in acquiring and adapting PSD-relevant knowledge to their specific context and development needs.We believe that this will considerably enhance the effectiveness of development activities and support developing countries in their endeavour towards reaching their individual development objectives and aspirations.

Soraya Rodriguez Ramos
Secretary of State for International Development Cooperation
Spain





# Foreword

Sophie de Caen
Director
MDG Achievement Fund

This report, Networks for Prosperity, is an outcome of a programme for the establishment of a knowledge management system for private sector development, funded by the Government of Spain through the MDG Achievement Fund.

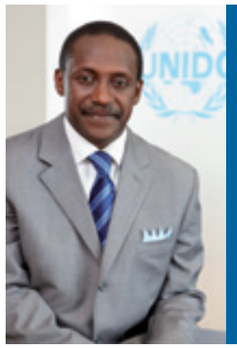
Coordinated by UNIDO, the programme brings together a range of United Nations agencies, intensifying the system's capacity to deliver as one globally and at the country level, while embedding knowledge gained in each of the twelve Joint Programmes of the MDG-F funding window, Development and the Private Sector.

The knowledge management system envisaged in the programme follows two tracks. On the one hand, it aims to strengthen the capacity and effectiveness of Joint Programme Teams through increased networking, knowledge sharing and mainstreaming of lessons learned. On the other, it seeks to create knowledge by establishing a more effective means of policymaking through moving beyond informal sharing of expertise residing in government institutions, the private sector, and civil society organizations.

Networks for Prosperity builds on the outcome of the Global Meeting of the Development and the Private Sector Joint Programme Coordinators held in Panama City in March 2011. It also contains the fruits of studies carried out in the twelve participating countries in the Funding Window: Bolivia (Plurinational State of), Costa Rica, Cuba, Dominican Republic, Egypt, El Salvador, Ethiopia, Panama, Peru, Serbia, Turkey and Viet Nam. These are varied countries, each following its own path to development. Nevertheless, the report uncovers a certain commonality in the range and types of formal and informal knowledge networks that affect national private sector development policies, in turn impacting broader economic and development goals.

New and innovative solutions will be needed to overcome development challenges as we approach 2015. Networks for Prosperity provides solid recommendations for such solutions in the area of Development and the Private Sector. I look forward to the implementation of these proposals in the next phase of the programme, and to the further strengthening of our global partnership for development.

Sophie de Caen
Director
MDG Achievement Fund



# Foreword

Kandeh K. Yumkella
Director-General
UNIDO

We live in an interdependent world, with the forces of globalization bringing us closer together day by day. At times this leads to grave challenges which much be confronted even in the absence of existing governance frameworks – a case in point is the global financial and economic crisis that is still felt throughout the world.

Regrettably, it sometimes appears that we act in our common interest only after the fact. In the sphere of international development cooperation, however, the need for a common approach has long been recognized. Over the past decade or more, greater thought has been given to interrelated concepts such as coherence in the elaboration by partners of development strategies and actions, and of efficiency and effectiveness of aid. Development actors generally have sought to better align their activities with national objectives. The United Nations system, in part spurred on by the drive to achieve the Millennium Development Goals by 2015, has intensified its cooperation globally and at the country level.

This willingness to enter into partnership provides hope for the future. Throughout my tenure as Director-General of UNIDO, I have made external collaboration a key theme of our organizational ethos. Our programmes and campaigns in areas such as access to energy, cleaner production, investment promotion, trade capacity-building and agri-business development are evidence of the benefits of broad-based coalitions for action.

Networks for Prosperity takes this concept further. The report moves beyond traditional mechanisms of cooperation to consider how what were once regarded as informal relationships between public and private organizations can become embedded, institutionalized networks for knowledge sharing, positively impacting policies for private sector development. It uncovers how networks of this type are emerging as a distinct form of governance to meet ever-changing policy challenges in international development. Moreover, it establishes for the first time a Connectedness Index covering a wide range of countries and correlating strongly with indicators on government effectiveness, regulatory quality, industrial development and economic development. The report provides solid recommendations on the next steps to be taken in deepening this index, and in leveraging the role of networks for private sector development.

Networks for Prosperity was prepared on behalf of the United Nations system by UNIDO together with the University of Leuven. It is one component in an initiative generously supported by the Government of Spain through the Development and the Private Sector funding window of the Millennium Development Goals Achievement Fund. I am convinced that this ground-breaking report will form the cornerstone of a new approach in private sector development policy, using dynamic multi-actor networks to meet development goals through to 2015 and beyond.

Kandeh K. Yumkella
Director-General
UNIDO



# Foreword

Jan Wouters
Director
Leuven Centre for Global Governance Studies

Networks, formal and informal, local and global, are increasingly important channels for pursuing policy goals in a globalizing world.

One of these goals, as identified by Millennium Development Goal 8, is the establishment of a global partnership for development. The private sector can play a key role in such a partnership. In fact, private sector development, as a spur to enterprise and economic growth, is now widely accepted as a tool to help achieve a range of development goals.

Networks for Prosperity maps this world of networks and captures their variety and diversity across a wide range of issues relevant to private sector development. It makes a significant contribution to the growing literature on the emergence of network governance as a distinct way of governing, which is based on information and knowledge exchange and learning by doing.

Networks for Prosperity approaches networks from a multi-actor and multi-level perspective. Such a comprehensive approach is crucial in order to grasp the complexity of current-day governance arrangements and their effect on private sector development and development in general. This multi-actor and multi-level approach concurs with the general approach taken by our Leuven Centre for Global Governance Studies, an interdisciplinary research centre of excellence of the University of Leuven.

Private sector development is clearly a result of a range of multi-actor initiatives. This report presents the private sector development 'ecosystem', which consists of many different types of actors, such as ministries, business associations and confederations, investors, enterprise support agencies, civil society groups, research and technology centres and universities. All play an important role in the governance arrangements for private sector development. The report also stresses the importance of different levels of governance and of forging networks within and across levels. This multi-level quality ranges from networks within organizations which are crucial to forge knowledge creation and diffusion, to networks on a regional and global scale which connect organizations with counterparts across state boundaries. In between, on the state level, the report goes into detail on different types of inter-organizational and state-society networks which greatly contribute to the further development of the private sector.

Networks for Prosperity will not only be of interest to academic researchers; it is at least as useful for global governance and development practitioners. The Global Academic Partnership Agreement with UNIDO enabled our Centre to work closely with UNIDO and its dedicated staff. It was a very enriching experience and we hope the end result will make a genuine contribution to the objectives of UNIDO and to global governance. We look forward to further cooperation in the future.

Jan Wouters

Jean Monnet Chair Ad Personam EU and Global Governance
Professor of International Law and International Organizations
Director, Leuven Centre for Global Governance Studies - Institute for International Law
University of Leuven

President, Flemish Foreign Affairs Council
Honorary President, United Nations Association Flanders – Belgium



# Executive summary

## Introduction

Knowledge management and knowledge networking can play a key role in achieving development goals. It is therefore an important topic for change agents and policymakers in the fields of development policy and policy effectiveness.

This report intends to provide decision-makers with a basis for including knowledge management and knowledge networking in policy considerations related to development strategy, effectiveness and governance. It is not intended as a full, in-depth study of all the links between knowledge networking, network governance and private sector development, but it gives an overview of the various concepts, provides new findings on correlations between them and illustrates these concepts with country case studies.

The report is the outcome of a request to UNIDO, the technical convenor agency of the funding window "Development and the Private Sector" of the Spanish MDG Achievement Fund (MDG-F), to create a knowledge management concept that would support developing countries in acquiring and adapting private sector development (PSD)-relevant knowledge to their specific contexts and needs, and enhance the knowledge capabilities of the United Nations system and its national counterparts and partners in the field of PSD policy.

# Part 1: Concepts and empirical analysis

The first part of the study discusses, in general terms, the importance of information and knowledge networks for development and then outlines a method for demonstrating the links between networking and development through empirical analysis.

**CHAPTER 1: PRIVATE SECTOR DEVELOPMENT, KNOWLEDGE MANAGEMENT AND NETWORKS**
Private sector development (PSD) is fundamental to sustainable economic development. In order to further develop the private sector a wide variety of policy initiatives is taken. Governments are increasingly interested in sharing knowledge with regard to these policy initiatives and the lessons learned. Hence the importance of networks and knowledge management in these networks. The latter, which can take many forms (such as database creation, knowledge fairs and peer assisted learning) is the process through which organizations transform information into knowledge which helps them to achieve their goals.

The rise of what might be termed "network governance" takes place in a context of a shift from government to governance which has been redefining the role of national authorities in market regulation since the 1980s. Major characteristics of this shift include:

- Increased participation of non-governmental actors in policymaking, including the elaboration of policy norms and goals.
- Regulatory regimes that take account of the different values and interests of actors involved in the policy-making process and regulatory coordination to facilitate communication between public and private actors.
- Decentralization of policy competences with integration of policy domains by collaboration across functional divisions of government.
- Non-coercive ('soft') policy instruments replacing 'command and control'.
- Adaptability and constant learning.

Whether networks enable or constrain private sector development and PSD policies depends on the nature and governance of the network. A key conceptual distinction is the difference between embedded networks and autonomous or arm-length networks. The differences are elaborated in the report. Large networks tend to be mainly constructed of arm-length ties, while small networks are more likely to consist of embedded ties.

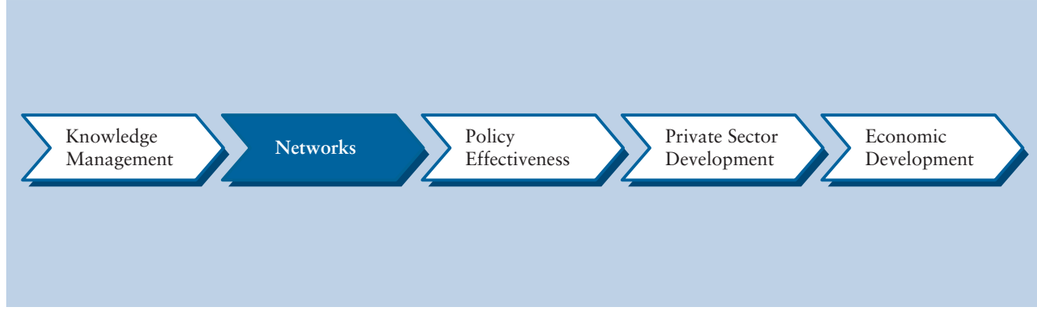


Embedded and arm-length networks perform different functions in the context of knowledge management. An optimal network is an embedded network which is sufficiently open to arm-length ties. The aim should therefore be to develop institutionalized and embedded networks that are nevertheless sufficiently fluid and flexible. Within and parallel to institutionalized networks, informal or personal networks can play an important role in this connection.

**CHAPTER 2: MEASURING NETWORKS ACCROSS COUNTRIES: AN EMPIRICAL EXPLORATION**
Up to now, there has been no overall network index to compare countries and substantiate the importance of networks for development. This chapter explores the possibilities for constructing such an index. Given the restricted scope of the study, it relies on existing databases. More than 70 of these which contain data for a large number of countries were screened for indicators which can be related to international, inter-organizational and intra-organizational networks. The average of the results for these three sub-indices constitutes the overall network or connectedness index.

The resulting connectedness index showed strong variations in the degree to which countries are networked, both internally as well as internationally. Some countries achieve a consistently high score on the various network indicators and hence on the connectedness index, whereas the scores of others are consistently low. Similar scores on the connectedness index were often reached by very distinct paths. The next step in the analysis was to explore the relationship between connectedness and government effectiveness, regulatory quality, competitive industrial performance and GDP (gross domestic product) per capita PPP (purchasing power parity). The result was a strong positive linear relationship between connectedness and these four performance indicators. Networks, in short, do play a role. However, more conceptual work and empirical research is needed to explain the variations, disentangle causal relationships and determine precise effects.

*Figure 1.1: Focus of the report*



# Part 2: International, inter-organizational and intra-organizational networks in practice

The second part of the study discusses the governance of international, inter-organizational and intra-organizational networks. The individual chapters are illustrated with detailed examples from a wide range of developing countries and transition economies.

**CHAPTER 3: KNOWLEDGE WITHOUT FRONTIERS: INTERNATIONAL NETWORKS**
International knowledge networks can have a bilateral, regional and multilateral character and can emerge not only between government actors but also between non-government actors (as in international trade and foreign investment). Well-known examples include the information and knowledge exchanges at various policy-related levels between the EU and the USA (bilateral networking), within the African Union, ASEAN, and SICA, CAN, ALADI and Mercosur in Latin America (regional networking), and in the context of the United Nations system (multilateral networking).

The complexity of international networks is, following Slaughter (2004), increasing as a consequence of two related developments:

- There is a tendency for governments to disaggregate into their components, which are no longer solely interacting within the government hierarchy but also outside their boundaries with foreign counterparts;
- As a result, government networks emerge which exist alongside, and sometimes within, more traditional international organizations.

A distinction can be made between horizontal networks, such as networks among government officials or business leaders from different countries, and vertical networks between supranational officials and their country-level counterparts. Of course, both aspects may be represented in networks.

Issues which are central to the functioning of all networks, but multilateral networks in particular are:

- Trust: without trust joint network management is highly unlikely;
- Leadership: who should take the lead - a new organization or any of the existing organizations?;
- Flexibility: the governance of networks must evolve as they develop.

**CHAPTER 4: CHAPTER 4: FROM DIALOGUE TO COLLABORATION: INTER-ORGANIZATIONAL NETWORKS**
Inter-organizational networks can emerge in at least three spaces:

- Within the public sector

These aim to achieve specific policy objectives that cut across the functional departmental borders of government. The report makes clear that PSD is influenced by many policy areas such as labour, education, enterprise and finance. Integrating PSD goals into each of these policy areas can support the further development of PSD. This type of collaboration can take many forms, ranging from ad hoc meetings to joint strategic plans and permanent working groups.



- Between public and private sector actors

These networks can take many forms. Governments, for example, can set up government-owned or dominated firms in specific economic sectors to initiate innovation and change. A similar initiating role with strong spillovers can also be observed in key areas such as research and development support. Public-private joint ventures in emerging sectors which then further develop and diffuse constitute another example. Finally, an increasing number of public-private partnerships have developed to provide different kinds of services and infrastructure supporting private sector development, such as investment promotion. A particularly important factor in the creation of public-private sector network is the building of mutual trust. There is empirical evidence in many countries that good government-business relations make a strong contribution to growth.

- Among private sector actors only

These can take many forms, including business associations, industry-university collaborations, and private regulatory initiatives. Clusters, geographic concentrations of interconnected companies, specialized suppliers, service providers and associated institutions in a particular field are also important manifestations. Their development is supported by cluster development initiatives where public-private sector networks come into play. If business associations wish to influence economic policy they will need to assure themselves of the trust of the general public as well as policy-makers to gain influence.

**CHAPTER 5: THE KNOWLEDGE ORGANIZATION: INTRA-ORGANIZATIONAL NETWORKS**
Within organizations knowledge creation and information exchange primarily occurs between persons, notwithstanding the exponential growth of technical knowledge management tools such as databases and the intranet. Research has consistently shown that internal interconnectedness – not least at the informal level - is crucial for organizational performance. Following a paradigm shift in economics towards more emphasis on endogenous growth models since the 1990s, more attention has been given to the effects of organizational structure on economic performance. In the public sector, research shows that a meritocratic, accountable, performance-based bureaucratic system can strengthen intra-organizational networks and have profound effects on the quality of policy-making and economic performance.

While knowledge sharing is growing in government bodies involved in economic development (for example between ministries and national agencies), the corporate sector is more experienced in this respect. Empirical evidence shows that, for private sector development, knowing someone who has started a business is a key indicator of entrepreneurial potential. Policy-makers increasingly recognize the potential of secondments, study tours, mentoring and social networking mechanisms to engage with the private sector and the general public.

# Part 3: Networks for prosperity: conclusions and recommendations

"Networks are rarely effective on their own – they need to form a symbiotic relationship with international organizations. The emerging world order is one in which networks, rather than operating alone, come to incorporate and work hand in hand with international organizations."

***Leonardo Martinez-Díaz and Ngaire Woods***[i]

Knowledge networking and network governance in the field of economic policy is certainly not a new phenomenon; neither is the realization that the development of a strong private sector is necessary for achieving economic, social and environmental objectives. With the rapid globalization in all spheres of our societies over the past decades, however, achieving economic success, social cohesion and environmental sustainability in one country depends more than ever on the performance and behaviours of its neighbours, regional leaders and global economic powers. Accordingly, both the scope of knowledge networking and the nature of the private sector have altered dramatically. This requires a closer look at the interrelationships between the knowledge networking capacities of a country, its private sector development policies and its economic, social and environmental performance.

## Networks are still highly under-researched and under-appreciated among policymakers and development specialists.

In view of the relevance of these interrelationships for domestic policymaking and international relations alike, it is all the more surprising how under-researched they have remained in the past and how unappreciated they seem to be among policymakers and development specialists. This report has therefore made a first attempt to improve the overall understanding of these complex interrelations and has presented cases from around the world that illustrate the numerous approaches governments are currently taking in responding to their domestic, regional and global challenges through knowledge networking.

## Networks are a distinct form of governance with important potential for knowledge creation and development performance.

In this context, it can be observed that networks are increasingly emerging as a distinct form of governance, which includes different types of public and private actors within and across organizational and national boundaries. Different types of networks exist, whether for learning, information exchange or knowledge creation. There could be significant benefits from ensuring that networks are successfully embedded. However, vibrant knowledge networking cannot only depend on existing networks but requires a living "institutional ecosystem", with new organisms providing new knowledge and opportunities. Thus successful networking implies the development of solid networks which continue over time and are built on trust, as well as constant movement between relevant networks to capture new information.

## Significant benefit can be gained from networking strategies to institutionalize or "embed" networks.

To achieve this, more empirical evidence will be necessary on knowledge networking and there is a need for more conceptual thinking on how to measure knowledge networks and Connectedness Index. With these caveats, the Connectedness Index constructed in this report shows a strong positive correlation with government effectiveness, industrial development and economic development. *Indeed, a key conclusion from the literature, from the best available international metrics, and from the 16 case studies from countries of all shapes, sizes and levels of development, is that knowledge networks could be the missing ingredient in strategies for sustainable development and prosperity.*

## Initial findings through the Connectedness Index are clear: networks matter for development effectiveness.

Policymakers' interest in knowledge networks appears thus to be justified, despite limited evidence on causalities. They find intergovernmental knowledge networks particularly useful to better understand and freely choose from the various policy options, to coordinate policies with other members of the network and to implement policies requiring concerted action. Knowledge networks can facilitate the exchange of policy-relevant knowledge among their members and the production of new knowledge and solutions. In some cases, this is being scaled up and leads to policy coordination (or even harmonization) and mutual learning. With their informal, flexible and trust-building nature, knowledge networks can lead to global/regional agenda and norm setting and help in harmonization processes, particularly when rapid decision-making is required during crisis periods. Knowledge networks can thus be particularly useful in processes of regional and/or inter-regional integration, where a prior harmonization process can ease, support and speed up policy implementation and operations.

## Knowledge networking is not about ICT as the 'knowledge economy' but about building trust, dialogue and collaboration across sectors and borders.

The role of intergovernmental knowledge networks in norm and standard setting/diffusion deserves particular attention, especially because of the increasing rise of private standards ruling the international private sector, influencing the economic performance of countries indirectly. This mirrors the gradual move away from the traditional

## Knowledge networking can be crucial in norm-setting and diffusion through peer-to-peer interaction and learning.

model, in which international organizations were established with the primary function of developing standards and then Persuading Member States to adopt them. Standard-setting knowledge networks usually work out of lean structures, are driven by policy priorities and interest of its public and/or private members, and work through a combination of policy-relevant knowledge exchange and peer pressure. In fact, through their peers, policymakers might be exposed to new practices and policy options, or even discover entirely new models or paradigms for policymaking in a specific field. This is particularly relevant for peer-to-peer networks among developing countries and might provide a better understanding of how "South-South cooperation" could be better operationalized in the future.

## Successful knowledge sharing depends less on IT platforms than on interests and incentives.

However, as networks have the tendency to proliferate and as it is costly to participate in networks, individuals, organizations and countries need to develop clear networking strategies. Also, despite the growing discourse on the importance of knowledge networks for development, experience on effective networking strategies and managing effective and efficient networks is limited. There is strong demand among policy-makers to learn from best practices on network management and the development of network strategies, especially in the context of private sector development. This can be achieved via study visits, workshops, mentoring, case studies and social networking. These activities can contribute to identifying success factors for network management and international organizations can support such effort as catalysts and facilitators where network structures and human and financial resources are limited.

## Further research is needed to identify success factors for network management and international organizations should support this effort.

A final consideration regarding the need for increased cross-border knowledge exchange and policy coordination is the recently-revived call for "regional integration". Again, the nature and shortcomings in the current international system of governance has led to the concept of a 'multi-level' form of governance, extending from the local to the global level and thus speeding up problem solving for issues of cross-border dimension. This concept is, again, closely linked to the thinking that emphasises the networked aspects of governance in order to deal with interdependencies across policy levels (local to global) and policy domains (economic, social, environmental). In many regions can be observed the parallel processes of 'regionalization' of policy and the progressive upgrading of the micro-regional level in policy processes. Indeed, there is now a wide consensus that governance is not limited to the level of the state alone but requires a system of participatory policymaking, involving those parts of society that are affected by the policies.

It can thus be argued that (1) regional governance is not incompatible with and does not negate global governance – on the contrary, it has the potential to strengthen global governance; and (2) we are today witnessing a new current in multilateral governance that gives a prominent role to regions but still maintains a series of problematic issues to be settled at the global level. To return to the knowledge network aspects above, 'good' global governance may well imply not exclusive policy jurisdiction but rather an optimal partnership between the national, regional and global levels of actors, and between state, intergovernmental and non-governmental categories of actors.

## 'Triangular' regional networks offer real potential for timely knowledge sharing and solution finding.

Central to this will be the intensified and better exchange of knowledge between global and regional multilateral institutions as well as their interaction and collaboration with non-state actors. Again, knowledge networks can be seen as a solution for closing the knowledge gaps and advancing necessary policy coordination in order to ensure that countries can reap the fruits from regional economic integration efforts. Central to this consideration is the establishment of a common understanding across all levels of the embedding of the knowledge gathered from multilateral networks into the actual implementation of policies and programmes. Existing international organizations can and should play a crucial role in these knowledge management processes.



# Recommendations

## Based on these findings and conclusions, the following recommendations have been formulated for consideration by Member States:

- ***The international community should actively promote knowledge networking and network governance structures for achieving local, regional and global development objectives.*** This may include, *inter alia*, to foster international and national knowledge networking approaches in all capacity development activities; to improve national ownership through multi-stakeholder networking arrangements in the policymaking processes at all levels; to make the international system more inclusive through engagement of more countries and institutions in solution-finding processes; and to support networking arrangements with the goal of enhancing innovation and private sector development.

- ***Member States should encourage and facilitate the international knowledge networking capacities of their public and private institutions.*** This may include, *inter alia*, formulating networking strategies in relation to the achievement of development objectives and reforms; to actively support regional policy and research network participation; to invest in institutional infrastructure and innovation networks domestically and internationally; to actively upgrade the knowledge networking capacities and capabilities of domestic institutions; and to provide suitable incentives for the formation of new networks in specific fields of strategic interest.

- ***International organizations should improve their inter-institutional information and knowledge exchange systems and facilitate better knowledge networking among their members.*** This may include, *inter alia*, improving thematic information exchange in communities of practice, to provide more user-friendly platforms for knowledge sharing among members; to actively seek the involvement of non-state actors in consultation processes; and to actively support knowledge network development in relevant fields.

- ***An international and cross-sectoral consultation network should be established to further develop the initial findings*** on connectedness and knowledge networking for the achievement of development goals, and recommend measures and programmes for development effectiveness through increased knowledge networking, in particular in the field of private sector development policy.



# Introduction

Kazuki Kitaoka, Alex MacGillivray,
Axel Marx and Cormac O'Reilly

"The world possesses the resources and knowledge to ensure that even the poorest countries, and others held back by disease, geographic isolation or civil strife, can be empowered to achieve the MDGs."

***Ban Ki-moon, Secretary-General, United Nations (2010)***

This report is issued under the funding window "Development and the Private Sector" of the Spanish MDG Achievement Fund (MDG-F). Through this window, the Spanish Government together with the United Nations addresses the urgent need for supporting a vibrant and responsible private sector in development processes in order to achieve agreed development objectives, including the Millennium Development Goals (MDGs). In this context, UNIDO, as the technical convenor agency of the funding window, was requested to establish a knowledge management concept that would support developing countries in acquiring and adapting private sector development (PSD)-relevant knowledge to their specific contexts and development needs, and enhance the knowledge capabilities of the United Nations system and its national counterparts and partners in the field of PSD policy.
Initial discussions on the issue of knowledge management in development activities took place during a global workshop among MDG-F programme coordinators in March 2011 in Panama City (see Box 1 for details). This, among other inputs, inspired the first draft of this report, which was discussed during informal dialogues in Vienna and Brussels with Member State delegations as well as UNIDO and EU experts in May and September 2011. Comments were used to revise the manuscript, adding specific topics pertinent to knowledge networking and private sector development.

## Box 1 The Panama workshop and its findings

The first meeting of the Spanish MDG Achievement Fund (MDG-F) Private Sector and Development Joint Programme Coordinators (JPCs) was organized by the United Nations Industrial Development Organization (UNIDO) in its capacity as lead agency for the MDG-F Private Sector Development window knowledge management facility. The meeting took place in Panama City on March 1st -3rd 2011 and counted 31 participants, including headquarters and regional representatives of the MDG-F Secretariat, UNIDO, the United Nations Conference on Trade and Development (UNCTAD), the United Nations Development Programme (UNDP), the International Labour Organization (ILO) and UN Women, as well as JPCs and programme representatives from 11 of the 12 programme countries: Bolivia, Costa Rica, Cuba, Dominican Republic, Egypt, El Salvador, Ethiopia, Panama, Peru, Serbia and Vietnam. The meeting was chaired by the Coordinator of the Donor Committee for Enterprise Development (DCED). The key objectives and expected outcomes for the meeting were threefold, namely:

- To strengthen the capacity and effectiveness of Joint Programme Teams through increased networking and knowledge sharing;
- To identify programme level needs, in anticipation of a planned needs assessment exercise - conducted under the auspices of the UNIDO Knowledge Management Team - and separate mid-term evaluation exercise organized by the MDG-F Secretariat; and
- To identify critical next steps and actions aimed at addressing immediate programme level problems and issues.

In order to further underline the crucial subject of KM as a certain discipline to be followed in joint programmes, with multiple agencies implementing one project, the organization team of the Panama meeting applied KM sessions for the sharing of information, lessons learned and recommendations for future action. This has been performed inter alia by creating a "Marketplace Scenario", during which the participants presented their Joint Programmes in a lively and interactive manner.

The Panama workshop concluded with the *Panama Plan of Action* which is currently being implemented by the various project partners. The plan calls for increased inter-organizational collaboration and more frequent opportunities for cross-border knowledge exchange and peer learning among practitioners. It is expected that such activities will have a positive impact on overall programme quality and innovation across the UN system.

This report addresses how knowledge management and knowledge networking for private sector development policy can achieve development goals in an economy operating in a globalized world. The report targets change agents and policymakers in the fields of development policy and effectiveness, and aims to serve as a basis for policy considerations related to development strategy, effectiveness and governance. While it is not intended to be a holistic account of all existing literature and thinking in the nexus of knowledge networking, network governance and private sector development, it gives the interested reader a sound overview of the various concepts, provides new findings on correlations between these diverse concepts and illustrates these with country case studies.

The report was written in light of the global economic and financial crisis and tightening international cooperation budgets, which brought to the forefront a plethora of issues concerning economic policy and aid effectiveness (or, more properly, development effectiveness). In this context, there is a growing global understanding that a more productive public-private dialogue and an effective, yet balanced, involvement of the private sector in development activities is crucial for achieving the multitude of development goals and economic aspirations in developing countries. PSD, seen in this light, is therefore not merely a means for improving the overall production of goods and services, and thus the economic performance of a country. Conscious PSD policies can also spur activities that develop the necessary implementation capacities for addressing complex social and environmental challenges that, so far, have been primarily left to national authorities. This can not only free public capacities for re-orientation to more strategic fields of government work, but can also increase efficiencies and effectiveness in the implementation processes and open new financing channels and human resources in a guided manner.

Knowledge systems have long been recognized as central to development effectiveness and policy quality, but they remain underappreciated, under-supported and underused in addressing the central challenges of our globalized era. While traditional industrialized countries are highly networked, with government officials and business leaders increasingly exchanging information and coordinating activities and policies to address common problems on an international scale, the situation in developing countries is in many cases still characterized by a lack of free access to the latest findings in global and regional policy dialogue and discourse. The existing mechanisms, platforms and networks need to become more dynamic, inclusive and accessible for developing countries. Effective support is needed to better facilitate the exchange of knowledge, concepts and ideas among practitioners and policymakers, at both the regional and global levels. Existing knowledge platforms and institutions need to be strengthened in this regard.



## The report is divided into three parts:

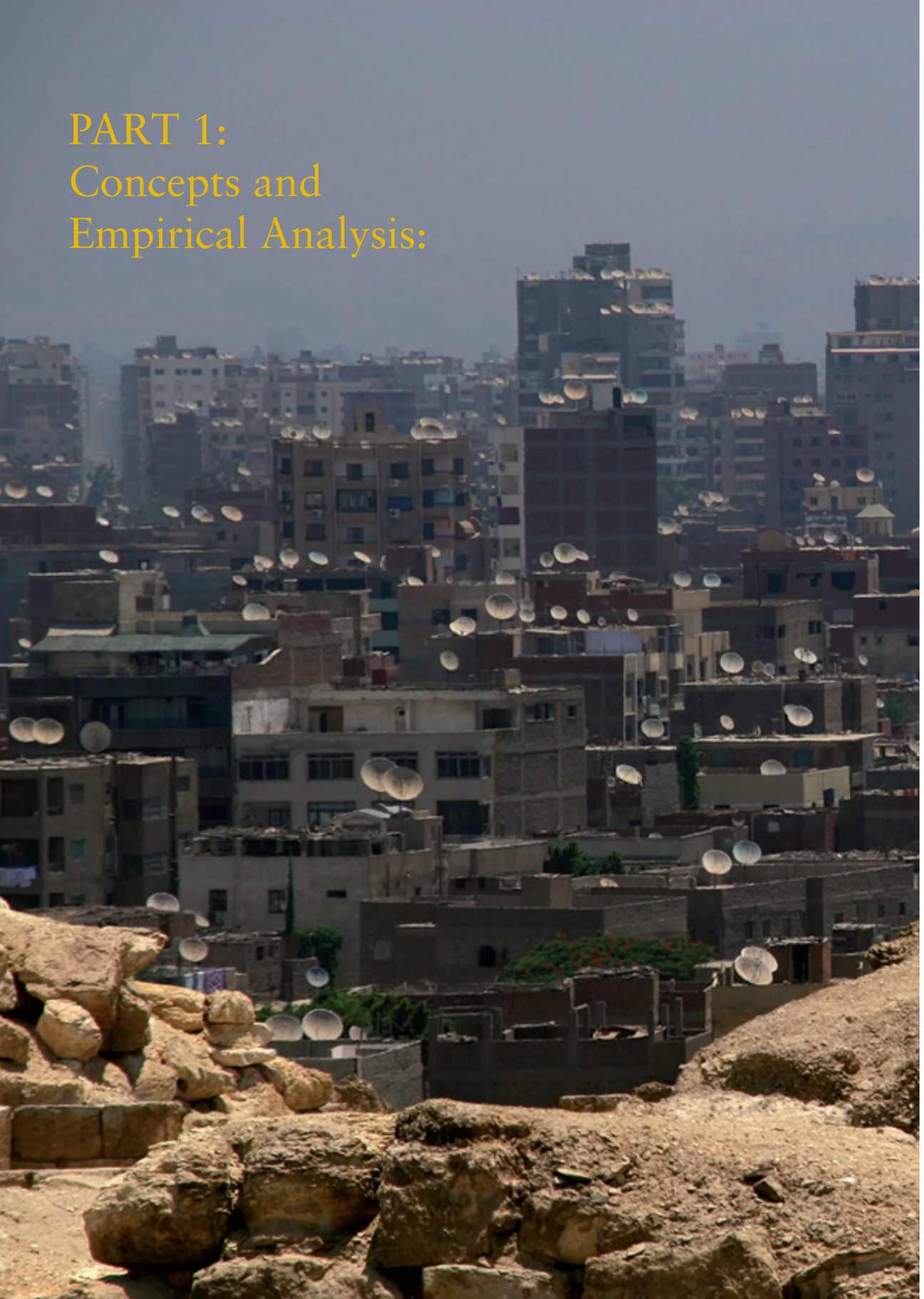
*Part 1* focuses on clarifying the basic concepts of PSD, knowledge management and network governance. It also discusses the issue of network embeddedness and provides the necessary definitions for further analysis. It then moves from the conceptual definition to a suggested framework for analysing the nexus between these concepts, and examines specific correlations between network capabilities, connectedness and economic performance of countries. This part also provides the overall rationale for why a focus on multi-sector network capabilities, and particularly international knowledge exchange, is crucial for countries' economic aspirations. It also examines the growing consensus on the need to involve both public and private sector actors in development policy processes.

*Part 2* focuses on different types of knowledge networks, their governance and impact on development results. Starting with the most common approach to knowledge management, an initial chapter focuses on international networks, supranational networks, and related governance issues on bilateral, regional and global levels. It then moves to inter-organizational networks, including public-public, public-private as well as private networks. A final chapter examines intra-organizational networks and examines links between the existence of performance-based, networked bureaucracies and economic success of a country. Each chapter is illustrated by specific country case studies, primarily inspired by institutions in the twelve countries currently implementing programmes under the MDG-F, namely Bolivia (Plurinational State of), Costa Rica, Cuba, Dominican Republic, Egypt, El Salvador, Ethiopia, Panama, Peru, Serbia, Turkey and Viet Nam (see Table 1 for an overview).

*Part 3* provides conclusions and recommendations for change agents and policymakers in the fields of development policy and effectiveness.

*Table 1: The MDG-F PSD Joint Programmes*

| | | |
|---|---|---|
| **Bolivia** (Plurinational State of), | National and international value chains | UNDP, UNICEF, WFP, FAO, UNIDO, ILO |
| **Costa Rica** | Competitive tourism and agro industry | UNDP, UN-HABITAT, FAO, ILO, IOM |
| **Cuba** | Decentralization and higher production | UNDP, UNESCO, FAO |
| **Dominican Republic** | Banana value chains | UNDP, WFP, UNAIDS, WHO, FAO, ILO |
| **Egypt** | Horticulture value chains | UNDP, UNIFEM, UNIDO, ILO |
| **El Salvador** | Productive urban settlements | UNDP, UN-HABITAT, UNIDO |
| **Ethiopia** | Edible oil value chain enhancement | UNDP, FAO, UNIDO, ILO |
| **Panama** | Entrepreneurial opportunities network | UNDP, UNCTAD, FAO, UNIDO, UNWTO |
| **Peru** | Creative industries | UNDP, UNESCO, FAO, UNIDO, ILO, UNWTO |
| **Serbia** | Sustainable tourism | UNDP, UNICEF, FAO, UNEP, UNWTO |
| **Turkey** | Sustainable Linkages for SMEs | UNDP, UNIDO, ILO |
| **Viet Nam** | Green production & trade | UNCTAD, FAO, UNIDO, ILO |



# PART 1: Concepts and Empirical Analysis:



# Chapter 1: Private Sector Development, Knowledge Management and Networks

Axel Marx, Kazuki Kitaoka and Alex MacGillivray

"Basically we know what works to create jobs and grow prosperity is networking and co-operation."

***Bill Clinton, Former President of the United States of America***[ii]

## 1.1 INTRODUCTION

Private sector development (PSD) is fundamental to sustainable economic development. In order to further develop the private sector a plethora of policy initiatives can be taken. Governments are increasingly interested in sharing knowledge with regard to these policy initiatives and the lessons learned. Consequently, many governments find intergovernmental knowledge networks useful to better understand the various policy options, to coordinate policies with other members of the network and to implement policies requiring concerted action. Knowledge networks can facilitate the exchange of policy-relevant knowledge among their members and the production of knowledge through synthesis of information in new ways (this means new solutions to policy problems, previously not available to any of the individual network members). This may be scaled up and lead to policy coordination (or even harmonization) and mutual learning (see also Slaughter, 2004).

The current report examines how knowledge on private sector development and private sector development policies is managed with a specific focus on the role of networks. This study does not aim to analyse and assess PSD or PSD policies as such in the selected countries but rather how networks can contribute to a better understanding and exchange of PSD policies. Since the 1990's, several leading authors have analysed the emergence of the network society (Castells, 1996). Consequently, significant attention has recently been paid to network governance on the level of organizations (Rauch & Cassela, 2001; Powell, 1990; Powell, W. & L. Smith-Doerr, 1994), the level of the state (Rhodes, 2012; Provan and Kenis, 2007; Torfing, 2012) and the international level (Slaughter, 2004; Martinez and Dias, 2009).

The emphasis on networks resonates with the work of many political economists who focus on the importance of embeddedness for economic and industrial development, and the role of the private sector therein. Networks are regarded as crucial instruments for learning (knowledge diffusion and creation) and hence for economic development. The importance of learning is best illustrated by the phenomenal economic development in recent decades of what Alice Amsden labels 'the Rest' (i.e. Argentina, Brazil, Chile, China, India, Indonesia, the Republic of Korea, Malaysia, Mexico, Taiwan, Thailand and Turkey). Amsden (2001, p. 2) argued that:

*"For the first time in history, backward countries industrialized* ***without proprietary innovations****. They caught up in industries requiring large amounts of technological capabilities without initially having advanced technological capabilities of their own. Late industrialization was a case of* ***pure learning****, meaning a total initial dependence on other countries' commercialized technology to establish modern industries. This dependence lent catching up its distinctive norms."*

Networks facilitate learning within and across organizational boundaries. Figure 1.1 presents a general approach to the study of knowledge management for private sector development. The underlying assumptions are that economic development is partially a result of private sector

development, which in turn is partially a result of government effectiveness across different policy areas, which in turn is partially a function of networks which are an important component of knowledge management.

The key focus of the report, therefore, is networks and network governance and the aim is to propose more effective forms of governance on PSD policy through the use of networks.

It is important to stress that networks are crucial to knowledge creation and diffusion but are not limited to that. As Slaughter (2004, pp. 52-61) argues, several types of networks do exist, including information exchange and knowledge networks, enforcement networks and harmonization networks (see also chapter 6.1). In the context of this report, we focus on information and knowledge networks since they are the most relevant in the context of knowledge management.

The next section provides some conceptual clarification on the role of policy in private sector development and knowledge management. Subsequently the chapter will focus on networks and their role in information exchange and knowledge creation. For this purpose, the report makes a conceptual distinction between arm-length networks and embedded networks. There are two reasons for this:

- First, the difference is crucial in understanding the potential of networks in the context of knowledge management. Networks differ significantly in design and their capability to manage and create knowledge.

- Second, the concept of embeddedness goes to the heart of current research on economic institutional development and the importance of developing strong institutionalized relations without falling prey to corporate capture.

*Figure 1.1: Focus of the report*


## 1.2 The role of policy interventions in private sector development

Recent academic research has given significant attention to the role of government and public-private relations in economic development (Rodrik, 2007; Evans, 1995; Amsden, 2001; Chang& Grabel, 2004-2005; Lin & Chang, 2009; Altenburg; 2011). "This transformative role", as it is called by Evans (1995, p. 6), places greater demands on the states' capacities and involvement in economic development. In turn, this increased acceptance of a strategic approach by government to economic policy means that rather than focusing on the divide between liberal and interventionist states, the appropriate contemporary distinction is between the different kinds of governmental involvement in the market and its contribution to private sector development. However, Rodrik (2007, p. 99) notes that *"few people seriously believe any more that state planning and public investment can act as the driving force of economic development"* and that instead, governments should focus on creating – through public action – a business environment that is conducive to privately initiated restructuring, diversification and technological dynamism.

So, which role can national authorities play, and which instruments are at their disposal to foster private sector development? According to the OECD (2007, p. 22), there is broad consensus that, while government has a clear role in promoting economic growth, development and, ultimately, poverty reduction, its main focus in doing so must be on creating suitable conditions that enable the emergence of a strong private sector, which is regarded as the main engine behind economic growth.

*"Nowadays the development of the private sector in developing countries is regarded as essential. The logic behind this statement is simple: poverty reduction is the main objective of development co-operation and a target of development policies. Economic growth is essential for development, and growth is best achieved through the private sector, which in turn needs to be adequately promoted. Thus policies to foster private sector development (PSD) deserve most attention". (OECD, 2007, p. 22)*

A number of policy options are open to governments to facilitate the development of the private sector. Lau Schulpen and Peter Gibbon (2002) provide an overview of the different elements and levels relevant for private sector development and which can be influenced by government policies. Table 1.1 summarizes their findings.

*Table 1.1: Elements and Levels in Private Sector Development*

| Level | Enabling environment | | | |
|---|---|---|---|---|
| | International/regional | Macro | Meso | Micro |
| | Countries | State | Branch | Company |
| Elements | - Free and rule governed international trade<br>- Access to international markets<br>- Debt reduction<br>- Donor policies and practices (including coordination)<br>- Membership in international economic, social or environmental governance bodies | *Macroeconomic policies*<br>- Trade policies<br>- Privatization<br>- Exchange rate and monetary policies<br>- Public budgets<br>- Labour market policy<br>- Observance of labour standards<br>- Fiscal policy (tax)<br>- Inflation reduction<br>- Financial institutions<br>- BoP regulation<br><br>*Physical infrastructure and human capital*<br>- Education and skill training<br>- Health<br>- Roads, railways, harbours, electricity, telecommunication, etc.<br>- Intellectual capital<br>- E-readiness<br>- Social security and pension schemes<br><br>*Good governance*<br>- Fight against corruption<br>- Transparency<br>- Legal system<br>- Effective governance<br>- Administrative reform | *Institutional infrastructure*<br>- Chamber of commerce<br>- Employers organizations<br>- Labour unions<br>- Intermediary financial institutions<br>- R&D institutions<br>- Training institutions<br>- Sector-level market institutions<br>- Standard agencies<br>- Information agencies | - Access to technology, expertise and capital<br>- Manpower<br>- Management and entrepreneurship<br>- Market access and information<br>- CSR uptake |

*Source: Adapted from Schulpen and Gibbon (2002, p. 3)*

It should be noted that the intention of table 1.1 is to list a whole set of factors influencing private sector development. It does not causally disentangle the relationships or order them according to importance. Not all elements are of equal relevance and importance, nor is the list exhaustive. The same holds for several more specific policy interventions which can be designed by governments to promote private sector development. These can be of a financial nature or a more technical nature. The former includes loans and equity financing for local private enterprises, providing risk capital and guarantees, providing concession and export credits or micro-loan programmes. The latter includes the provision of business development services such as export training, vocational training, investment advice, grants to conduct feasibility studies, management provision (finding and recruiting capable management) and information provision on markets, regulations, etc. (Schulpen & Gibbon, 2002, p. 5; see also Brainard, 2006; Parhizkar et al.; 2010; Andriesse & van Helvoirt; 2010; McKenzie; 2009).

However, table 1.1 can help us identify the multitude of actors involved in private sector development, by making it clear that PSD is interlinked with many different policy areas. The table was instrumental in preparing the study visits and interviews for the case studies undertaken for this report. These study visits revealed that a wide range of actors is involved in private sector development in public institutions, private entities and civil society organizations. This private sector development ecosystem is mapped in figure 1.2.

*Figure 1.2: The private sector development ecosystem*




# 1.3 Knowledge management and private sector development

Knowledge management is the process through which organizations transform information into knowledge which is instrumental to achieving their goals. They realize this by constructing knowledge management strategies. In the academic literature, knowledge management strategies are mostly discussed in the context of organizational learning (for early contributions see Argyris, 1993; Argyris and Schön, 1978; Levitt and March, 1988 ). There are several streams of literature on organizational learning. First, some focus on individuals as key agents of learning *within* organizations (Argyris and Schön, 1978). A second stream of literature focuses on how organizations themselves learn through sets of rules and procedures. The latter is very much related to the work of James March (Levitt and March, 1988; March, 1999). A third stream of literature does not see information and knowledge residing in single individuals or in organizations as such but in networked ties within and between organizations.

With regard to intra-organizational networks, scholars have focused on three types of learning processes: knowledge creation, knowledge retention and knowledge transfer (Argote and Ophir, 2002). Knowledge creation is the emergence of new knowledge within an organization. Knowledge retention is the capture of knowledge within an organization (Argote et al., 1990). Knowledge transfer occurs when knowledge present in one part of an organization affects the performance of another part. (see Carley 1992; Devadas and Argote; 1995; Baum and Berta 1999). The literature on inter-organizational learning contains studies on dyadic networks, triadic networks, an organization set or an organization field (Baker and Faulkner, 2002). In general inter-organizational learning will occur *"when one organization causes a change in the capacities of another, either through experience sharing, or by somehow stimulating innovation"*. (Ingram, 2002; see also Bruneel et al., 2010)

This literature on organizational learning and knowledge management is of interest for strengthening the capacities of single organizations or projects. In this context several practical guides and consultancy services are available which focus on knowledge management and learning strategies in general or on specific aspects of it including inter alia knowledge mapping, putting in place knowledge sharing systems and supportive information technology, updating intranet pages and staff contact information, strengthening communities of practice (teams or networks), using stories to communicate effectively, investing in new organizational processes, and encouraging cultural change within the organization. (Hovland, 2003, p. 2). Box 1.1 provides an overview of KM tools and methodologies.

## Box 1.1: Knowledge Management Strategies and Methodologies

**After Action Review:** An After Action Review (AAR) is a process developed by the United States Army. It is a simple process used by a team to capture the lessons learned from past successes and failures, with the goal of improving future performance. It is an opportunity for a team to reflect on a project, activity, event or task so that they can do better the next time.

**Database:** Information stored in a computer for subsequent retrieval. Databases are structured to support data architectures, and may be "flat", relational, or object-oriented. Modern databases are relational.

**Knowledge Base:** An organized structure of knowledge that facilitates the storage of data, information, and knowledge to be retrieved in support of a KM process.

**Knowledge Fair:** Knowledge fairs (KFs) are face-to-face events in which participants set up displays to share their undertakings. KFs can be internal to an organization or open to partners and the public. They are "free-flowing, open, flexible, and non-hierarchical. People can see what is happening, can interact with each other, and can see what others are doing.

**Knowledge Management Audit:** A KM audit is a systematic identification and analysis of an organization's knowledge needs, resources, flows, gaps, uses, and users. It usually includes a review of people-based knowledge, capability, and skills as well as information. It also examines, from a critical perspective, the values, vision, culture, and skills of an organization, from the perspective of its knowledge needs.

**Knowledge Map:** A knowledge map characterizes links between used knowledge concepts and their specific grammar, so they can be easily searched or browsed by users.

**Knowledge Mapping:** This is a process to determine where knowledge assets reside in an organization, and how knowledge flows operate in the organization.

**Activity-based Knowledge Mapping** is a tool which can link knowledge inputs and outputs to ongoing organizational activities and processes (ranging from office mail to strategic reviews). It helps to understand, in a visual manner, how activities are ordered and why and who performs the activity, what inputs are required and how knowledge and information flows can support the task in question. This results in a series of diagrams to visually display how knowledge is currently used within a given process, as well as the source of the knowledge. Furthermore, it points to where/ how improvements can be achieved.

**Knowledge Repository:** A place where knowledge is gathered and stored and can be accessed and used by other people. It may be a physical place like a library, a "virtual" place like an interactive website or an online discussion board, or a place where people gather such as a café or an informal meeting room or discussion area created to encourage knowledge sharing.

**Mind Maps:** Mind maps are a powerful graphic learning technique that can be applied in all aspects of life where clearer thinking will enhance work performance and effectiveness. They are a non-linear way of organizing information and a technique that enables capturing the natural flow of ideas.

**Online Collaboration Platform:** This is a general "catch all" term to describe a range of Internet-based tools that allow people to collaborate online. This may include online conversations in forums and email lists, co-creation of documents on wikis, file sharing and storing, creation of user groups based on thematic topics, etc.

**Peer Assist:** Peer assist is a method of cooperation, based on dialogue and mutual respect and learning, which seeks to share knowledge, elicit feedback on a problem, project, or activity, and draw lessons learned for people in similar situations. This tool encourages participatory learning through asking those with experience in certain activities (or situations) to assist those wishing to benefit from their knowledge.

Peer Coaching: Peer coaching is a method of professional development whereby colleagues agree to formally learn from each other. It is a confidential process through which professionals share their expertise and provide one another with feedback, support, and assistance for the purpose of refining present skills, learning new skills, and / or solving task related problems.

**Scenario Learning / Scenario Testing:** This involves modelling several likely scenarios for the future (instead of just one) so that decisions can be made based on a wide range of possible futures.

**Social Network Analysis:** Social Network Analysis (SNA) is a research technique that focuses on relationships among social entities, such as members of a group and within or between organizations or nations. It explores both directional and bidirectional exchanges, including sharing of Information or business relationships.

**Storytelling:** This is the use of stories as a way of sharing knowledge and assisting learning in an organization. Stories can describe complicated issues, explain events, communicate lessons, and/or bring about cultural change.

**World Café:** World Café is a system of exchange based on social café conversation whereby a group of people is enabled to explore a chosen topic. The aim is to tap directly into the social nature of much of our learning. It is based on a set of integrated design principles.



Notwithstanding the prominence of literature on organizational learning and knowledge management relatively little attention has been paid thus far to the contribution it makes to specific policy areas in economic development and PSD. As Hovland (2003, p. vi) notes in a literature review:

*"A very large proportion of the literature on KM and organizational learning is developed by, and aimed at, the corporate sector. Therefore, business rationales of organisational efficiency and financial profit strongly characterise the underlying motivation for much of the KM literature and recommendations. Development agencies can benefit from this in so far as they also need to continually improve organisational efficiency. However, the overarching goal of poverty reduction and the MDGs that many development agencies work towards require that KM and learning in the development sector should not only contribute to internal efficiency but also to issues such as improved."*

Relatively little consolidated information can be found in the academic literature on the nexus between private sector development and knowledge management. A literature search for papers which focus on the interaction between knowledge management and private sector development shows that papers deal with many different topics including human resources (Sakalas & Vienazindiene (2010); Debrah & Mmieh (2009); Redpath, Hurst & Devine (2009); Simard & Doucet (2005); Francis & Sinclair (2003); Rubery et al. (2002), etc.), education and training (Kroukamp, 2010); Bester & Boshoff (2009); Hjort (2008), etc.), ICT (Predl (2010); Zelenka (2009); Butler et al. (2009); etc.), science and research (e.g. Hemphill & Vonortas (2003) and many organizational-level aspects such as the design of IT systems for KM, the development of systems for storing knowledge in databases or the use of stored knowledge within organizations. (Goodman, sd; Butler et al., 2008; Hazlett et al. 2008; Badamas, 2007; Jain, 2007).

This broadness is also illustrated by a workshop report by GiZ. In 2007, GiZ organized, jointly with FAO, a workshop on knowledge management in rural development. The workshop demonstrated that knowledge management in relation to an assessment of policy outcomes in the context of development remains difficult to define.

Notwithstanding the breadth of the concept, knowledge management can be approached from several distinct perspectives. As argued in the introduction, this report takes a specific network perspective. This choice is not only based on the increasing academic relevance of networks for knowledge management (Newig et al. 2010), but also on the fact that it enables us to explore the possibilities of network governance as an emerging means to effectively meet shared challenges. Networks and the importance of networks are further introduced in the following sections.

*In general, inter-organizational learning will occur when one organization causes a change in the capacities of another, either through experience sharing, or by somehow stimulating innovation.*



# 1.4 The importance of networks and network governance

Social networks can be defined "as a set of nodes or actors (persons or organizations) linked by social relationships or ties of a specified type. A tie or relation between two actors has both strength and content."

***(Castilla et. al., 2000, p. 219)***

The importance of networks, and the social capital which emerges out of networks, has been recognized by policy-makers and academics from many different disciplines (Ostrom, 1990, Woolcock, 1998; Bourdieu, 1984, 1988; Coleman, 1990; Podolny & Rauch, 2007; Putnam, 2000; Barabassi, 2002; Buchanan, 2002; Sabel and Zeitling, 2012; Torfing, 2012; Lobel; 2012; Rhodes, 2012; Gilardi and Radaelli, 2012; Uzzi et al., 2007). Social networks constitute structures of opportunity and constraint for individuals as well as corporate actors. Networks have proven to be crucial for several policy outcomes including learning, reduction of uncertainty, increased quality of decisions and performance. In a recent leading publications Slaughter (2004) and Martínez-Diaz and Woods (2009) focused on networks as a key concept in order to understand current development processes in a global order. Martínez-Diaz and Woods (2009) identify five functions of networks, namely agenda-setting, consensus building, policy coordination, knowledge production and exchange, and norm-setting and diffusion. The third and fourth functions (policy coordination and knowledge production and exchange) are of especially crucial importance in linking knowledge management and private sector development.

Since networks are based on non-hierarchical coordination and horizontal embedded relations between actors, many authors consider them as distinct type of governance besides hierarchies (governmental bodies) and market. (Börzel, 2011; see also Williamson 1979; Powell, 1990; Jacob Torfing; 2012; Scharpf, 1993). As Renate Mayntz states: "*instead of emanating from a central authority, be this government or the legislature, policy today is in fact made in a process involving a plurality of both public and private organizations*". Hence, "*the notion of 'policy networks' does not so much represent a new analytical perspective but rather signals a real change in the structure of the polity.* (Mayntz, 1993, p. 5; quoted in Börzel, 2011, p. 52)

Although embryonic forms of network governance have existed in different times and places over the years, it could be argued that during the 20th century markets and hierarchies became the most prominent governance form (Perrow, 2002). At the turn of the present century however – and especially following the development gains in many Asian countries – the network form has again become a credible type of governance structure. The rise of network governance takes place in a context of a more general and profound shift from government to governance which is redefining the role of states in market regulation. Many observers have argued that a partial and progressive shift has been occurring since the 1980s from public to private or public-private governance on certain issues. Tatenhove et al. (2000, p. 48) identified the following major evolutions: (a) the traditional divides between state, market and civil society are disappearing, while (b) the interrelations between these spheres increasingly exceed the nation state, (c) resulting in new coalitions between state agencies, market actors and civic parties both on local and global levels (see also Abbott and Snidal, 2009; Marx, 2011). A similar shift is described in Lobel's (2004; see also 2012; Rhodes, 2012) The Renew Deal: The Fall of Regulation and the Rise of Governance. He identifies eight major characteristics which describe the governance paradigm:

- Increased participation of non-state actors in public policy making and provision due to their knowledge and expert capabilities and efficiency. The 'ecosystem' of actors involved in private sector development (see figure 1.2) illustrates nicely the multitude of persons and entities involved in private sector development.

- Public/private collaboration and interaction in the development of policy norms and goals. Traditionally, private actors were solely objects of regulation and subjected to norms of behaviour. In the new forms of governance, they are increasingly involved in norm-generating and developing and changing the norms of behaviour.

- Diversity and competition within the market. This refers to the idea that a regulatory regime must take into account a diversity of values and interests of actors involved in the policy-making process, and recognize the legitimacy of private economic interests, without falling victim to corporate capture or jeopardizing the provision of public goods.

- Decentralization of policy competences, both vertically (multi-level government) and horizontally (multi-actor governance).

- Integration of policy domains by collaboration across functional divisions of government. Policy integration recognizes that functional divides between policy areas has limiting effects on policy development. Multi-faceted policy areas such as private sector development are influenced by many different policy areas as is illustrated in section 1.2.

- A move to non-coerciveness ('soft law') policy instruments instead of hard law 'command and control' policy instruments. Policy-making is increasingly characterized by policy interventions which rely on provision of information, benchmarking, monitoring and others to implement policies.

- Adaptability and constant learning. Given the nature of a highly dynamic policy environment with increasingly new complex policy challenges governance requires adaptability and constant learning, recognizing the ongoing requirement to adapt to change. Systems to facilitate this form of learning are increasingly developed.

- Regulatory coordination which aims to facilitate the communication between public and private providers in the policy making process.

Taken together, these dimensions point to an overall model of network governance which is more flexible than existing forms of governance and takes into account the many different private actors involved in the policy-making process. The rise of network governance is not only limited to new policy fields or developed countries but omnipresent in several existing policy fields and across the globe. As Tilman Altenburg (2011) notes *"Industrial policy (like many other policy areas) is increasingly shaped by network-like forms of governance based on self-organisation and voluntary horizontal coordination."* For this reason the present report focuses on several examples of different types of networks, specifically intra-organizational networks, inter-organizational networks and international networks.

An interesting example of how networks facilitate learning by doing and how they are instrumental in achieving policy goals related to industrial development, both on a global and international scale, as seen in the National Cleaner Production Centres (NCPCs) initiated by a joint effort of UNIDO and UNEP. Box 1.2 presents these NCPCs as networks.



## Box 1.2: The UNIDO-UNEP National Cleaner Production Centres

### GENERAL CONTEXT

An interesting example of intra-country inter-organizational knowledge networks pooled together in regional and global platforms concerns the UNDIO-UNEP National Cleaner Production Centres (NCPCs). Cleaner production is the continuous application of an integrated preventive environmental strategy to processes, products and services to increase resource efficiency and productivity and reduce risks to humans and environment. Changing consumption and production patterns towards more sustainable ones is singled out as one of the key-objectives for industrial policy. Cleaner production (CP) is also strongly embedded in international environmental and sustainable development policies and strategies such as the Millennium Development Goals (MDG), in particular MDG 7 (ensuring environmental sustainability). Moreover, many leading publications of multilateral organizations stressed the importance of cleaner production. The recent UNEP report on Green Economy highlighted the importance of cleaner production in achieving sustainable consumption and production.

However, the implementation of cleaner production and the transfer of cleaner technologies is not straightforward, especially in developing countries, due to several barriers including a lack of knowledge. Firms and local entrepreneurs are usually not aware of the scope and potential of CP. In order to address this knowledge deficit UNIDO and UNEP established NCPCs, which have begun to play a major role in developing a "culture" for cleaner production in local communities and country-wide by coordinating cleaner production programmes, acting as a facilitator between industry, government, universities and non-governmental organizations (NGOs), and building the human capacities required to acquire and manage cleaner production and technologies.

Since 1994, more than 47 NCPCs have been established which have catalyzed the implementation of CP methods, policies, practices and technologies in their respective home countries and beyond. The countries include Albania, Armenia, the Plurinational State of Bolivia, Brazil, Bulgaria, Cambodia, Cape Verde, China, Colombia, Costa Rica, Croatia, Cuba, Czech Republic, Ecuador, Egypt, El Salvador, Ethiopia, Guatemala, Honduras, Hungary, India, Kenya, Republic of Korea, Lao People's Democratic Republic, Lebanon, Macedonia, Mexico, Moldova, Montenegro, Morocco, Mozambique, Nicaragua, Peru, Romania, Russian Federation, Rwanda, Serbia, Slovakia, South Africa, Sri Lanka, Tunisia, Uganda, Ukraine, United Republic of Tanzania, Uzbekistan, Viet Nam, and Zimbabwe. The establishment of NCPC's is achieved through multiple project agreements mainly involving a donor (institutional donors for country-specific projects on the one side and project-based donors for multi-country projects on the other side) and a host country (or hosts countries for multi-country projects) for a period of initially 3 years.

### MAIN ACTIVITIES OF NCPCS

NCPCs provide mainly four types of CP services. Awareness-raising is a first activity for a NCPC. Awareness-raising targets to explain what CP is, what benefits it can bring and what roles people can play to implement it. NCPCs disseminate information on CP concepts, methods and benefits to raise awareness and commitment for CP. NCPCs also have an important role in disseminating best practices and best technical case studies of CP techniques that emerge as a result of local demonstration projects. Secondly NCPCs work with individual enterprises to identify, evaluate and help implement CP options that are appropriate to the enterprise's processes, products or services, technologies and management systems. Thirdly, NCPCs train a cadre of national experts that can assist enterprises and other organizations with the implementation of CP, through training of trainers or assessors. It is an essential activity of NCPCs to build up local expertise and capacity to spread CP. NCPCs can offer technical assistance to individual enterprises that request it. Fourthly NCPC's liaise with government and other key stakeholders to identify ways to create a policy environment more conducive to CP.

### MULTI-LEVEL NETWORKING ACTIVITIES

In order to strengthen the network effect,

Regional Roundtables for Sustainable Consumption and Production were established in Europe (since 1994), Asia Pacific (since 1998), Africa (since 2001) and Latin America (ad hoc only). Concerning regional networking, UNIDO organizes activities to achieve exchange of know-how and experience between staff of the NCPCs in different countries. Several examples exist where networking and cooperation between individual NCPCs have happened, in some cases mature NCPCs have helped new ones to build up their capacity. The UNIDO-UNEP Programme has launched several regional networking initiatives. The regional network support activities such as a knowledge management system, training and CP awards, supports NCPCs to cooperate in the design and joint implementation of regional projects and it is a mechanism of regional experts exchange.

The most important networking initiative at the global level is the UNIDO-UNEP global network which is organized in the context of the 'annual Directors' meetings'. These meetings of the NCPC directors and a number of CP experts were the most important global networking activities of the Programme. They were designed to facilitate the sharing of information; the dissemination of best practices among NCPCs and the participation of supported the establishment of a regional network of NCPCs. The global and regional networks complement each other. The regional network has a number of interesting features that go beyond the services currently offered by the global network. More importantly, the regional network is open to such institutions that have never been part of the UNIDO-UNEP global network and who have not received any assistance through these agencies.

Several of the countries featured in this report have established NCPC's. Some interesting examples include:

### VIET NAM NATIONAL CLEANER PRODUCTION CENTRE.

The Viet Nam NCPC (VNCPC) was established in 1998. It is part of the Hanoi University of Technology. The Advisory Board members come from inter alia different ministries, the Viet Nam Chamber of Commerce and Industry, UNIDO office in Hanoi, Swiss State Secretariat for Economic Affairs (SECO) in Hanoi and the Hanoi University of Technology (HUT). Concerning its results, the Cleaner Production Energy Efficiency program ran from 2002 to 2004, during this period, 16 companies belonging to different industrial sectors have joined forces with VNCPC to introduce energy efficient techniques that can be applied widely throughout the Vietnamese industry. 191 specific measures for material an energy savings were implemented across the 16 case studies.

### ETHIOPIA CLEANER PRODUCTION CENTRE (ECPC).

The ECPC was established in April 2000 through a project agreement signed between the Government of Federal Democratic Republic of Ethiopia and UNIDO with the financial assistance of the Italian Government through Cooperazione Italiana. ECPC is assisting local enterprises to develop and implement Environmental management System based on ISO 14000. ECPC has already started the delivery of ISO 14001-EMS services in some selected enterprises in priority sectors such as leather, textile, food and beverage industry sectors. This is being done in partnership with STENNUM (consulting firm from Austria), Quality and Standards Authority of Ethiopia (QSAE), Ethiopian Society for Cleaner Production and Environment (ESCPE) and Environmental Protection Authority of Ethiopia (EPA).

### EGYPT NATIONAL CLEANER PRODUCTION CENTRE (ENCPC).

ENCPC was established in 2005 by the Ministry of Trade and Industry in close cooperation with UNIDO as a service provider for the Egyptian Industry. The ENCPC is part of the Egypt Technology Transfer and Innovation Centers (TTICs). Among other projects, the ENCPC is providing technical assistance for the Egyptian companies on energy efficiency and industrial application of renewable energy.

### CLEANER PRODUCTION CENTRE OF SERBIA.

Cleaner Production Centre of Serbia, launched in 2007, works with support of the Government of Serbia and its members of Advisory Board are high representatives of various ministries, the Office of the Deputy Prime-Minister of the Government, OEBS Mission in Serbia, University of Belgrade and the Serbian Chamber of Commerce. The Cleaner Production Centre of Serbia offers to companies consultancy in assessing the situation of their sites and improving operations in terms of raw material usage, energy efficiency, waste management and other aspects of business.



### CENTRO NACIONAL DE PRODUCCION MAS LIMPIA- EL SALVADOR (CNPML).

The CNPML was created in early 1999 and became an independent foundation in December 2005. It has close ties with private sector organizations and particularly with the Agro-Industrial Chamber (CAMAGRO). CNPML has conducted several CP audits including 90 in-plant assessments and 200 quick scans. In addition, about 2000 people were trained. Finally concerning policy advice the Centre contributed to the Government's CP policy by participating in the advisory committees on environmental standards for enterprises and contributing to the specific standard setting and sector manual preparation.

NCPCs are an interesting example of a knowledge networks since they create networks within countries and across countries on a regional and global level. By institutionalizing and embeddeding network ties the NCPCs aim to create new knowledge with regard to cleaner production, diffuse existing knowledge and facilitate learning across networks and initiatives. Notwithstanding the network nature of the NCPCs approach a recent evaluation highlighted the importance of further developing a clear networking strategy. This recommendation underlines another issue which is of importance in network governance. Networks are indeed becoming more and more important, however knowledge on how to effectively run and manage networks is more sparse. In order to further optimize network outcomes, network integration should be pursued with a clear network coordinator. NCPCs might experiment in order to achieve this optimization.

*Cleaner production is the continuous application of an integrated preventive environmental strategy to processes, products and services to increase resource efficiency and productivity and reduce risks to humans and the environment.*

*When Clifford Geertz visited a market, he noticed that certain buyers would repeatedly go to the same sellers without browsing the whole market and hence, many economic transactions had a recurring pattern.*

# 1.5 Networks and economic development

The concept of networks - deepening the approach of Martínez-Diaz and Woods (2009) and Slaughter (2004) – needs to be developed further to gain a more in-depth insight into what networks do (why are they relevant) and how they vary in nature depending on the type of network. Whether networks will be enabling or constraining for private sector development and PSD policies depends on the nature of the network and the governance of the network.

In other words, not all networks are equivalent in the functions they perform (Martínez-Diaz and Woods, 2009) and it is important to understand the differences between them. A key conceptual distinction here is the difference between embedded networks and autonomous or arm-length networks. The 'embeddedness approach', which will be discussed in some detail below, is key to understanding industrial development policies, the role of government and public-private relations therein (Altenburg, 2011). As Peter Evans (1995) argued in his acclaimed *Embedded Autonomy*, governments must have a good understanding of the developments in the private sector in order to develop effective and efficient policies. As a result, states should be *"embedded in a concrete set of social ties that binds the state to society and provides institutionalized channels for the continual negotiation and renegotiation of goals and policies"* (Evans 1995, 12; see also Rodrik 2004; 2007). Consequently, *"variations in internal state organization and state-society relations create differential degrees of developmental capacity."* (Evans 1995, p. 73; see also Bates, 1989) The complexity and stability of the interrelatedness between government and market players is hypothesised to increase government effectiveness (Samuels, 1987).

Altenburg (2011, p. 20) adds to this that *"public-private policy networks are needed to ensure frequent meetings on particular policy issues, and repeated mutual exposure serves to build trust"*. The importance of embeddedness is also stressed by leading political economists such as Dani Rodrik (2004, p. 17) who argues that *"the critical institutional challenge therefore is to find an intermediate position between full autonomy and full embeddedness."* Recent public administration literature equally gives significant attention to the importance of embeddedness for public administration performance (Isett et al. 2011; Provan & Kenis, 2007).

This section further develops the concept of and distinction between embedded and arm-length networks. This focus is chosen since the distinction between the two types of networks means they differ in terms of the type of information/knowledge they provide, which is key in the context of knowledge management.

# 1.5.1 The importance of embeddedness

The importance of embeddedness has been mostly developed in the management and organizational studies literature. Karl Polanyi ((1944) 1957, pp. 43-68) famously analysed the emergence of the separation of social and economic relations.

He argued that the embeddedness of economic action in pre-industrial societies was supplanted in modern life by the logic of efficient markets, which resulted in atomistic relations between the transacting parties. However, when Clifford Geertz (1979; see also 1993; 1995) visited the Bazaar of Sefrou in Morocco he noticed that certain buyers would repeatedly go to the same sellers without browsing the whole market and hence, many economic transactions had a recurring pattern.

In these cases, repeated interactions (social structures - networks) without authority structures governed market transactions and organized economic activity. Hence, underlying the economic transaction was a social structure (and culture) which 'guided' these transactions. Granovetter (1985) developed this idea further and argued that all economic transactions are embedded in social relations. Moving away from an 'oversocialized' and 'undersocialized' view of economic transactions towards an embedded view, he argued that the social structure underlying the transactions is crucial in understanding economic action and development.

In order to understand economic transactions and interactions, Granovetter (1985) argued, one must analyze the underlying structural and cultural properties of social networks. Structural properties include the number of exchange relations and the strength of relations between actors and organizations. The cultural properties include the foundations of exchange such as trust, reciprocity, and instrumentalism. These properties, which can be very diverse, define the network as a social structure. An important difference in these properties concerns the strength, or embeddedness, of the ties in a network.

The importance of embedded transactions and interactions is best illustrated by the booming literature on network forms of organizations and the broader market-network discussion (see Rauch & Casella, 2001; White, 2002). The network form of organization can be seen as a group of agents who pursue repeated, enduring and reciprocal exchange relations with one another across organizational boundaries and, at the same time, lack a legitimate single organizational authority to arbitrate and resolve the disputes that may arise during the exchange (Podolny and Page, 1998; Powell 1990; Knoke, 2001). The stress on co-operation and



*The social structure underlying the transactions is crucial in understanding economic action and development.*

collaboration comes from an empirical observation that many organizations work and experiment with many different forms of co-operation and collaboration (Powell, 1990; Scott; 2000; Helper et. al., 2000; Knoke, 2001).

The further development of embeddedness theory for empirical research was undertaken by Brian Uzzi, who elaborated the difference between arm-length networks and embedded networks for economic action:

- **Arm-length networks** are characterized by lean and sporadic transactions and function without any prolonged human or social contact between parties who need not enter into recurrent or continuing relations (Uzzi, 1996, 1997, 1999). In other words, these networks are characterized by minimal information exchange (Williamson, 1985).

- **Embedded networks** are characterized by their strength, repetitiveness, transmission of tacit, thick and additional information and their grounding in norms of trust and reciprocity (Uzzi & Gillespie, 2002; Perrow, 2002, p. 25).

Embedded networks can be identified or measured in three distinct ways (Uzzi & Gillespie, 2002). A first indicator for embeddedness is duration. The longer a network tie lasts, the greater the possibility that close bonds of trust and reciprocity are developed. A second indicator is multiplexity, which refers to the diversity of relationships involved between two actors/organizations. The more diverse the relationships are, the more embedded network ties become. A third indicator of embeddedness is the dispersion or concentration of an actor's network. A proxy for this indicator is the size of a network. Large networks tend to be mainly constructed of arm-length network ties, while small networks are more related to embedded network ties. Throughout the network literature the distinction between arm-length and embedded networks is conceptualized in order to capture their different performance with regard to knowledge and information exchange.

*Knowledge is the single most important asset for both micro- and macro-economic development. Recent research in sociology and economics has shown how knowledge networks contribute to the reduction of information asymmetries.*

# 1.5.2 Information transmission and the creation of knowledge

The main resources which go through networks are information (in different forms) and knowledge. Besides information and knowledge, tangible assets such as people and skills are transmitted over network ties. A first crucial difference in the functioning of different networks is related to the nature and amount of information exchanged in networks.

First of all, networks *transfer self-contained pieces of information* (i.e. facts). In this way, networks are channels or transmitters of information (Podolny & Page, 1998). This transmission of information can occur in both arm-length networks as well as embedded networks. In the case of arm-length networks, the information is very limited. In embedded networks, the information is 'thicker' and more tacit (Uzzi, 1996). Hence, embedded ties promote the transfer of more fine-grained information. Susan Helper (1991) for example reported that 'thicker information' on strategy and production know-how is transferred through embedded ties, thereby promoting learning.

Secondly, networks may foster learning by encouraging novel syntheses of information that are qualitatively distinct from the information that previously resided within the distinct nodes. In this case, networks do not only facilitate the transmission of information, but also foster the *creation of knowledge*. The difference between information transmission and knowledge is subtle but important. In contrast to information, which is defined as self-contained facts, knowledge is conceptual, a unique combination of facts that interact in intangible ways (Amsden, 2001, p. 3). According to Amsden (2001), knowledge is the single most important asset for both micro- as well as macro- economic development:

*"The knowledge needed to compete in world markets, as distinct from factual information, comprises unique skills, sui generis capabilities, novel product concepts and idiosyncratic production systems.* [… Knowledge] *is the key to economic development, which involves a transformation from wealth-creation centered on primary product-based assets to wealth-creation centered on knowledge-based assets."* (Amsden, 2001, p. v)

The locus of the knowledge creation is inter alia in the network. This can be the result of both formal and informal modes of collaboration. This type of information generation was analysed by Powell and collaborators. Powell et al. (1996, p. 118) argue that *"knowledge creation occurs in the context of a community, one that is fluid and evolving rather than tightly bound or static. ... Sources of innovation do not reside exclusively inside firms; instead, they are commonly found in the interstices between firms, universities, research laboratories, suppliers, and customers"* (Powell, 1990).

Thirdly, the distinction between arm-length networks and embedded networks in relation to information is also important in the debate on information imperfections and asymmetries. Building on the path-breaking work by Nobel laureates Akerlof (1970) and Stiglitz (2001) on the role of (imperfect)

information for economic development, many economists have explored the implications of asymmetric information, i.e. the fact that different people and organizations know different things which are valuable for the other party. There are many mechanisms for the elimination or reduction of information asymmetries. Most of them are discussed by Stiglitz (2001) in his Nobel Prize Lecture on *Information and the Change in the Paradigm of Economics*. Stiglitz only marginally focuses on the importance of networks. However, more recent research in sociology and economics has shown how networks contribute to the reduction of information asymmetries.

In other words, there are three important differences between arm-length networks and embedded networks in relation to information transmission and knowledge creation:

- The amount of information which can be processed within a network which goes into a network. This is a function of the number of ties and the diversification of network ties. A high number of ties and a high degree of diversification of ties (non-redundancy) increase the probability to gain more and new information. This is partially a result from the fact that more structural holes are bridged in these conditions (Burt, 1992, p. 18). The latter will occur mainly in networks dominated by arm length relationships, because in these types of networks one can manage many more network ties (cfr. low co-ordination costs). According to Burt (1992), the essence of network benefits does not necessarily lie in the presence of network ties but in the absence of ties and the possibilities of agents to exploit this absence (structural hole) by forming a bridge between two previously unconnected nodes.
- The nature of information which is transmitted. Arm-length networks are characterised by minimal or very thin information exchange. In embedded ties, information exchange is 'thick'. It should be noted that the difference between 'thin' and 'thick' information is difficult to conceptualize and operationalize.
- Information transmission versus knowledge creation. Information transmission occurs both in arm-length and in embedded networks, but knowledge creation occurs almost exclusively in embedded ties. This makes them extremely valuable because in this way new products and market-opportunities can be developed.

Table 1.2 summarizes the main differences between arm-length and embedded networks.

*Table 1.2 Comparison of different characteristics between arm-length and embedded networks.*

| Information characteristics | Arm-length Networks | Embedded Networks |
|---|---|---|
| Information vs. knowledge | Information-transfer | Knowledge creation |
| Nature of information | Thin | Thick & Tacit |
| Amount of new information | Extensive | Limited |
| Direction of information creating one-sided advantages | One-way | Two-way / collaborative |
| Information asymmetries | High | Low |
| Exchange of key-information | Limited / Non-existence | High |



The discussion demonstrates that embedded and arm-length networks clearly perform different functions in the context of knowledge management. As a consequence, an optimal network is an embedded network which is sufficiently open to arm-length ties or networks. Information benefits, as Ron Burt argues, *"are maximized in a large, diverse network of trusted contacts."* (Burt, 1992, p. 47)

This type of network balances the liabilities of under- and over-embeddedness (Uzzi 1996, 1997, 1999, Uzzi & Gillespie, 2002; Uzzi & Lancaster, 2006) and corresponds to the idea of Peter Evans (1995, see als Rodrik, 2007) with regard to embedded autonomy. Uzzi argues that embedded networks are more functional than arm-length networks. However, he also posits that an inverted U-relationship between embeddedness and performance exists. That is, while embedded transactions are superior to unembedded ones, it nonetheless remains possible for an organization to depend too much on embedded networks and hence become trapped in embedded networks. Hence, according to Uzzi a theoretical optimum exists between the countervailing effects of under- and over-embeddedness when a network is composed of a mixture of arm-length and embedded networks (Uzzi, 1996, p. 684; see also Helper, 1991).

The balancing of over-connectedness and under-connectedness is also stressed by Evans and other political economists. Evans argues, *"it is worth underlining that either autonomy or embeddedness may produce perverse results without the other."* (Evans, 1995, p 59) In case of full embeddedness the risk of state capture by private interests is very high. Pure autonomy will not lead to institutionalized network ties which build trust, exchange information, create knowledge and develop mutual dependence which are all necessary for economic development. As a result both autonomy (arm-length relations) and embedded relations are jointly necessary conditions for the promotion of private sector development and economic development. As Peter Evans (1993, p. 248; see also Rodrik, 2004, p. 17; Altenburg, 2011, p. 20) argues:

*The power of embedded autonomy arises from the fusion of what seem at first to be contradictory characteristics. Embeddedness provides sources of intelligence and channels of implementation that enhance the competence of the state. Autonomy complements embeddedness, protecting the state from piecemeal capture, which would destroy the cohesiveness of the state itself and eventually undermine the coherence of its social interlocutors. The state's corporate coherence enhances the cohesiveness of external networks and helps groups that share its vision overcome their collective action problems.*

As a result, network formation for private sector development should strive to develop networks which institutionalize and embed networks that are sufficiently fluid and flexible. These types of networks will facilitate the exchange of information and the creation of new knowledge. The subsequent chapters will illustrate, via case studies, the many different ways in which countries are institutionalizing networks within organizations, across organizations and internationally.

# 1.6 Conclusions

Knowledge management for private sector development is a wide topic. Private sector development is a result of many interacting initiatives and policies pursued across different levels of governance by multiple actors. The private sector development 'ecosystem' (see figure 1.2) consists of many different actors. Knowledge management for private sector development should take this multi-level and multi-actor complexity into account. In order to provide an actionable means of addressing this complexity, the present report focuses on networks. Networks play a key role in diffusing information and generating knowledge and hence contribute directly to economic development, as argued by many leading scholars. Moreover network governance is becoming increasingly important on a local, national, regional and global scale. Consequently the current chapter introduced network governance as a distinct means of governing. Most importantly, the chapter presented a conceptual difference in types of networks in order to make clear that networks differ in nature and that this difference is relevant in the context of knowledge management and information provision.



## The key points stressed in this chapter are:

- Networks are crucial for information exchange and knowledge creation and diffusion, and contribute significantly to knowledge management.
- Networks are increasingly emerging as a distinct form of governance which includes different types of public and private actors within and across organizational and national boundaries.
- Not all networks are equivalent, and they differ in nature. Different types of networks exist, and some are more instrumental in the context of learning, information exchange and knowledge creation.
- There is a significant benefit to be gained from institutionalizing or embedding networks and hence investing in networks. The creation of trust and social capital which follows from this is beneficial for organizations and the economy as a whole.
- It is crucial not only to embed networks but also to be active in new or existing networks which will provide new information, knowledge and opportunities.
- From an actor's or organization's perspective, successful networking implies the development of solid networks which continue over time and are built on trust, as well as and constant movement between relevant networks to capture new information.
- Networks are proliferating. Given the increasing choice of networks, the importance of seriously investing in some networks and institutionalizing network ties within them (high administrative co-ordination cost) and the importance of balancing arm-length ties with embedded ties, it is becoming important to develop clear networking strategies with specific objectives.
- Knowledge on networking strategies and managing effective and efficient networks is more limited. Efforts to generate knowledge and best practices on network management and the development of network strategies, especially in the context of private sector development, would be welcomed. The latter can be achieved via study visits, workshops or illustrative case studies. These activities can contribute to identifying success factors for network management.

# Chapter 2: Measuring Networks across Countries: an Empirical Exploration

Axel Marx and Jadir Soares

"A world in which horizontal and vertical government networks comprise different types of government institutions (regulatory, judicial, legislative), perform different functions (information exchange, enforcement cooperation, technical assistance and training), have different members, have different degrees of formality and coexists in different ways with international organizations is a messy world indeed. It may seem impossibly complex."

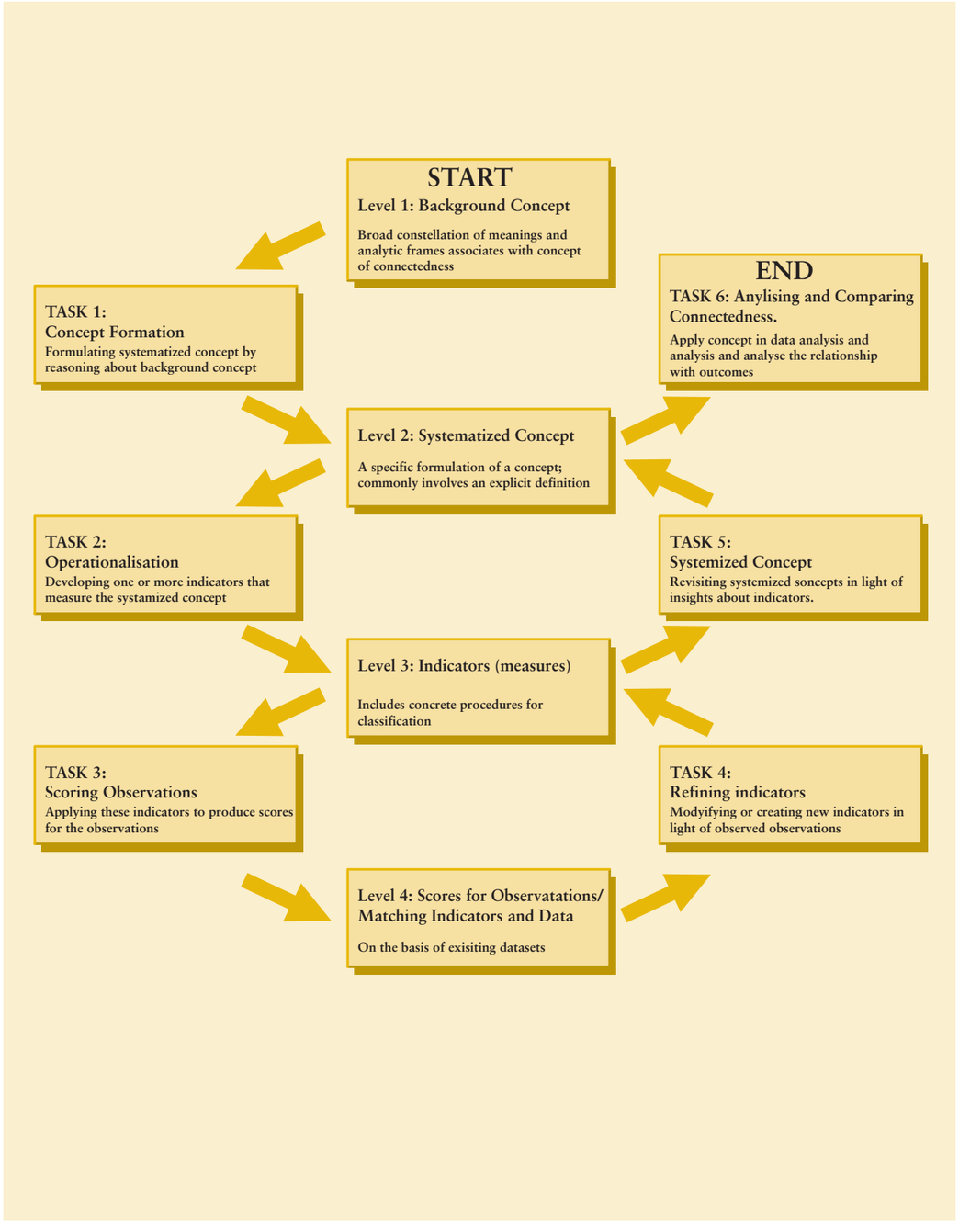
*Anne-Marie Slaughter*[iii]

## 2.1 INTRODUCTION

Notwithstanding the importance of networks in the academic literature, little solid empirical data is available to measure networks on the country level and the effect on relevant outcome parameters such as government effectiveness, industrial development and/or GDP/per capita on country level. There are many excellent network studies available which quantitatively analyse network effects on organizational level, and case studies which describe the importance of networks. However, few studies are available which aim to capture the degree to which a country is 'networked' or connected taking into account that networks develop and are influential on distinct levels (intra-organizational networks, inter-organizational networks and international networks) (for an exception see Maoz, 2010). No overall network index currently exists which enables a comparison between countries and which substantiates the importance of networks for relevant outcomes. So, is it "impossibly complex" to measure these networks?

For the purpose of this report, we explore the possibilities for constructing such an index. Given the limited scope of the study, in terms of both duration and budget, we were able to collect little new data on the basis of surveys, expert interviews, data-mining in raw datasets of existing databases, etc. Figure 2.1, based on the work of Adcock and Collier (2001) presents the ideal-typical process of constructing and validating new concepts and indicators. Starting from the distinction between intra-organizational networks, inter-organizational networks and international networks, we therefore used an inductive approach to construct an index of connectedness and hence to work our way from level 4 to level 1 in the concept development process. As a result, more than 70 databases (see Annex 1) containing country level data for a significant number of countries were screened for indicators which can be related to international, inter-organizational and intra-organizational networks. In total more than 7000 existing indicators were considered (Annex 2 contains more information on the variable selection process). Some indicators were identified as being potentially relevant, i.e. proxies for indicators on the levels identified in the report, intra-organizational, inter organizational and international.

*Figure 2.1: Concept Formation Process for Connectedness: Tasks and Levels*




*Source: adapted from Adcock and Collier (2001)*



This approach has several disadvantages. First, we have to work with available data. The report develops new indicators on the basis of existing data which is not the same as gathering new data on the basis of the concept development framework outlined in figure 2.1. Chapter 1 stressed the importance of institutionalized/embedded ties for knowledge management and knowledge creation. Such a fine-grained assessment is not possible if data is not specifically collected from that theoretical perspective. Working with existing data makes it difficult to differentiate between arm-length and embedded networks. Chapter 1 also argued that the 'ecosystem' of private sector development consists of many different actors, potentially creating a wide diversity of networks which in all likelihood is not captured in existing datasets. Secondly, while many existing variables were screened there are likely to be many more relevant databases. Future work could focus on identifying these. Nevertheless, the present report does succeed in developing an initial indicator for connectedness. Its use will shed some light on the fruitfulness of continuing the effort to develop more fine-grained measures of connectedness. In subsequent chapters, several proposals for the development of new indicators are made.

What is the result of screening more than 7000 variables with the purpose of identifying network indicators? Surprisingly few indicators are available. Figure 2.2 presents the seven variables which were selected for the purpose of the connectedness index. For international networks we aimed to identify indicators that capture the flows of information and policy diffusion between public authorities, as well as the information flows between economic actors (Slaughter, 2004; Martínez-Diaz &Woods, 2009). Two indicators were selected to capture this degree of international connectedness, namely the KOF (Swiss Economic Institute) political globalization indicator and the KOF economic networks indicator. The political globalization index captures inter alia the membership in international inter-governmental organizations and the number of international treaties which are signed and ratified by a country.

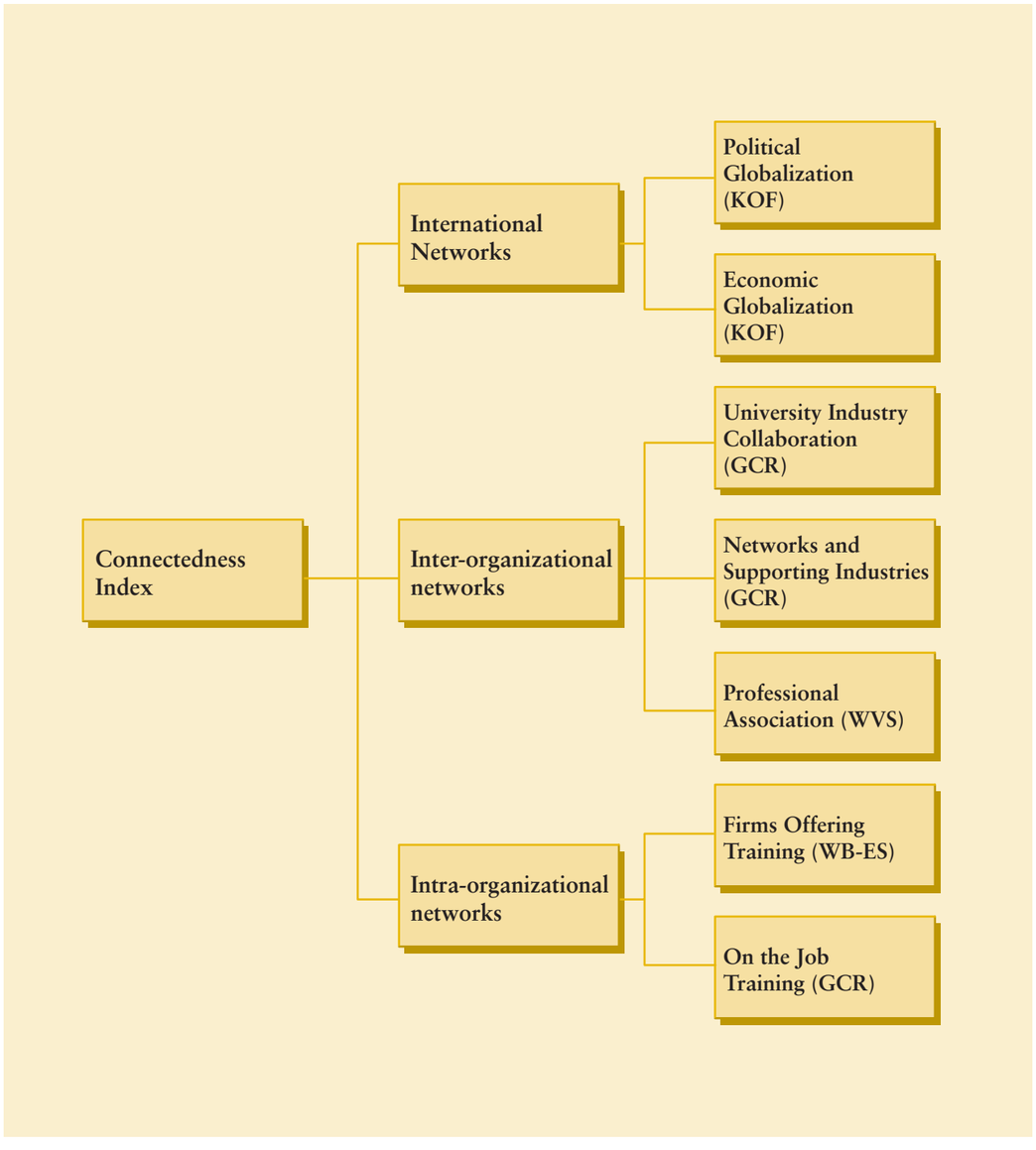
The economic networks indicator measures the actual economic and financial flows between countries (trade, FDI, portfolio investments). Several other economic indicators capture economic flows, but the KOF is the most comprehensive and suitable one for the purpose of this report.

Three variables were selected to capture the degree of inter-organizational interconnectedness within a country, namely university-industry collaboration, networks and supporting industries and the degree to which individuals are members of professional organizations which are often established for networking purposes. The first two indicators are drawn from the Global Competitiveness Report. University industry collaboration measures the extent to which business and research collaborate on research and development. It captures the networks between business and universities, when working together pursuing innovations. Networks and supporting industries captures the number and quality of local suppliers and the extent of their interaction (i.e. clusters, or the concentration of interconnected businesses). Both are in the literature on inter-organizational networks and economic geography recognized as important indicators to capture the degree of connectedness between these organizations. (Podolny & Page, 1998; Powell & Smith-Doerr, 1994; Saxenian et al. 2001; European Commission, 2008) The third indicator is drawn from the World Values Survey and aims to capture networks of professionals that collaborate each other for specific purposes. Networking in the context of professional association can be regarded as a relevant networking strategy in the context of information exchange (see Burt, 1995; Baker, 2000; Putnam, 2000 for a more general argument on the importance of association).

Intra-organizational networks are hard to capture. To measure intra-organizational networks we identified two proxies based on the degree to which firms offer training (Cross & Parker, 2004). The idea is that training enhances internal networks and learning resulting from increased interaction between people within an organization. One measure comes from the World Bank Enterprise Surveys and measures the percentages of firms offering formal training. A second measure is based on the Global Competitiveness report and focuses on-the-job training which is in turn based on the local availability of specialized research and training services in a country and the extent to which companies in a country invest in training and employee development.

The indicators will be discussed more extensively in the following sections. Figure 2.2 presents the different components of the connectedness index.

*Figure 2.2: Connectedness Index*






To analyse the relationship with relevant outcome variables, the report focuses on four variables, namely two policy-related variables (government effectiveness and regulatory quality) and two economy-related variables (industrial development and GDP per capita). Government effectiveness and regulatory quality are chosen since networks are assumed to contribute to better policy formulation and implementation (see discussion in Part 1). Government effectiveness and regulatory quality in turn are important for better private sector development and economic development, the ultimate parameters in which we are interested (see also Altenburg (2011, pp. 35-36)). Government effectiveness, from the World Bank governance indicators series, captures different aspects of policymaking and implementation, including the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. The link with private sector development is specifically made in the concept of regulatory quality, from the World Bank governance indicators series, which refers to the ability of governments to formulate and implement sound policies and regulations that permit and promote private sector development (Kaufman et al. 2009). The UNIDO Competitive Industrial Performance (CIP) Index benchmarks competitive industrial activity at the country level and is an indicator for industrial development. GDP per capita from the World Development Indicators is included as a second general measure for economic development.

The analysis will focus on the one hand on analysing the variation in the connectedness index and its sub-indices, and on the other hand on the relationship with other relevant parameters such as policy effectiveness, industrial development and economic development, without implying any causal relationship. Data on the latter indicators is drawn from the World Bank governance indicators, the UNIDO Competitive Industrial Performance Index and World Bank development indicators on GDP per capita PPP. Table 2.1 presents the variables which are used to compose the connectedness index, the sources from which they are drawn and the name of the variable in the source database.

*Table 2.1: Variables and Sources of the Connextedness Index*

| Variable | Source | Source variable |
|---|---|---|
| Political Networks | KOF Index of Globalization | Political Globalization |
| Economic Networks | KOF Index of Globalization | Actual flows in economic terms |
| University-Firm Networks | Global Competitiveness Report | University-industry collaboration in R&D |
| Inter-firm Networks | Global Competitiveness Report | Networks and supporting industries |
| Personal Networks | World Values Survey | A072: Member of professional associations or<br>A104: Active/inactive membership of professional organization |
| Formal Training | Enterprise Surveys | L.10: Over fiscal year … [last complete fiscal year], did this establishment have formal training programs for its permanent, full-time employees? |
| On-the-job Training | Global Competitiveness Report | On-the-job training |
| Government Effectiveness | Worldwide Governance Indicators | Government effectiveness |
| Regulatory Quality | Worldwide Governance Indicators | Regulatory quality |
| Competitive Industrial Performance (CIP) | Industrial Development Report | Competitive industrial performance |
| GDP per capita | World Development Indicators | GDP per capita, PPP (current international $) (NY.GDP.PCAP.PP.CD) |

The discussion of the available indicators makes clear that several potential relevant networks are currently not captured in the datasets which were screened in the context of this report. The private sector development ecosystem is such that many types of actors can form relevant knowledge networks. Most importantly no indicators are available, to our knowledge, which capture the degree to which governmental structures are connected to the 'private' sector in a country, neither on the level of inter-organizational networks nor on the intra-organizational level (for example number of bureaucrats with significant private sector experience).

The following sections discuss the different sub-indices, the connectedness index and the relationship with relevant other variables, government effectiveness, CIP and GDP/per capita.



# 2.2 The international networks sub-index

The International Networks sub-index is based on two indicators from the KOF Index of Globalization, political and economic globalization. Political globalization is a proxy for the degree to which states are networked on an international level.

This indicator is based on the number of embassies in a country, the number of international organizations of which the country is a member, the number of UN peace missions in which a country participated, and the number of international treaties a country signed (Dreher, 2006). The proxy for economic globalization (networks) is based on the flows of goods and services (KOF actual flows). This indicator takes into account the exports and imports of goods and services, foreign direct investments (FDI stocks), the portfolio of investments of a country, and the income payments to foreign nationals.

After the selection of the indicators, the International Networks Sub-index was created based on the arithmetic mean of political and economic networks, transformed on a scale from 0-1.The sub-index of International Networks covering 121 countries is presented in table 2.2.

*Table 2.2: International Networks Sub-index*

| ISO code | Country | International Network Index | International Network Rank | ISO code | Country | International Network Index | International Network Rank |
|---|---|---|---|---|---|---|---|
| BEL | Belgium | 1.000 | 1 | CYP | Cyprus | 0.837 | 17 |
| NLD | Netherlands | 0.963 | 2 | CHL | Chile | 0.833 | 18 |
| HUN | Hungary | 0.940 | 3 | NOR | Norway | 0.831 | 19 |
| IRL | Ireland | 0.935 | 4 | ESP | Spain | 0.829 | 20 |
| CHE | Switzerland | 0.934 | 5 | BGR | Bulgaria | 0.820 | 21 |
| AUT | Austria | 0.929 | 6 | ETH | Ethiopia | 0.812 | 22 |
| SWE | Sweden | 0.920 | 7 | SVK | Slovakia | 0.788 | 23 |
| LUX | Luxembourg | 0.906 | 8 | CAN | Canada | 0.787 | 24 |
| DNK | Denmark | 0.904 | 9 | EST | Estonia | 0.787 | 25 |
| PRT | Portugal | 0.862 | 10 | ITA | Italy | 0.787 | 26 |
| CZE | Czech Republic | 0.852 | 11 | SVN | Slovenia | 0.775 | 27 |
| FIN | Finland | 0.851 | 12 | ISL | Iceland | 0.768 | 28 |
| SGP | Singapore | 0.849 | 13 | TUN | Tunisia | 0.757 | 29 |
| MYS | Malaysia | 0.844 | 14 | JOR | Jordan | 0.753 | 30 |
| FRA | France | 0.840 | 15 | AUS | Australia | 0.736 | 31 |
| DEU | Germany | 0.837 | 16 | HRV | Croatia | 0.735 | 32 |

| ISO code | Country | International Network Index | International Network Rank |
|---|---|---|---|
| POL | Poland | 0.730 | 33 |
| ZAF | South Africa | 0.730 | 34 |
| GRC | Greece | 0.728 | 35 |
| NZL | New Zealand | 0.726 | 36 |
| PAN | Panama | 0.725 | 37 |
| THA | Thailand | 0.719 | 38 |
| ISR | Israel | 0.718 | 39 |
| NGA | Nigeria | 0.714 | 40 |
| GBR | United Kingdom | 0.696 | 41 |
| MLT | Malta | 0.690 | 42 |
| ZMB | Zambia | 0.687 | 43 |
| JAM | Jamaica | 0.686 | 44 |
| KAZ | Kazakhstan | 0.681 | 45 |
| LTU | Lithuania | 0.675 | 46 |
| USA | United States | 0.673 | 47 |
| PER | Peru | 0.666 | 48 |
| ZWE | Zimbabwe | 0.657 | 49 |
| URY | Uruguay | 0.654 | 50 |
| BHR | Bahrain | 0.651 | 51 |
| ROU | Romania | 0.647 | 52 |
| UKR | Ukraine | 0.646 | 53 |
| KOR | Korea, Republic of | 0.639 | 54 |
| NAM | Namibia | 0.626 | 55 |
| MAR | Morocco | 0.610 | 56 |
| RUS | Russian Federation | 0.604 | 57 |
| ARG | Argentina | 0.602 | 58 |
| BOL | Bolivia, Plurinational State of | 0.590 | 59 |
| BRA | Brazil | 0.583 | 60 |
| PHL | Philippines | 0.580 | 61 |
| MRT | Mauritania | 0.577 | 62 |
| BLZ | Belize | 0.566 | 63 |
| SLV | El Salvador | 0.565 | 64 |
| EGY | Egypt | 0.563 | 65 |
| ECU | Ecuador | 0.560 | 66 |
| IDN | Indonesia | 0.556 | 67 |
| COL | Colombia | 0.554 | 68 |
| KHM | Cambodia | 0.552 | 69 |
| CIV | Côte d'Ivoire | 0.551 | 70 |
| MUS | Mauritius | 0.549 | 71 |
| HND | Honduras | 0.539 | 72 |
| DZA | Algeria | 0.539 | 73 |
| LVA | Latvia | 0.538 | 74 |
| TTO | Trinidad and Tobago | 0.538 | 75 |
| SRB | Serbia | 0.530 | 76 |
| MOZ | Mozambique | 0.529 | 77 |
| GUY | Guyana | 0.528 | 78 |
| PNG | Papua New Guinea | 0.520 | 79 |
| BIH | Bosnia and Herzegovina | 0.519 | 80 |
| TUR | Turkey | 0.514 | 81 |
| SEN | Senegal | 0.508 | 82 |
| KGZ | Kyrgyzstan | 0.506 | 83 |
| IND | India | 0.498 | 84 |
| JPN | Japan | 0.498 | 85 |
| GTM | Guatemala | 0.493 | 86 |
| MEX | Mexico | 0.487 | 87 |
| AZE | Azerbaijan | 0.485 | 88 |
| CRI | Costa Rica | 0.475 | 89 |
| MDA | Moldova | 0.472 | 90 |
| PRY | Paraguay | 0.468 | 91 |
| ALB | Albania | 0.464 | 92 |
| CHN | China | 0.460 | 93 |
| BWA | Botswana | 0.454 | 94 |
| BRB | Barbados | 0.446 | 95 |
| MDG | Madagascar | 0.446 | 96 |
| MKD | Macedonia | 0.445 | 97 |
| PAK | Pakistan | 0.445 | 98 |
| GEO | Georgia | 0.443 | 99 |
| MLI | Mali | 0.442 | 100 |
| TCD | Chad | 0.425 | 101 |
| DOM | Dominican Republic | 0.420 | 102 |
| OMN | Oman | 0.418 | 103 |
| LKA | Sri Lanka | 0.408 | 104 |
| KWT | Kuwait | 0.400 | 105 |
| CMR | Cameroon | 0.392 | 106 |
| NIC | Nicaragua | 0.384 | 107 |
| VEN | Venezuela, Bolivarian Republic of | 0.377 | 108 |
| LSO | Lesotho | 0.358 | 109 |
| KEN | Kenya | 0.352 | 110 |
| UGA | Uganda | 0.339 | 111 |
| BGD | Bangladesh | 0.305 | 112 |
| ARM | Armenia | 0.281 | 113 |
| BEN | Benin | 0.278 | 114 |
| MWI | Malawi | 0.277 | 115 |
| CAF | Central African Republic | 0.262 | 116 |
| SYR | Syrian Arab Republic | 0.260 | 117 |
| BFA | Burkina Faso | 0.255 | 118 |
| BDI | Burundi | 0.119 | 119 |
| TZA | Tanzania United Republic of | 0.091 | 120 |
| HTI | Haiti | 0.000 | 121 |
| | **Median:** | **0.580** | |



The international sub-index shows significant variation in the degree to which countries are linked to each other on the international level, both politically as well as economically. The comparison with the median indicates that a significant proportion (more than 50 per cent) of the countries achieve relatively high scores on the sub index. However, several countries also receive lower scores and are outside the international dynamics between countries. It should be noted that a score of zero does not imply that a country is totally unconnected, but that - taken the variation between countries into account and due to the re-scaling of the variables, which is necessary for index-creation (see annex 2) - a country has a score of zero, indicating that in comparison to other countries the international connectedness is very low.

# 2.3 The inter-organizational networks sub-index

The Inter-organizational Networks Sub-index was created based on the following three indicators. First, the indicator on networks and supporting industries is taken from the Global Competitiveness Report 2008.

This indicator is based on an Executive Opinion Survey, and takes into account the quality and quantity of local suppliers, and the state of cluster development. The University-Industry Collaboration indicator is also taken from the Global Competitiveness Report that measures to what extent business and universities collaborate on research and development (R&D) in a country. Finally, the professional association indicator, which captures the degree to which individuals are involved in professional associations, was taken from the World Values Survey.

The Inter-organizational Networks Sub-index was created by the arithmetic mean the three indicators, transformed on a scale from 0-1. The Inter-organizational Networks sub-index, covering 81 countries, is presented in table 2.3.

*Table 2.3: Inter-organizational Networks Index*

| ISO code | Country | International Network Index | International Network Rank |
|---|---|---|---|
| USA | United States | 1.000 | 1 |
| CHE | Switzerland | 0.976 | 2 |
| SWE | Sweden | 0.874 | 3 |
| DEU | Germany | 0.865 | 4 |
| FIN | Finland | 0.845 | 5 |
| CAN | Canada | 0.823 | 6 |
| TWN | Taiwan, Province of China | 0.817 | 7 |
| JPN | Japan | 0.807 | 8 |
| NOR | Norway | 0.798 | 9 |
| IND | India | 0.795 | 10 |
| NLD | Netherlands | 0.784 | 11 |
| GBR | United Kingdom | 0.781 | 12 |
| SGP | Singapore | 0.760 | 13 |
| AUS | Australia | 0.749 | 14 |
| KOR | Korea, Republic of | 0.730 | 15 |
| MYS | Malaysia | 0.688 | 16 |
| HKG | Hong Kong SAR, China | 0.658 | 17 |

| ISO code | Country | International Network Index | International Network Rank |
|---|---|---|---|
| NZL | New Zealand | 0.629 | 18 |
| FRA | France | 0.616 | 19 |
| ZAF | South Africa | 0.607 | 20 |
| CHN | China | 0.601 | 21 |
| CZE | Czech Republic | 0.593 | 22 |
| PRI | Puerto Rico | 0.585 | 23 |
| ISR | Israel | 0.584 | 24 |
| THA | Thailand | 0.577 | 25 |
| ARM | Armenia | 0.567 | 26 |
| IDN | Indonesia | 0.550 | 27 |
| ITA | Italy | 0.534 | 28 |
| SVN | Slovenia | 0.513 | 29 |
| BRA | Brazil | 0.508 | 30 |
| CHL | Chile | 0.500 | 31 |
| ESP | Spain | 0.494 | 32 |
| HUN | Hungary | 0.464 | 33 |
| EST | Estonia | 0.457 | 34 |
| CYP | Cyprus | 0.452 | 35 |
| SAU | Saudi Arabia | 0.436 | 36 |
| COL | Colombia | 0.413 | 37 |
| DOM | Dominican Republic | 0.408 | 38 |
| LTU | Lithuania | 0.403 | 39 |
| SVK | Slovakia | 0.401 | 40 |
| MEX | Mexico | 0.396 | 41 |
| GTM | Guatemala | 0.388 | 42 |
| JOR | Jordan | 0.385 | 43 |
| VNM | Viet Nam | 0.383 | 44 |
| TUR | Turkey | 0.381 | 45 |
| TTO | Trinidad and Tobago | 0.374 | 46 |
| HRV | Croatia | 0.364 | 47 |
| ZMB | Zambia | 0.356 | 48 |
| PHL | Philippines | 0.344 | 49 |
| UKR | Ukraine | 0.344 | 50 |
| ARG | Argentina | 0.335 | 51 |
| POL | Poland | 0.323 | 52 |
| UGA | Uganda | 0.322 | 53 |
| NGA | Nigeria | 0.313 | 54 |
| MLI | Mali | 0.312 | 55 |
| RUS | Russian Federation | 0.306 | 56 |
| EGY | Egypt | 0.297 | 57 |
| PER | Peru | 0.295 | 58 |
| AZE | Azerbaijan | 0.294 | 59 |
| ROU | Romania | 0.279 | 60 |
| MAR | Morocco | 0.276 | 61 |
| TZA | Tanzania United Republic of | 0.273 | 62 |
| LVA | Latvia | 0.257 | 63 |
| PAK | Pakistan | 0.255 | 64 |
| SRB | Serbia | 0.247 | 65 |
| BGR | Bulgaria | 0.241 | 66 |
| BFA | Burkina Faso | 0.236 | 67 |
| URY | Uruguay | 0.221 | 68 |
| BGD | Bangladesh | 0.215 | 69 |
| GHA | Ghana | 0.209 | 70 |
| ETH | Ethiopia | 0.207 | 71 |
| MKD | Macedonia | 0.201 | 72 |
| SLV | El Salvador | 0.198 | 73 |
| VEN | Venezuela, Bolivarian Republic of | 0.152 | 74 |
| ZWE | Zimbabwe | 0.113 | 75 |
| DZA | Algeria | 0.075 | 76 |
| KGZ | Kyrgyzstan | 0.069 | 77 |
| GEO | Georgia | 0.064 | 78 |
| BIH | Bosnia and Herzegovina | 0.062 | 79 |
| ALB | Albania | 0.026 | 80 |
| MDA | Moldova | 0.000 | 81 |
| | **Median:** | **0.396** | |

The inter-organizational sub-index also varies significantly between countries. Inter-firm networks (clusters), firm-university networks and personal networks are very highly developed in some countries but underdeveloped in a large number of countries. The median indicates that overall the degree of inter-organizational interconnectedness is below 0.5, indicating that a significant number of countries have less developed inter-organizational networks as operationalized in the inter-organizational network sub-index. In our sample, it is partly a consequence of the low level of personal networks measures by the professional association indicator. It should be stressed that this is only a very partial operationalization on the basis of available data, which does not take into account several other elements which could be important in terms of inter-organizational networks, most importantly the links between other actors of the private sector development eco-system which are not included in the sub-index. Again, the zero score does not indicate a complete absence of inter-organizational networks, but is a result of the re-scaling method, indicating a comparatively low level of inter-organizational connectedness.



# 2.4 The intra-organizational network sub-index

The Intra-organizational Networks Sub-index was created based on two indicators. The Percentage of Firms Offering Formal Training comes from the World Bank Enterprise Surveys, most specifically from the question L10 which assessed whether an establishment offered formal training programs for its permanent, full-time employees.

The On-the-job Training indicator from the Global Competitiveness Report 2008-2009 is based on the local availability of specialized research and training services and the extent to which companies invest in training and employee development.

The Intra-organizational Networks sub-index was created by the arithmetic mean of the two training indicators. The index, covering 163 countries, is presented in table 2.4.

*Table 2.4: Intra-organizational Networks Index*

| ISO code | Country | International Network Index | International Network Rank |
|---|---|---|---|
| CHE | Switzerland | 1.000 | 1 |
| DNK | Denmark | 0.975 | 2 |
| USA | United States | 0.972 | 3 |
| SWE | Sweden | 0.940 | 4 |
| NLD | Netherlands | 0.908 | 5 |
| SGP | Singapore | 0.893 | 6 |
| WSM | Samoa | 0.890 | 7 |
| FIN | Finland | 0.886 | 8 |
| JPN | Japan | 0.880 | 9 |
| BEL | Belgium | 0.833 | 10 |
| CAN | Canada | 0.817 | 11 |
| GBR | United Kingdom | 0.817 | 12 |
| FRA | France | 0.804 | 13 |
| NOR | Norway | 0.801 | 14 |
| ISL | Iceland | 0.789 | 15 |
| AUS | Australia | 0.766 | 16 |
| IRL | Ireland | 0.759 | 17 |
| AUT | Austria | 0.757 | 18 |
| CHN | China | 0.751 | 19 |
| LBN | Lebanon | 0.747 | 20 |
| SVK | Slovakia | 0.736 | 21 |
| TWN | Taiwan, Province of China | 0.725 | 22 |
| ISR | Israel | 0.716 | 23 |
| SVN | Slovenia | 0.700 | 24 |
| NZL | New Zealand | 0.678 | 25 |
| EST | Estonia | 0.666 | 26 |
| CZE | Czech Republic | 0.662 | 27 |
| FJI | Fiji | 0.660 | 28 |
| LUX | Luxembourg | 0.656 | 29 |
| HKG | Hong Kong SAR, China | 0.646 | 30 |
| PRI | Puerto Rico | 0.646 | 31 |
| TUN | Tunisia | 0.646 | 32 |
| THA | Thailand | 0.640 | 33 |
| FSM | Micronesia, Federated States of | 0.626 | 34 |

| ISO code | Country | International Network Index | International Network Rank |
|---|---|---|---|
| MYS | Malaysia | 0.608 | 35 |
| DEU | Germany | 0.608 | 36 |
| KOR | Korea, Republic of | 0.573 | 37 |
| BRA | Brazil | 0.572 | 38 |
| QAT | Qatar | 0.552 | 39 |
| ARE | United Arab Emirates | 0.542 | 40 |
| CRI | Costa Rica | 0.540 | 41 |
| LTU | Lithuania | 0.536 | 42 |
| SWZ | Swaziland | 0.533 | 43 |
| KEN | Kenya | 0.523 | 44 |
| ZAF | South Africa | 0.517 | 45 |
| ESP | Spain | 0.506 | 46 |
| POL | Poland | 0.503 | 47 |
| VUT | Vanuatu | 0.489 | 48 |
| SAU | Saudi Arabia | 0.489 | 49 |
| BRB | Barbados | 0.485 | 50 |
| CHL | Chile | 0.485 | 51 |
| GRD | Grenada | 0.473 | 52 |
| JAM | Jamaica | 0.464 | 53 |
| LVA | Latvia | 0.458 | 54 |
| CYP | Cyprus | 0.451 | 55 |
| ARG | Argentina | 0.450 | 56 |
| BLR | Belarus | 0.450 | 57 |
| PER | Peru | 0.449 | 58 |
| DOM | Dominican Republic | 0.433 | 59 |
| SLV | El Salvador | 0.430 | 60 |
| CPV | Cape Verde | 0.426 | 61 |
| PAN | Panama | 0.422 | 62 |
| PHL | Philippines | 0.407 | 63 |
| KWT | Kuwait | 0.403 | 64 |
| MWI | Malawi | 0.403 | 65 |
| ITA | Italy | 0.394 | 66 |
| ECU | Ecuador | 0.394 | 67 |
| VNM | Viet Nam | 0.393 | 68 |
| LKA | Sri Lanka | 0.388 | 69 |
| PRT | Portugal | 0.387 | 70 |
| BHR | Bahrain | 0.378 | 71 |
| IDN | Indonesia | 0.378 | 72 |
| MLT | Malta | 0.366 | 73 |
| ROU | Romania | 0.364 | 74 |
| COL | Colombia | 0.364 | 75 |
| HUN | Hungary | 0.362 | 76 |
| COD | Congo, Democratic Republic of the | 0.362 | 77 |
| BHS | Bahamas | 0.357 | 78 |
| MKD | Macedonia | 0.354 | 79 |
| SRB | Serbia | 0.354 | 80 |
| GTM | Guatemala | 0.348 | 81 |
| IND | India | 0.345 | 82 |
| NAM | Namibia | 0.342 | 83 |
| RUS | Russian Federation | 0.340 | 84 |
| HRV | Croatia | 0.338 | 85 |
| LSO | Lesotho | 0.334 | 86 |
| KHM | Cambodia | 0.329 | 87 |
| CMR | Cameroon | 0.325 | 88 |
| VEN | Venezuela, Bolivarian Republic of | 0.325 | 89 |
| TTO | Trinidad and Tobago | 0.324 | 90 |
| NER | Niger | 0.323 | 91 |
| JOR | Jordan | 0.322 | 92 |
| MUS | Mauritius | 0.321 | 93 |
| UGA | Uganda | 0.321 | 94 |
| MNG | Mongolia | 0.320 | 95 |
| BOL | Bolivia, Plurinational State of | 0.316 | 96 |
| HND | Honduras | 0.315 | 97 |
| BWA | Botswana | 0.313 | 98 |
| BFA | Burkina Faso | 0.306 | 99 |
| MNE | Montenegro | 0.297 | 100 |
| KGZ | Kyrgyzstan | 0.293 | 101 |
| KAZ | Kazakhstan | 0.293 | 102 |
| NGA | Nigeria | 0.292 | 103 |
| BGR | Bulgaria | 0.291 | 104 |
| TUR | Turkey | 0.286 | 105 |
| TLS | Timor-Leste | 0.283 | 106 |
| MEX | Mexico | 0.282 | 107 |
| BIH | Bosnia and Herzegovina | 0.280 | 108 |
| TGO | Togo | 0.279 | 109 |
| GMB | Gambia | 0.279 | 110 |
| GAB | Gabon | 0.278 | 111 |
| OMN | Oman | 0.276 | 112 |
| TZA | Tanzania United Republic of | 0.275 | 113 |
| MAR | Morocco | 0.268 | 114 |
| AZE | Azerbaijan | 0.265 | 115 |
| BEN | Benin | 0.255 | 116 |
| UKR | Ukraine | 0.255 | 117 |
| GHA | Ghana | 0.253 | 118 |
| SEN | Senegal | 0.250 | 119 |
| LAO | Lao People's Democratic Republic | 0.243 | 120 |
| PRY | Paraguay | 0.243 | 121 |
| URY | Uruguay | 0.241 | 122 |
| RWA | Rwanda | 0.236 | 123 |
| CIV | Côte d'Ivoire | 0.234 | 124 |
| MDG | Madagascar | 0.228 | 125 |
| ARM | Armenia | 0.224 | 126 |
| GRC | Greece | 0.224 | 127 |
| ETH | Ethiopia | 0.223 | 128 |
| WBG | West Bank and Gaza Strip | 0.222 | 129 |
| ERI | Eritrea | 0.217 | 130 |
| ZMB | Zambia | 0.215 | 131 |
| EGY | Egypt | 0.208 | 132 |
| MDA | Moldova | 0.208 | 133 |
| ZWE | Zimbabwe | 0.208 | 134 |
| TCD | Chad | 0.204 | 135 |
| NIC | Nicaragua | 0.203 | 136 |
| KOS | Kosovo | 0.198 | 137 |
| GUY | Guyana | 0.195 | 138 |
| MOZ | Mozambique | 0.195 | 139 |
| SYR | Syrian Arab Republic | 0.182 | 140 |
| BTN | Bhutan | 0.182 | 141 |
| MLI | Mali | 0.169 | 142 |
| LBY | Libyan Arab Jamahiriya | 0.167 | 143 |
| ALB | Albania | 0.165 | 144 |
| GIN | Guinea | 0.154 | 145 |
| GEO | Georgia | 0.142 | 146 |
| AGO | Angola | 0.132 | 147 |
| TJK | Tajikistan | 0.124 | 148 |
| SLE | Sierra Leone | 0.122 | 149 |
| SUR | Suriname | 0.119 | 150 |
| BDI | Burundi | 0.108 | 151 |
| MRT | Mauritania | 0.106 | 152 |
| BGD | Bangladesh | 0.104 | 153 |
| LBR | Liberia | 0.101 | 154 |
| DZA | Algeria | 0.093 | 155 |
| AFG | Afghanistan | 0.071 | 156 |
| PAK | Pakistan | 0.056 | 157 |
| YEM | Yemen | 0.050 | 158 |
| GNB | Guinea-Bissau | 0.044 | 159 |
| COG | Congo | 0.031 | 160 |
| TON | Tonga | 0.027 | 161 |
| UZB | Uzbekistan | 0.008 | 162 |
| NPL | Nepal | 0.000 | 163 |
| | **Median:** | **0.345** | |

The intra-organizational sub-index varies significantly between countries. The low median score indicates that these instruments to strengthen internal networks are less widespread among countries. A limited number of countries achieve high scores, while a large group of countries receive lower scores, as is indicated by the median. Again, the zero score does not indicate a complete absence of intra-organizational networks, but is a result of the re-scaling method, indicating a comparatively low level of intra-organizational connectedness.

# 2.5 The Connectedness Index

The Connectedness Index is the average of three sub-indices (International, Inter-organizational, and Intra-organizational Networks). It is presented in table 2.5.

*Table 2.5: Connectedness Index*

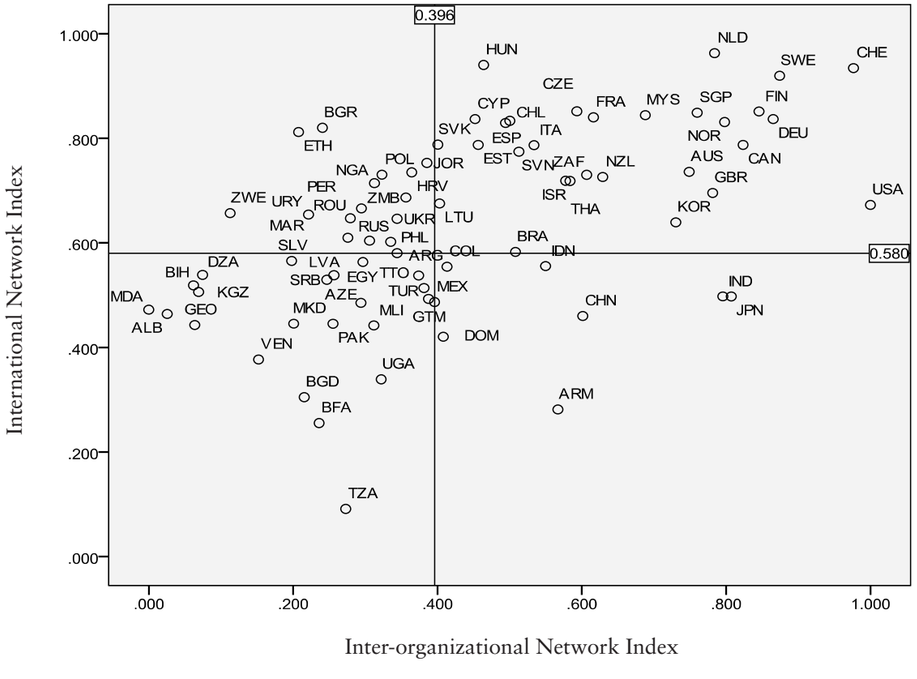
| ISO code | Country | International Network Index | Inter-org Network Index | Intra-org Network Index | Connectedness Index | Connectedness Rank |
|---|---|---|---|---|---|---|
| CHE | Switzerland | 0.934 | 0.976 | 1.000 | 0.970 | 1 |
| SWE | Sweden | 0.920 | 0.874 | 0.940 | 0.911 | 2 |
| NLD | Netherlands | 0.963 | 0.784 | 0.908 | 0.885 | 3 |
| USA | United States | 0.673 | 1.000 | 0.972 | 0.881 | 4 |
| FIN | Finland | 0.851 | 0.845 | 0.886 | 0.861 | 5 |
| SGP | Singapore | 0.849 | 0.760 | 0.893 | 0.834 | 6 |
| NOR | Norway | 0.831 | 0.798 | 0.801 | 0.810 | 7 |
| CAN | Canada | 0.787 | 0.823 | 0.817 | 0.809 | 8 |
| DEU | Germany | 0.837 | 0.865 | 0.608 | 0.770 | 9 |
| GBR | United Kingdom | 0.696 | 0.781 | 0.817 | 0.765 | 10 |
| FRA | France | 0.840 | 0.616 | 0.804 | 0.754 | 11 |
| AUS | Australia | 0.736 | 0.749 | 0.766 | 0.750 | 12 |
| JPN | Japan | 0.498 | 0.807 | 0.880 | 0.728 | 13 |
| MYS | Malaysia | 0.844 | 0.688 | 0.608 | 0.713 | 14 |
| CZE | Czech Republic | 0.852 | 0.593 | 0.662 | 0.702 | 15 |
| NZL | New Zealand | 0.726 | 0.629 | 0.678 | 0.678 | 16 |
| ISR | Israel | 0.718 | 0.584 | 0.716 | 0.673 | 17 |
| SVN | Slovenia | 0.775 | 0.513 | 0.700 | 0.662 | 18 |
| KOR | Korea, Republic of | 0.639 | 0.730 | 0.573 | 0.648 | 19 |
| THA | Thailand | 0.719 | 0.577 | 0.640 | 0.646 | 20 |
| SVK | Slovakia | 0.788 | 0.401 | 0.736 | 0.642 | 21 |
| EST | Estonia | 0.787 | 0.457 | 0.666 | 0.637 | 22 |
| ZAF | South Africa | 0.730 | 0.607 | 0.517 | 0.618 | 23 |
| ESP | Spain | 0.829 | 0.494 | 0.506 | 0.610 | 24 |
| CHL | Chile | 0.833 | 0.500 | 0.485 | 0.606 | 25 |
| CHN | China | 0.460 | 0.601 | 0.751 | 0.604 | 26 |
| HUN | Hungary | 0.940 | 0.464 | 0.362 | 0.589 | 27 |
| CYP | Cyprus | 0.837 | 0.452 | 0.451 | 0.580 | 28 |
| ITA | Italy | 0.787 | 0.534 | 0.394 | 0.572 | 29 |
| BRA | Brazil | 0.583 | 0.508 | 0.572 | 0.554 | 30 |
| IND | India | 0.498 | 0.795 | 0.345 | 0.546 | 31 |
| LTU | Lithuania | 0.675 | 0.403 | 0.536 | 0.538 | 32 |
| POL | Poland | 0.730 | 0.323 | 0.503 | 0.519 | 33 |
| IDN | Indonesia | 0.556 | 0.550 | 0.378 | 0.494 | 34 |
| JOR | Jordan | 0.753 | 0.385 | 0.322 | 0.487 | 35 |
| HRV | Croatia | 0.735 | 0.364 | 0.338 | 0.479 | 36 |
| PER | Peru | 0.666 | 0.295 | 0.449 | 0.470 | 37 |
| ARG | Argentina | 0.602 | 0.335 | 0.450 | 0.463 | 38 |
| BGR | Bulgaria | 0.820 | 0.241 | 0.291 | 0.451 | 39 |
| COL | Colombia | 0.554 | 0.413 | 0.364 | 0.444 | 40 |
| PHL | Philippines | 0.580 | 0.344 | 0.407 | 0.444 | 41 |
| NGA | Nigeria | 0.714 | 0.313 | 0.292 | 0.440 | 42 |
| ROU | Romania | 0.647 | 0.279 | 0.364 | 0.430 | 43 |
| DOM | Dominican Republic | 0.420 | 0.408 | 0.433 | 0.420 | 44 |
| ZMB | Zambia | 0.687 | 0.356 | 0.215 | 0.419 | 45 |
| LVA | Latvia | 0.538 | 0.257 | 0.458 | 0.417 | 46 |
| RUS | Russian Federation | 0.604 | 0.306 | 0.340 | 0.417 | 47 |
| UKR | Ukraine | 0.646 | 0.344 | 0.255 | 0.415 | 48 |
| ETH | Ethiopia | 0.812 | 0.207 | 0.223 | 0.414 | 49 |
| TTO | Trinidad and Tobago | 0.538 | 0.374 | 0.324 | 0.412 | 50 |
| GTM | Guatemala | 0.493 | 0.388 | 0.348 | 0.410 | 51 |
| SLV | El Salvador | 0.565 | 0.198 | 0.430 | 0.398 | 52 |
| TUR | Turkey | 0.514 | 0.381 | 0.286 | 0.394 | 53 |
| MEX | Mexico | 0.487 | 0.396 | 0.282 | 0.388 | 54 |
| MAR | Morocco | 0.610 | 0.276 | 0.268 | 0.385 | 55 |
| SRB | Serbia | 0.530 | 0.247 | 0.354 | 0.377 | 56 |
| URY | Uruguay | 0.654 | 0.221 | 0.241 | 0.372 | 57 |
| ARM | Armenia | 0.281 | 0.567 | 0.224 | 0.357 | 58 |
| EGY | Egypt | 0.563 | 0.297 | 0.208 | 0.356 | 59 |
| AZE | Azerbaijan | 0.485 | 0.294 | 0.265 | 0.348 | 60 |
| MKD | Macedonia | 0.445 | 0.201 | 0.354 | 0.333 | 61 |
| UGA | Uganda | 0.339 | 0.322 | 0.321 | 0.327 | 62 |
| ZWE | Zimbabwe | 0.657 | 0.113 | 0.208 | 0.326 | 63 |
| MLI | Mali | 0.442 | 0.312 | 0.169 | 0.308 | 64 |
| KGZ | Kyrgyzstan | 0.506 | 0.069 | 0.293 | 0.289 | 65 |
| BIH | Bosnia and Herzegovina | 0.519 | 0.062 | 0.280 | 0.287 | 66 |
| VEN | Venezuela, Bolivarian Republic of | 0.377 | 0.152 | 0.325 | 0.285 | 67 |
| BFA | Burkina Faso | 0.255 | 0.236 | 0.306 | 0.266 | 68 |
| PAK | Pakistan | 0.445 | 0.255 | 0.056 | 0.252 | 69 |
| DZA | Algeria | 0.539 | 0.075 | 0.093 | 0.236 | 70 |
| MDA | Moldova | 0.472 | 0.000 | 0.208 | 0.227 | 71 |
| ALB | Albania | 0.464 | 0.026 | 0.165 | 0.218 | 72 |
| GEO | Georgia | 0.443 | 0.064 | 0.142 | 0.216 | 73 |
| TZA | United Republic of Tanzania | 0.091 | 0.273 | 0.275 | 0.213 | 74 |
| BGD | Bangladesh | 0.305 | 0.215 | 0.104 | 0.208 | 75 |
| | | | | **Median:** | **0.463** | |

The connectedness index clearly shows the overall variation in the degree to which countries are networked, both internally as well as internationally (for a discussion on using the median for comparison purposes see annex 1). Some countries obtain consistently high scores across the various network indicators and hence on the connectedness index, whereas other receive consistently lower scores. Also, it is interesting to note that similar connectedness scores were reached following very distinct paths. For example, Hungary (0.589) and Brazil (0.554) occupy the 27th and 30th ranking positions, respectively. However, while Brazil is very consistent in the three components of connectedness (0.583 for International Networks, 0.508 for Inter-organizational Networks, and 0.572 for Intra-organizational Networks), the scores of Hungary vary significantly: a very high score is achieved (0.940) in the International Networks Sub-index, a mean score in the case of the Inter-organizational Networks Sub-index, and a low score (0.362) in the Intra-organizational Networks Sub-index. The similar result in the Connectedness index is, in part, a consequence of our choice of the aggregation procedure (equal weighting) that uses a full compensability system, i.e., a low score in one indicator is equally compensated by a high score in other.

More generally, the differences on country level between indices are interesting. Some Asian countries, such as Japan and China, score below median on international networks but (very) highly on inter-organizational and intra-organizational networks. Others, including some European countries such as Poland and Hungary, score highly on international networks but show only median scores on inter-organizational and intra-organizational networks. Still others, such as India, score very highly on one indicator, in casu inter-organizational networks, but below median on the other two indices. This variation, both across countries and within countries, and across types of networks, reveals that very different dynamics are unfolding with regard to the development of networks.

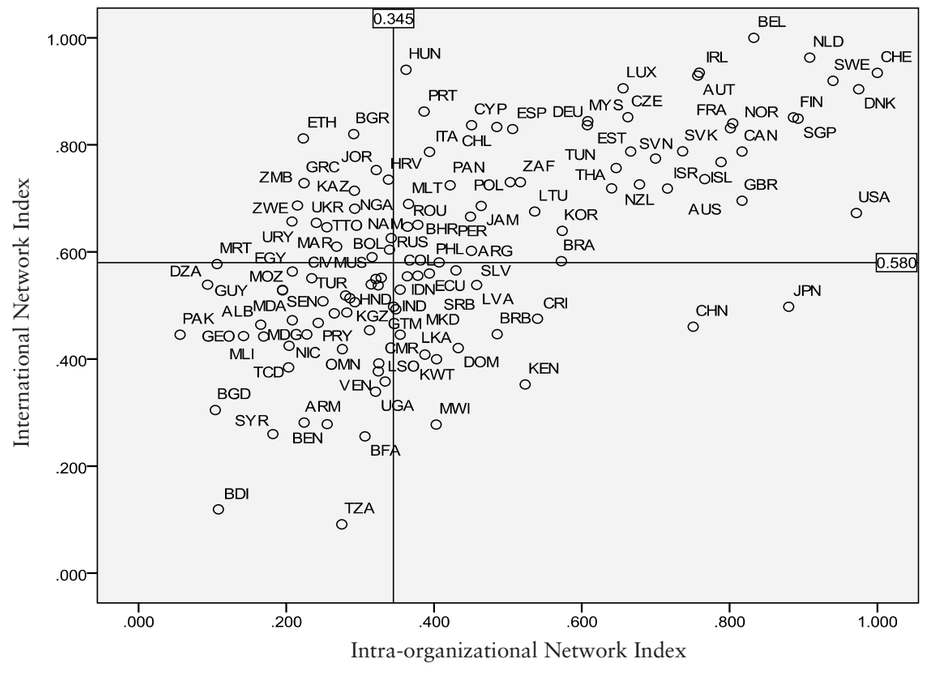
Graphs 2.1-2.3 present the scatter plots between the three sub-indices: international, inter-organization and intra-organization networks. The X and Y-axis present the median scores. The graphs help us to visualize the different scores of countries and between countries on the different network subindices. For example, on the top left of graph 2.2 one can observe that Bulgaria scores very highly in the international sub-index but below the median in the intra-organizational networks sub-index. Another example of the disparity between the sub-indices is the case of India (top of graph 2.3), whose score is very high on inter-organizational networks, but only median on intra-organizational networks.

*Graph 2.1: Relationship between International and Inter-organizational Networks*

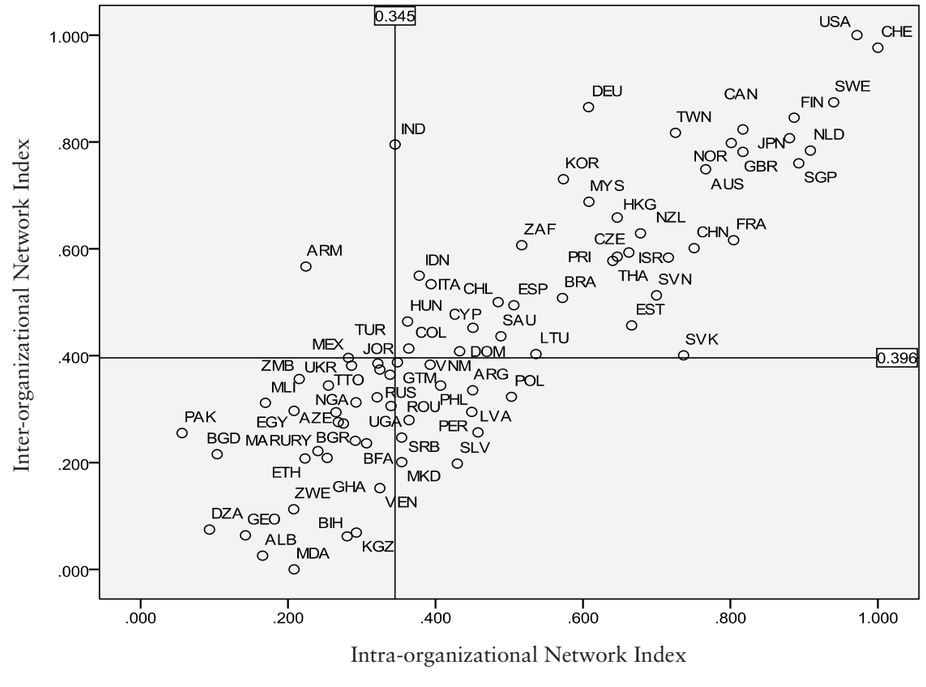





*Graph 2.2: Relationship between International and Intra-organizational Networks*




*Graph 2.3: Relationship between Inter-organizational and Intra-organizational Networks*



# 2.6 The relationship between connectedness and government, industrial and economic performance

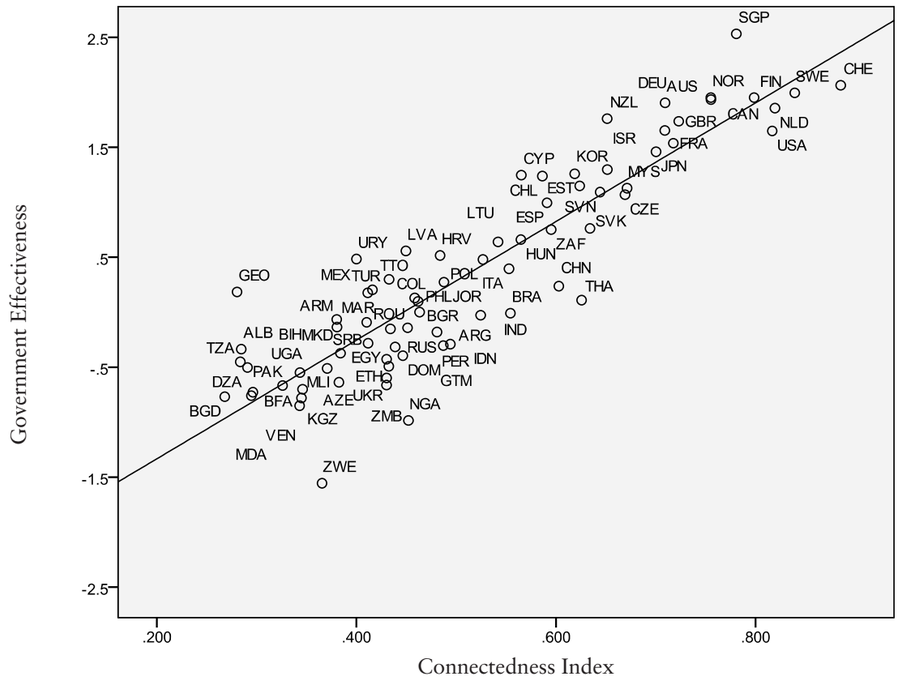
In order to analyse the relationship between connectedness and government effectiveness, regulatory quality, competitive industrial performance, and GDP per capita PPP a correlation matrix was constructed. The graphs clearly show a strong positive linear relationship between on the one hand connectedness and on the other hand different performance indicators.

Given the linear relationship between the variables (see graphs 2.4-2.7) the Pearson Product-Moment Correlation Coefficient was used to calculate the correlation between the different indicators (see annex 2).

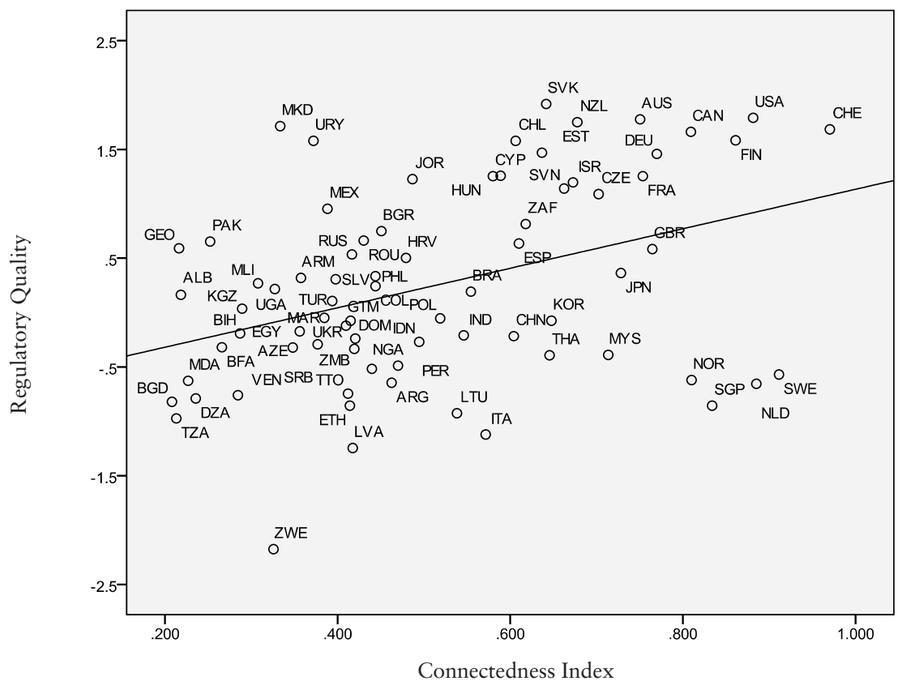
The correlations are presented in table 2.6.



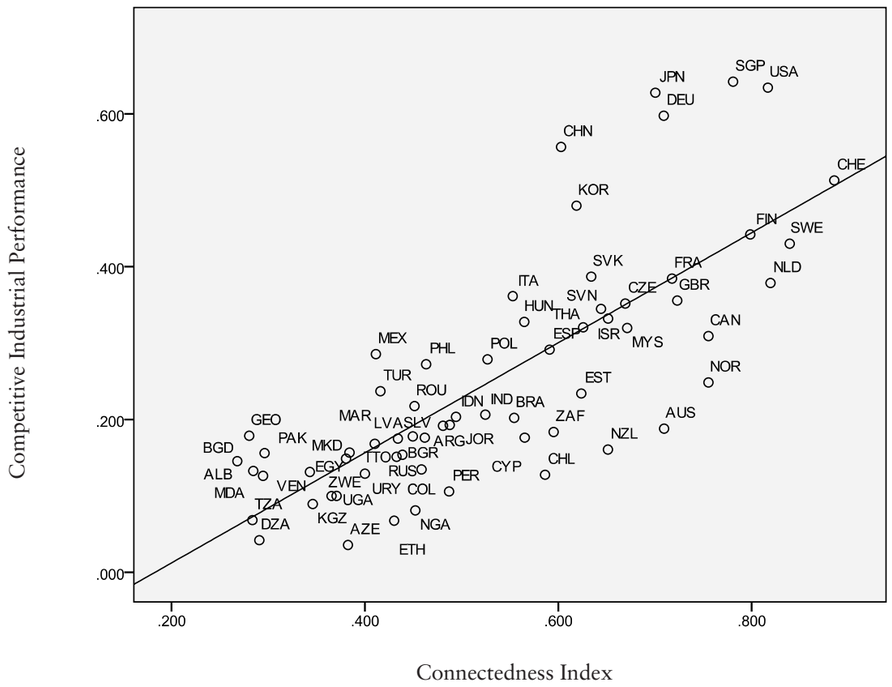
*Graph 2.4: Government Effectiveness x Connectedness Index*




*Graph 2.5: Regulatory Quality x Connectedness Index*



*Graph 2.6: Competitive Industrial Performance x Connectedness Index*




*Graph 2.7: GDP per capita PPP x Connectedness Index*

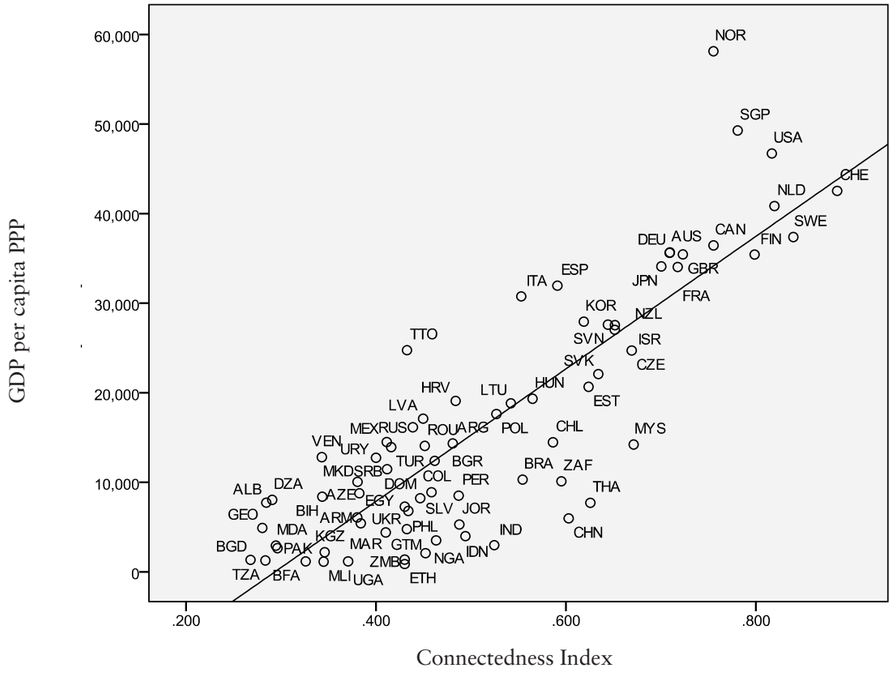





*Table 2.6: Correlation matrix*

| | Connectedness Index | Political Networks | Economic Networks | International Networks Index | Inter-Firm Networks | University-Firm Networks | Personal Networks | Inter-org Networks Index | Formal Training | On-the-Job Training | Intra-org Networks Index | Government Effect | Regulatory Quality | CIP | GDP per capita |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Connectedness Index | 1 | | | | | | | | | | | | | | |
| Political Networks | .541** | 1 | | | | | | | | | | | | | |
| Economic Networks | .646** | .102 | 1 | | | | | | | | | | | | |
| International Net Index | .766** | .610** | .851** | 1 | | | | | | | | | | | |
| Inter-Firm Networks | .895** | .544** | .404** | .609** | 1 | | | | | | | | | | |
| University-Firm Network | .916** | .445** | .474** | .606** | .841** | 1 | | | | | | | | | |
| Personal Network | .118 | -.158 | -.119 | -.171 | .042 | .031 | 1 | | | | | | | | |
| Inter-org Net Index | .919** | .457** | .394** | .525** | .922** | .920** | .325** | 1 | | | | | | | |
| Formal Training | .561** | .121 | .298** | .314** | .218** | .298** | -.07 | .277* | 1 | | | | | | |
| On-the-Job Training | .932** | .456** | .504** | .632** | .898** | .935** | .030 | .908** | .267** | 1 | | | | | |
| Intra-org Net Index | .940** | .420** | .491** | .629** | .808** | .881** | .035 | .848** | .870** | .914* | 1 | | | | |
| Gov Effect | .902** | .377** | .586** | .709** | .769** | .836** | .104 | .819** | .374** | .859** | .771** | 1 | | | |
| Regulatory Quality | .391** | .250** | .373** | .402 | .377** | .431** | .039 | .321** | .143 | .424** | .411** | .603** | 1 | | |
| CIP | .767** | .439** | .395** | .533** | .775** | .780** | .047 | .779** | .450** | .759** | .750** | .742** | .352** | 1 | |
| GDP per capita | .845** | .448** | .577** | .694** | .707** | .768** | -.013 | .754** | .386** | .767** | .729** | .859** | .471** | .719** | 1 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

# 2.7 Discussion

The analysis clearly shows the strong relationship between connectedness and government effectiveness, regulatory quality, industrial competitiveness and economic development. This is further supported by the high correlations which are all highly significant (see table 2.6). Both the overall connectedness index as well as the sub-indices on international networks, inter-organizational networks and intra-organizational networks are highly and significantly correlated to the performance indicators.

There are two interesting exceptions. First, regulatory quality, an indicator which is directly related to private sector development, is still highly and statistically significantly correlated with connectedness but the correlation is much less strong than in case of government effectiveness (also compare graphs 2.4 and 2.5). This is an interesting finding which needs to be analysed more in depth, especially since regulatory quality and government effectiveness are highly correlated. An in-depth comparison of countries which score very differently on regulatory quality and government effectiveness in its relationship with connectedness should be further pursued. Secondly, on the level of personal networks measured as membership in professional associations, the table indicates that this network measure is not significantly correlated to any of the performance measures. This can be the result of different methodological and substantial reasons which need to be further explored.

On the one hand, this high correlation is of course an interesting and relevant finding. No correlation would indicate that networks are 'much ado about nothing' and that we would not be able to find empirical evidence to support the increased attention for networks. This is clearly not the case. Networks do play an important role. However, the high correlations also show that much more work is necessary to further understand the concept of networks and assess the impact of networks. The correlations are simply too high to draw many definite conclusions. Several methodological and substantial points are at stake.

First of all, we have to ask ourselves whether the results are spurious, i.e. whether there are any latent variables that drive connectedness and/or its sub-indices as well as the other variables. With regard to connectedness (especially intra-organizational networks as measured by training) and economic development, it might for example be the case that both are influenced by the development of human capital. Other theoretical reasons might probably be identified which could hypothesize why high correlations occur. Further theoretical development is necessary in this respect.

Secondly, the results might indicate that several of the indicators used are correlated proxies for the same phenomenon and that they are influenced by a same underlying dynamic. The latter can be explored a bit further by a closer inspection of the ranking of the



*It was possible to create a connectedness index to further substantiate the relevance of examining networks. The results show that there is significant variation in networks across countries and also within countries across levels of networks.*

connectedness index. The top 30 consists mostly of OECD Member States with the exception of Brazil, China, Cyprus, Malaysia, Singapore, South Africa and Thailand. Some of these exceptions score (very) highly on indicators such as the Human Development Index (UNDP) or economic development indicators. Hence, connectedness is very high in highly developed or rapidly developing countries. This indicates that networks are highly correlated to the development level. Whether they are a cause, consequence or both cannot be disentangled on the basis of the present analysis.

The latter is related to a third and obvious point that correlation is not causation since we do not know the direction of the cause; a third variable might be involved which is responsible for the covariance between X and Y. Hence the correlations and identified relationships should definitely not be considered causally relevant. International political networks for example can be a consequence of economic development as highly developed economies are more likely to have more embassies because they can afford it. The presence of such a large and highly educated diplomatic corps is also likely to affect the number of agreements a country can initiate, which is another element in the international political networks indicator. Similarly, the degree of university-industry interactions is affected by the presence of an elaborated tertiary educational tier, which in turn is partially a result of the development level of a country.

Although these arguments might reverse causality it should also be noted that the analysis on the sub-index level shows that there are several cases where the level of economic development (as measured by CIP or GDP per capita) or policy effectiveness (as measured by government effectiveness and regulatory quality) is the same but the variation in networks very substantial (see graphs in annex 3), indicating that if a reverse causal argument would hold other factors contribute to network development. Taking it a step further, it might be the case that network dynamics emerge which further in time have an effect on the other variables. Much more theoretically informed empirical research is needed to figure out how networks causally play out in the dynamics of increased policy effectiveness, private sector development and economic development. In addition, we need more refined data and time-series to get grip on the issue of causality.

◀ *Connectedness is very high in highly developed or rapidly developing countries. This indicates that networks are highly correlated to the development level.*

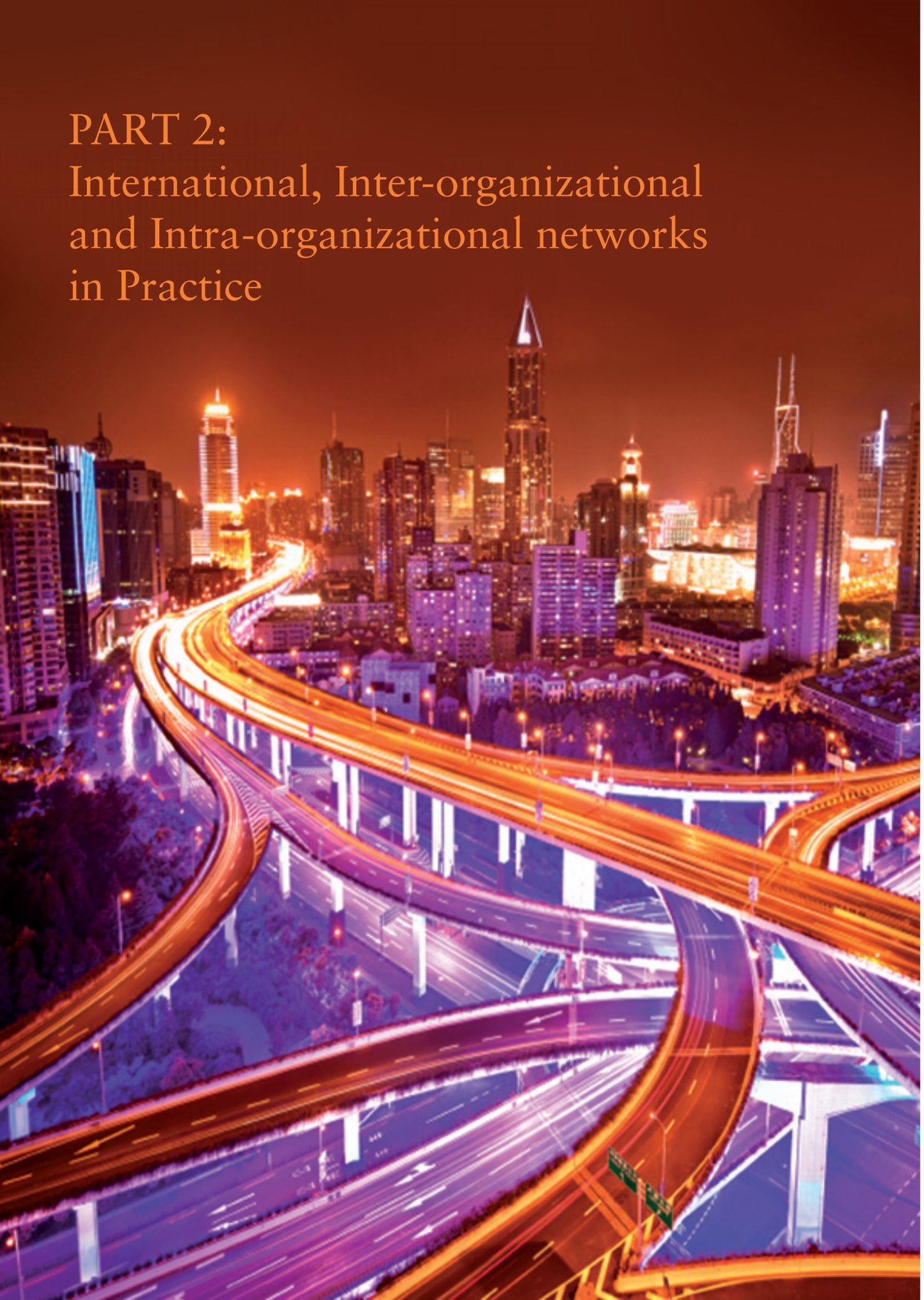
# 2.8 Conclusions

This chapter explored the possibility of constructing an index to capture the degree to which a country is networked on different levels.

The exploration was carried out on the basis of an inductive, data-searching approach. Many datasets and variables were screened. Very few contain data on networks. In addition, the data displays limitations:

- Insufficient time series are available for a better causal analysis.
- The connectedness index could only be calculated for 75 countries because data is lacking.
- The data only very partially captures the idea of networks, both in terms of their structures (the many potential networks which might arise out of the eco-system of private sector development) and of their nature (embedded versus arm-length networks).
- The remaining indicators which are included in the index and which are considered as a proxy for networks, such as the intra-organizational ones on training, also capture other aspects such as human capabilities development.
- So far, general indicators capturing network effects were considered. One good way forward to capture more precise networks and network effects, especially on the international level, would begin by making use of social network analysis tools and develop indicators on the basis of dyadic relations between countries. Zeev Maoz (2010) in a very recent publication explored this further and makes convincing arguments for a better exploitation of network tools in the context of international relations and international political economy research.
- Finally, the available data only allows for an indirect link to the nexus of networks and knowledge management. Data on knowledge networks is limited and more conceptualization is needed to guide empirical research in this area.

Notwithstanding the limitations of the data, especially from a theoretical and conceptual perspective, it was possible to create a connectedness index to further substantiate the relevance of examining networks. The results show that there is significant variation in networks across countries and also within countries across levels of networks. This is an interesting finding which triggers many questions on how to explain this variation. The variation correlates highly with other outcome variables such as government effectiveness, industrial development and economic development. As such this finding is highly interesting, but not definite causal arguments can be drawn from this link at this stage. Networks are probably cause and consequence and influence other parameters in causality loops. In general, concept development with the aim of developing indicators which capture the 'network effect' would best follow the process outlined in figure 2.1. More conceptual and empirical refinement is required. Given the rise of the importance of networks this might be further explored by bringing together experts on international relations, on economic clusters and inter-organizational networks, intra-organizational networks, international and national datasets and social network analysis in order to explore further existing datasets, identify opportunities to create more data and further conceptualize the concept of connectedness as a measurable indicator to capture the degree of network formation.



# PART 2:
# International, Inter-organizational and Intra-organizational networks in Practice



# Chapter 3: Knowledge without Frontiers: International Networks

Kazuki Kitaoka, Alex MacGillivray, Axel Marx and Cormac O'Reilly

"If we accept that (informal) networks are indispensable to address the problems posed by the process of globalization, we have to attempt to mitigate some of their negative features. Turning to new formal institutions might not be necessary if we ensure that the networks of today and tomorrow are transparent, inclusive, and responsive".

***Jan Wouters & Dylan Geraets, Leuven Centre for Global Governance Studies, University of Leuven, Belgium***[iv]

## 3.1 INTRODUCTION

Knowledge networks are increasingly relevant at the international level. The most extensive treatment of network governance at the international level was conducted by Anne-Marie Slaughter in her book *A New Global Order* (for a further elaboration see Slaughter and Zaring 2006). Slaughter (2004 p. 18) starts from five premises of which two are crucially linked to network governance. The first is that the state is not disappearing but is disaggregating into its components, which are no longer solely interacting within the hierarchical state but also outside their boundaries with foreign counterparts. As a result, secondly, government networks emerge which exist alongside, and sometimes within, more traditional international organizations.

Slaughter distinguishes horizontal and vertical networks. Horizontal networks are networks between government officials which can operate between high-level officials responsive to the national political process as well as lower level regulators and policy-makers (Slaughter, 2004, p. 19). Vertical networks emerge between supranational officials and their state-level counterparts (Slaughter, 2004, p. 21). Of course networks may consist of both vertical and horizontal networks. This approach corresponds very much to the idea forwarded by Peter Haas (1992) on epistemic communities.

These horizontal and vertical networks can differ in nature as a function of their main purpose. Slaughter identifies three purposes, namely information exchange, enforcement and harmonization. As a result, information networks, enforcement networks and harmonization networks emerge (Slaughter, 2004, pp. 52-61). Information networks primarily focus on the exchange of information and knowledge. Enforcement networks focus 'primarily on enhancing cooperation among national regulators to enforce existing national law and rules'. (Slaughter, 2004, p. 55). Harmonization networks, often resulting from trade agreements, focus primarily on harmonizing regulatory standards such as product-safety standards with the aim of abolishing technical barriers to trade. Besides international networks initiated by governments, international networks can of course also develop between non-state actors (AccountAbility, 2008). At the international level, information and knowledge networks may emerge bilaterally, regionally or multilaterally.

# 3.2 Bilateral networks

Information networks often emerge out of bilateral or trilateral cooperation. David Vogel notes that the formal and informal discussions between regulatory officials in Washington and Brussels have expanded over the last years.

In a recent published edited volume by Vogel and Swinnen (2011) several authors map the many different ways in which regulators are currently collaborating across the Atlantic and how collaboration, i.e. network formation, could be further enhanced (for an overview see the concluding chapter by Marx and Wouters, 2011). For example in the case of chemical regulation, Schwarzmann and Wilson (2011) propose to further share information via inter-agency memoranda of understanding, jointly funded research collaboration and data-sharing resulting from monitoring efforts. In addition, they propose to systematically share best practices on the development of chemical and product life-cycle assessment tools and building an appropriate information technology (IT) infrastructure for access to information in product ingredients, chemical use and hazards.



# 3.3 Regional networks

Regional organizations such as the European Union, the African Union, Association of Southeast Asian Nations (ASEAN), Central American Integration System (SICA), Andean Community (CAN), Mercosur and Latin American Integration Association (ALADI) and others often act as information and knowledge networks. Especially interesting as an example of integrated vertical and horizontal networks is the emergence of so-called information agencies.

The European Union has established several information agencies, such as the European Environmental Agency and the European Energy Agency, in the last two decades. They collect and disseminate relevant information for policy makers, often building huge databases which are very interesting from a knowledge management perspective. They do not have any decision-making power (Slaughter, 2004, p. 158), but in fact exercise attributes of governance via information exchange, which some consider to be a flexible, responsive, effective and efficient governance method (Sabel and Zeitlin, 2012).

The Regional Integration Knowledge System (RIKS), a joint initiative taken by UNU-CRIS in the framework of the GARNET Network of Excellence with various partner institutes and organizations, gives a useful picture of the number of regional integration agreements in which countries participate. Among the twelve countries in which study visits took place for the present report, it is clear that Egypt, Peru and Turkey are most active in regional networks; Serbia and Viet Nam less so (see table 3.1). The Asian Development Bank's Asia Regional Integration Centre provides detailed status reports on Free Trade Agreements for 48 countries[v]. While useful, such databases do not indicate the depth of national engagement in each arrangement or the overall quality of the institution managing the agreement. Nor is it necessarily the case that a plethora of overlapping arrangements adds to knowledge sharing for participants. "Global and regional policy-makers are taking a great interest in South-South and triangular knowledge exchange, as reflected in the recent G20 Consensus on Development, the 2010 Bogotá Statement and the 2009 Nairobi Outcome Document", reports the Task Team on South-South Cooperation (TT-SSC), a Southern-led platform formed in 2009 and hosted at the OECD-DAC Working Party on Aid Effectiveness. *"There is a window of opportunity to make knowledge exchange a strong pillar in global and regional development policies, and to generate much more attention and support to this type of horizontal partnerships. However, there is still a great gap in the understanding how South-South learning works, where it doesn't work and why."*[vi] A number of regional research networks are beginning to answer this question, as the case study of ERIA and Red Mercosur (see section 3.6) illustrates.

International networks have a habit of generating regional offshoots, such as Producción Mas Limpia, Latin America's network of 16 Cleaner Production Centres and associated organizations, supported by UNIDO and Swiss and Austrian development cooperation, and providing solutions focused on the continent's challenges[vii]. AFRIMETS is the Inter-African Metrology System established in 2007 to support its 46 member countries to develop accurate measurement, build new facilities and gain international acceptance for all the key export-related measurements. In February 2011 it held a 10-day metrology school for African metrologists in Nairobi, organized by UNIDO and supported by Norad, the Norwegian development cooperation agency.

*Table 3.1: Key regional integration arrangements for the group of countries studied*

| Country | Number of regional arrangements | List of regional arrangements |
|---|---|---|
| **Bolivia, Plurinational State of** | 5 | Andean Community<br>Latin America Integration Association<br>Latin American Economic System<br>Organization of American States<br>Permanent Mechanism of Political Consultation and Coordination |
| **Costa Rica** | 5 | Association of Caribbean States<br>Central American Integration System<br>Latin American Economic System<br>Organization of American States<br>Permanent Mechanism of Political Consultation and Coordination |
| **Cuba** | 5 | African, Caribbean and Pacific Group of States<br>Association of Caribbean States<br>Latin America Integration Association<br>Latin American Economic System<br>Organization of American States |
| **Dominican Republic** | 5 | African, Caribbean and Pacific Group of States<br>Association of Caribbean States<br>Latin American Economic System<br>Organization of American States<br>Permanent Mechanism of Political Consultation and Coordination |
| **Egypt** | 9 | African Union<br>Arab Organisation for Agricultural Development<br>Common Market for Eastern and Southern Africa<br>Community of Sahel-Saharan States Intergovernmental Group of 24 on International Monetary Affairs<br>League of Arab States<br>Organisation of Arab Petroleum Exporting Countries<br>Organisation of Islamic Conference<br>Council of Arab Economic Unity |
| **El Salvador** | 5 | Association of Caribbean States<br>Central American Integration System<br>Latin American Economic System<br>Organization of American States<br>Permanent Mechanism of Political Consultation and Coordination |
| **Ethiopia** | 5 | African Union<br>African, Caribbean and Pacific Group of States<br>Common Market for Eastern and Southern Africa<br>Intergovernmental Authority on Development<br>Organisation of Arab Petroleum Exporting Countries |
| **Panama** | 5 | Association of Caribbean States<br>Central American Integration System<br>Latin American Economic System<br>Organization of American States<br>Permanent Mechanism of Political Consultation and Coordination |
| **Peru** | 7 | Andean Community<br>Asia-Pacific Economic Co-operation<br>Intergovernmental Group of 24 on International Monetary Affairs<br>Latin America Integration Association<br>Latin American Economic System<br>Organization of American States<br>Permanent Mechanism of Political Consultation and Coordination |
| **Serbia** | 2 | Central European Free Trade Agreement<br>South East European Co-operation Process |
| **Turkey** | 6 | Black Sea Economic Cooperation<br>Council of Europe<br>Economic Co-operation Organisation<br>Organisation of Islamic Conference<br>Stability Pact for South Eastern Europe<br>South East European Co-operation Process |
| **Viet Nam** | 3 | Asia-Pacific Economic Co-operation<br>Association of Southeast Asian Nations<br>Mekong River Commission[xxix] |

*Source: RIKS database*[xviii]



# 3.4 Multilateral networks

Several multilateral organizations act as information and knowledge providers. In this context, an interesting case in point concerns the Cleaner Production Centres resulting from collaboration between UNIDO and UNEP (see box 1.2). Indeed, in the broader environmental field, one can observe an increasing need for and number of learning networks and platforms.

An interesting recent example concerns the case of forest governance. In 2011, Rayner, together with some forty experts, published an expert panel report on forest governance entitled Embracing Complexity: Meeting the Challenges of International Forest Governance. The report describes the current state of the forest governance regime and its challenges, which are ecological, social and economic in nature and range from the international level through the national level to the local level. In order to overcome these challenges, Rayner et al. propose a more comprehensive strategy for knowledge with a strong emphasis on building and managing networks for better governance and learning. A key issue is bridging knowledge generation and knowledge use. This can be achieved via networked learning platforms defined as an "integrated set of services that provide information, tools and resources to support policy learning (Rayner et al., 2011, p. 141)". In forest governance the most successful examples of these networked learning platforms are those with a problem-focused approach.

The issue of improved network management, explored by Rayner, refers to managing 'networks of networks' (Slaughter, 2004, p. 135) and building trust between currently sometimes antagonistic existing networks. Without trust joint network management is highly unlikely. A more operational question in this context is who should take the lead in these problem-focused learning platform networks: a new organization or one of the existing organizations?

# 3.5 Foreign investment and international networks

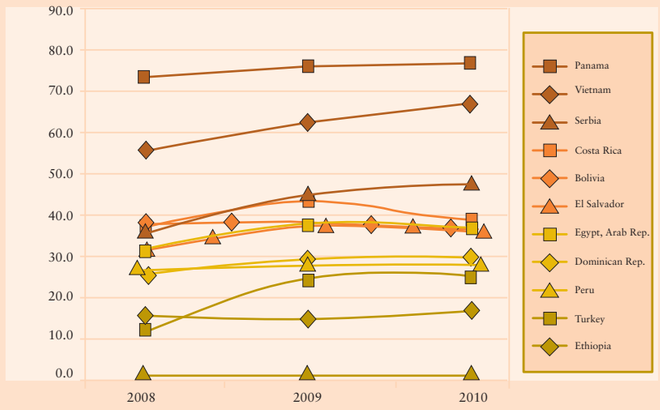
There is an extensive literature on foreign direct investment (FDI) as a driver of knowledge and upgrading. As discussed above, our Connectedness Index includes a composite measure of economic globalization including data on actual flows between countries (trade, FDI, portfolio investments) and restrictions for trade (import barriers, taxes, etc.).

Key trends in FDI for the countries studied, based on UNCTAD data for the years 2008-2010, are presented below[ix]. Panama and Viet Nam stand out, with FDI stocks accounting for in excess of 65 per cent of GDP.

Serbia appears to be heading into the group of countries with FDI stocks above 50 per cent of GDP. For the other countries of Central America, as well as Turkey and Egypt, FDI stocks are in the 25-35 per cent bracket. Turkey has experienced a particularly rapid increase, which is discussed in one of the case studies. Stocks are appreciably lower in Ethiopia and Cuba. Needless to say, severe economic conditions in many economies will likely impact on the trends and levels of FDI reported for 2011.

*Table 3.2*

FDI stocks as % of GDP (UNCTAD 2011)






# 3.6 Case studies

The case studies which now follow highlight different aspects of international networks:

- Economic Research Institute for ASEAN and East Asia (ERIA) and Red Mercosur are examples of regional research networks.
- AfrIPAnet is an example of a network set up specifically to enhance levels of foreign investment
- The importance of face-to-face meetings for international business is illustrated by Cuba's highly successful trade fair FIHAV.
- The Conference of African Ministers of Industry (CAMI) shows how a network copes with the need to evolve.
- The work of Viet Nam's Central Institute for Economic Management on competitiveness, a classic example of the 'triangular' model of North-South and South-South knowledge sharing, throws light on international knowledge networking.

*Harmonization networks, often resulting from trade agreements, focus primarily on harmonizing regulatory standards such as product-safety standards with the aim of abolishing technical barriers to trade.*

# Case: Knowledge integration: ERIA, Red Mercosur and regional research networks

"Capacity-building and knowledge creation are stated objectives of many intergovernmental networks, and international institutions. Yet often in both informal networks and formal organizations, powerful states have simply sought to impose their own ready-made solutions in the name of capacity-building or knowledge creation."

***Ngaire Woods and Leonardo Martinez-Díaz (2009)[x].***

Have the recent rise of Free Trade Agreements, the advent of the G20 and global financial crises weakened prospects for regional integration, a fifty-year-old project in many regions? There is no easy answer to that question, with regional trade sometimes intensifying even as the institutions designed to promote it may be stalled politically, institutionally or on technical obstacles such as customs unions (Bouzas, 2010). Given this situation, Woods and Martínez-Diaz have suggested that developing countries, particularly those outside the G20, need to create or remodel networks to make their voices heard and share knowledge in the new global economic system. One interesting sign of this is the growth of regional knowledge networks over the past decade.

The Economic Research Institute for ASEAN and East Asia (ERIA) is one example. It is a policy think tank proposed by Japan but based in Jakarta and arising out of first East Asia Summit. ERIA's goal is to facilitate ASEAN economic community building, to support ASEAN's role as the driver of wider economic integration, and to foster a sense of community. Its energetic team of 45 staff, with a network of research institutes in 16 East Asia Summit countries, produce a wide range of policy briefs and discussion papers covering the big picture (aging, trade network fragmentation, energy and climate change) as well as technical issues (biodiesel standards, SME support). The Institute has published work on knowledge sharing, such as a study of how easily local firms can obtain knowledge on product innovation in four Southeast Asian countries (Machikita et al, 2010). ERIA's major outputs include the Comprehensive Asia Development Plan, and, in collaboration with ESCAP and ADB, the Master Plan on ASEAN Connectivity (MPAC), adopted in Ha Noi in 2010[xi]. Both plans envisage huge investments in infrastructure and ERIA has established a Public Private Partnership Network Team to provide policy advice to governments[xii].

Red Mercosur is another regional research network that dates back to the initiative of a small group of academics from Argentina, Brazil, Paraguay and Uruguay in 1998. The network has since expanded to some 60 researchers from 10 institutions, supported along the way by the International Development Research Centre (IDRC). The network focuses on macroeconomics and trade policy, FDI, regional integration, productivity and competitiveness, global relations, and climate change and renewables.

Sometimes, networks are absorbed into institutions. NEPAD (the New Partnership for Africa's Development) is the vision and strategic framework adopted by the African Union (AU) in 2001. In 2010 a new Planning and Coordination Agency was established to bring NEPAD more fully into the AU[xiii]. One focus of its policy and implementation work will be capacity building.

Other regional bodies, such as ALADI, CAN, SICA, CARICOM and the Arab League are also seeing the value of this type of fast, flexible, regional research network for progressing with knowledge integration. Complex, cross-cutting challenges such as climate change and access to energy are especially well-suited to such collaborations.

*Sources: Interviews with ERIA, Red Mercosur, ALADI, CAN, SIECA*



# Case: Sharing knowledge on investors across Africa through AfrIPANet

"The new and emerging forms of business alliances and the complexities in the structures of the transactions in a fast-globalizing economy require that intermediary organizations of African countries understand and reach out on a constant and sustained basis to the private sector entities and ascertain their concerns, their challenges and expectations."

***UNIDO, 2011***

The Africa Investment Promotion Agency Network (AfrIPANet) was initiated by UNIDO in 2001 to provide African Investment Promotion Agencies (IPAs) with a common platform to discuss and design investment promotion strategies. The network has built capacity among IPAs by providing them with regular information on investors and technical assistance in re-aligning investment promotion strategies based on investor demands.

The network rapidly expanded from 10 founding countries to become a forum of 43 national and regional IPAs across sub-Saharan Africa. As AfrIPANet grew in size and ambition, it became necessary to formalize the initiative beyond an informal network. In 2008, members agreed unanimously to make it a formal African regional body on investment promotion, with a Memorandum of Association and elected Executives and a Steering Committee. IPAs say they gain considerable benefit from regular face to face meetings, such as the UNIDO-Africa Investor CEO Forum held in Durban in 2008 and bi-annual Meetings like the AfrIPANet V Meeting in November 2010 in Tripoli, Libya, at the occasion of the EU-Africa Business Forum or AfrIPANet VI which was organized as a side event of the 15th China International Fair for Investment and Trade (CIFIT) in Xiamen, China. The AfrIPANet VI meeting was the occasion for presenting the results of the recently conducted UNIDO survey of investors in 19 African counties funded through the European Commission. The Web based application designed to offer an easy to use platform for analysing the data by government agencies, IPAs and investors who took part in the survey was launched on that occasion.

One fundamental obstacle to the development of effective investment promotion strategies consistently recurs: the lack of reliable data on what investors are doing and what they want. Thus a key benefit of membership is access to the regular Investor Surveys undertaken by UNIDO (2001, 2003, 2005, 2010/11). These surveys provide a uniquely detailed insight into thousands of foreign enterprises across the continent. Focusing on the knowledge side of the equation, the findings showed that while the numbers of staff trained and the sums spent on training and R&D by foreign enterprises could be rather low in some sectors and countries, the companies did employ significant numbers of local and expatriate graduates. There are additional knowledge spillovers when skilled workers leave these companies, either to start their own enterprises or to join another business[xiv].

When investors were asked whether the national IPA meets and exceeds expectations, the results showed a mixed picture of performance across the 15 countries in the 2005 survey (see figure 3.1). In one group of countries, non-registered investors were fairly dissatisfied with IPA performance and registered investors are not especially satisfied; indeed some investors said they were unaware of the key functions of the national IPA.

In the other group, registered investors were significantly more satisfied and non-registered investors are less dissatisfied. The Ethiopia Investment Agency (EIA)[xv] fell into the second category, and along with sister IPAs in Tanzania and Uganda was said by investors to be a relatively high-performing IPA. In many countries, investor satisfaction increased substantially between 2003 and 2005.

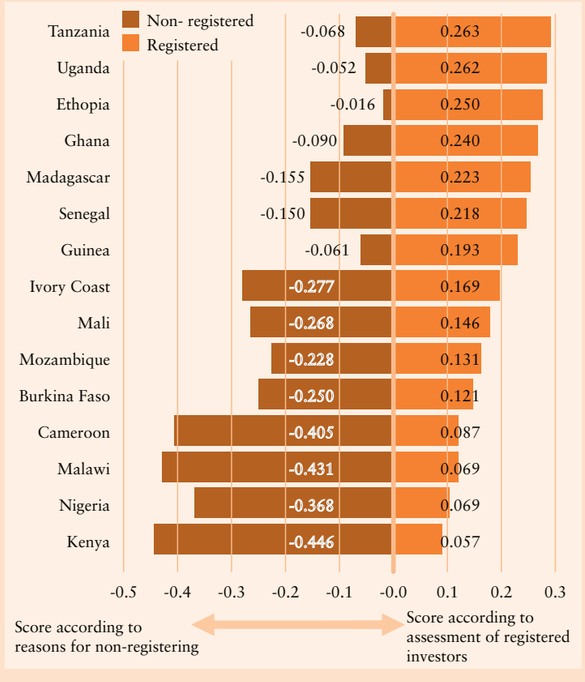
The results of the latest survey were published in 2011. Approximately 6,500 companies from 19 African countries, both domestic and foreign, were interviewed and a large set of variables about investor characteristics, investor performance, investor impact on the host economy as well as their perceptions has been collected. The objective is to provide Investment Promotion Agencies with factual information at the enterprise-level which was hitherto not available to assist them to revisit and design evidence-based investment promotion and targeting strategies and to carry out their policy advocacy role more effectively.

The scope of UNIDO´s technical assistance with regard to IPA capacity building goes beyond the execution of the Investor Survey and the publication of the biannual Survey Reports. The objective is to make the aggregated Survey data available to a large, diversified user group to mainstream the findings of the data into the day-to-day routine operations of Investment Promotion Agencies in Africa. To this end, UNIDO has pioneered the development of an investment-related information and management platform, the Investment Monitoring Platform, http://www.afripanet.org, which offers participating government authorities, companies, financial institutions, development organizations and civil society NGOs access to an array of primary data and analysis that is not available anywhere else. The supporting software allows users to interrogate existing reports on business activity and carry out primary research using firm-level data available on the platform. The platform enables national authorities to carry out systematic analysis of the activities and performance of enterprises operating in their countries.

*Sources: UNIDO (2011) Africa Investor Survey Report, Vienna.*

*figure 3.1*

IPA performace from the perspective of registered vs. non-registered investors






# Case: The Conference of African Ministers of Industry (CAMI)

"Thanks to the latest teachings, we realize now how ineffectual are development policies that are led in isolation and how relevant are those which constantly seek complementarity between economies."

***Mohamed Benmeradi***
***Algerian Minister of Small and Medium Enterprises and of the Promotion of Investment*** [xvi]

The Conference of African Ministers of Industry (CAMI) is a biannual conference established in 1975 as a pan-African network "to promote accelerated and sustainable industrial development". CAMI has served as a statutory forum for industry ministers and key stakeholders to share knowledge on African industrialization. It has a revolving presidency.

For the first three decades, UNIDO and UNECA managed the conference. At the Cairo meeting in 2006, the African Union (AU) took over the formal governance of CAMI, while the initiative is still supported technically and financially by UNIDO[xvii].

During 2007/08, the conference was closely engaged in developing the ambitious AU Action Plan for the Accelerated Industrial Development of Africa (AIDA). The implementation strategy, supported by UNIDO and a wide range of stakeholders, envisages over 50 projects across seven clusters:

- Industrial policy and institutional direction
- Upgrading production and trade capacities
- Promote infrastructure and energy for industrial development
- Human resources development for industry
- Industrial innovation systems, R&D and technology development
- Financing and resource mobilization
- Sustainable development

The importance of knowledge management is stressed throughout the strategy, for example in the HR cluster, by accessing the know-how of the African diaspora, or building up a knowledge-bank on renewable energy[xviii].

AIDA's strategy was endorsed by AU heads of state in Addis Ababa and by CAMI in Durban during 2008. Three specific governance mechanisms - a steering committee, monitoring and evaluation framework and a financing and resource mobilization strategy – were subsequently approved in June 2010.

To maintain momentum, efforts were made in 2010 to integrate agribusiness and agro-industries into AIDA. Given the massive scope of the Action Plan, it was felt important to identify some priorities for rapid progress. Thus in March 2011, the CAMI hosted by Algeria was themed "Enhancing Competitiveness of the African Industries through Increased and Improved Value Addition." The key focus of the conference was knowledge exchange on improving value added in food and agribusiness, mineral processing ('beneficiation'), and local pharmaceuticals[xix].

In addition to the high-level segment of the conference for African industry ministers, the Algiers CAMI brought together 300 delegates from 35 African countries: high officials and experts of industry, African Economic Community (AEC), the regional economic communities (REC), UNIDO and other UN agencies including FAO and IFAD, African partner organizations, chambers of commerce, IPAs and development banks[xx].

The ministerial network is clearly seen as a useful model: a biannual Conference of the Ministers for Industry of the Union for the Mediterranean began in 1996[xxi]. More recently, the first meeting of industry ministers of the 'D8' (Iran, Turkey, Malaysia, Pakistan, Nigeria, Egypt, Bangladesh and Indonesia, the developing eight Islamic countries) was held in Tehran in 2010, and it has become an annual event with the second meeting in Istanbul in October 2011[xxii].

*Source: UNIDO.*

# Case: Promoting exports in Cuba's changing economy

"These realities compel us to speed up the improvement of the agencies managing our work and the performance of companies and other institutions, and intensify the re-classification of leaders at every level in order to realize the content of the Guidelines approved by the Party's Congress, particularly in reference to promoting the role of accounting and internal control as irreplaceable tools of business management…, crucial factors in the interrelationships of the different actors of the economic life of our nation."

*Raul Castro*
***Presidente de los Consejos de Estado y de Ministros, August 2011.***

Cuba's 11.2 million people have a high level of human development. Cuba achieved 0.706 on the United Nation's Development Programme's (UNDP) Human Development Index in 2010, well ahead of the regional average in Latin America and the Caribbean[xxiii]. The country performs well on most health, education and income equality measures, although there is lack of agreement about its methodology for calculating GDP per capita. It reports that it is on track to achieve many of the Millennium Development Goals by 2015 (Government of Cuba, 2010).

There are few studies on Cuba's overall economic competitiveness. However, there have been numerous studies on traditional sectors such as agricultural commodities (especially the decline in sugar production after 1992), and minerals (notably nickel). There has also been a focus on successful non-traditional sectors like tourism, biotechnology[xxiv] and music[xxv]. This changing economic structure means that the country's carbon emissions per unit of GDP have fallen substantially in the past decade (IEA, 2011). Despite the lack of global benchmarking studies, competitiveness is on the domestic policy agenda. For example, UNIDO has supported the multi-project Integrated Programme to Support the National Strategy on Industrial Competitiveness. In total some 25 projects have been undertaken. UNIDO also supported the strengthening of the Network of Industrial Information (DP/CUB/01/019)[xxvi].

### THE NEW ECONOMIC AND SOCIAL POLICY

Cuba has recently undertaken a major economic modernization initiative, the "Proyecto de Lineamientos de la Política Económica y Social" or "Guidelines for Economic and Social Policy" and the law of October 2010 on Employment and Microenterprise, which stresses efficiency and productivity.

A notable feature of the guidelines was the change of approach towards small businesses. There would be a modest increase in the range of permitted activities; some relaxation of regulations and changes in tax; and a significant liberalization of licensing. Overall, it would amount to a reversal of the traditional stigma attached to non-state economic activities, and with positive encouragement for the formation of cooperatives in sectors like taxis and beauty care. These economic and social policy measures were subsequently approved at the 6th Party Congress in June 2011, and Adel Izquierdo became Minister of the Economy and Planning.

The question now is what types of institutional support might be needed to help the new economic and social policy deliver the scale of employment required over the next few years (500,000-1.2 million jobs). As part of that debate, it is worth reviewing the roles of three key institutions that could be expected to play an active role in knowledge sharing in support of the expected growth in small enterprises.



*Cuba has recently undertaken a major economic modernization initiative which stresses efficiency and productivity.*

### THE CUBAN CHAMBER OF COMMERCE

The Chamber is a tool for the reintegration of the Cuban economy in the world economy. The core mission of the Chamber is to promote the development of the associated Cuban companies and commercial activities in general. In permanent contact with business world, it helps the state to draw up policies, it offers services to national and international businessmen and represents Cuban business abroad. The Chamber of Commerce supports knowledge and information exchange about global business opportunities.
http://www.camaracuba.cu/

### THE FERIA HAVANA TRADE FAIR

The Feria Havana Trade Fair (FIHAV) has become an important exhibition meeting for companies and business people worldwide. The 2010 Fair was attended by over 1,000 Cuban exhibitors and 2,500 international exhibitors from 58 countries. The Fair essentially displays products of the different branches of the economy such as food and beverage, health care services, capital and consumer goods, textiles and other essential goods and products. Decision-makers and purchasers from industrial and commercial state entities and importers use the fair to negotiate contracts with foreign suppliers, learn about new technologies and products, meet new exporters and strengthen their relationship with established suppliers. FIHAV 2010 evidenced the desire of entrepreneurs to promote bilateral projects, especially related to pharmaceutical industry.
http://www.feriahavana.com/Memorias

### CEPEC: PROMOTING THE EXPORT OF SERVICES

The Integrated Programme for the Promotion of Exports of Services (PIPES or Programa Integral para la Promoción de las Exportaciones de Servicios) is led by the Centro para la Promoción del Comercio Exterior de Cuba (CEPEC), which is part of the Ministry of Foreign Trade and Investment (MINCEX). The programme promotes and develops SME export capabilities. To achieve this goal it uses CEPEC's know-how and the support of the companies as well as the existing structures in the country. The Programme has different stages, among them the assessment of export potential, the implementation of quality certification, market research focused on the specific interests of a company, provision of information, provision of access to training courses related to the thematic services areas at the Instituto de Comercio Exterior or at the University Economics Department, the inclusion of companies in the prioritized markets defined by CEPEC according to specific company interests and, finally, a joint analysis with relevant agencies of the support that can be provided to companies.
http://www.cepec.cu/carpeta/servicios/pipes.pdf

*Sources: MINCEX, FIHAV, CEPEC, Cámara de Cuba.*

# Case: Viet Nam CIEM/ NUS Singapore partnership

"Viet Nam is endeavouring to integrate more deeply and widely into the world. The country cannot mature if it neither makes contact with the outside nor competes with other countries."

***Vu Khoan, Former Deputy Prime Minister***[xxvii]

Viet Nam's 89 million people saw rapid improvements in human development between 1990 and 2000, closing the gap to the world average. Despite rapid economic growth in recent years, income still remains below the regional average. Rising spending on education should increase school enrolment ratios and accelerate the growth of human development over the last decade. The country has been notably active in providing modern energy in rural areas[xxviii].

Viet Nam's ambitious national goal is to be a modern industrialized country by 2020. There is a lively debate among Viet Nam's economists about target economic growth rates and which industrial strategies will best meet the goal. Some international researchers question the degree to which Viet Nam owes its economic success to industrial policy (Altenburg, 2009; UNDP 2010). In terms of competitiveness, the trend over the past few years has been mixed, with recognition that spillovers from FDI have been limited. Exports are still 'factor-driven' (WEF, 2011). Public administration reform (PAR) and infrastructure investment are national priorities, as is higher education and workforce skills. Inflation and access to finance are the major concerns of business executives. Yet in industrial performance, Viet Nam did improve its competitiveness significantly between 2005 and 2009, although its carbon emissions per unit of GDP also increased substantially over this period (UNIDO, 2011; IEA, 2011). While still trailing neighbours like Indonesia, the Philippines and Thailand, Viet Nam is accelerating towards them, suggesting that the country is now on its way to becoming an 'efficiency driven' economy.

Viet Nam opened up economically following the beginning of liberalization in 1986 (Doi Moi), and enterprise reforms (2000-2005), with foreign direct investment really taking off from 2005, and then accession to the WTO in 2007. While many challenges remain for the country to meet its 2020 goal, international openness is a strong advantage. "In my discussions with Vietnamese leaders", says Michael Porter of Harvard Business School and the Chair of the International Advisory Panel at the Asia Competitiveness Institute, "I have always been struck by their willingness to learn from outside perspectives" (CIEM & NUS, 2010).

How is Viet Nam's international knowledge networking manifested? The country participates in three regional integration arrangements[xxix]: Asia-Pacific Economic Co-operation, the Association of South Eastern Asian Nations (ASEAN) and the Mekong River Commission. ASEAN has free trade agreements with China, the Republic of Korea, India, Japan, and Australia-New Zealand. While chairing ASEAN in 2010, Viet Nam proved its commitment to the ASEAN Economic Community (AEC) roadmap and the Ministry of Industry and Trade has been working to raise business interest in AEC[xxx]. As noted above, levels of FDI have increased significantly over the past decade, and Viet Nam has a similar level of FDI stocks to Panama in the study group. MOIT has an International Cooperation Department; and offers a searchable online directory of "reliable exporters" across 28 sectors. The Viet Nam Chamber of Commerce and Industry (VCCI) is well networked overseas, notably the Confederation of Asia Pacific Chambers of Commerce and Industry (CACCI), the International Chamber of Commerce (ICC), and has strong linkages with several foreign chambers in Viet Nam, including the Japanese Chamber of Commerce and Industry (JCCI) and the US Chamber of Commerce. Vietnamese businesses are becoming more responsible and sustainable too, by participating in programmes such as the Viet Nam Business Links Initiative and the Viet Nam Cleaner Production Centre (Bekefi, 2006).



*In industrial performance, Viet Nam did improve its competitiveness significantly between 2005 and 2009. While still trailing neighbours like Indonesia, the Phillippines and Thailand, Viet Nam is accelerating towards them, suggesting that the country is now on its way to becoming an 'efficiency-driven' economy.*

Viet Nam's international knowledge networking is exemplified by the Central Institute for Economic Management (CIEM), now considered the leading national economic think tank. While operating under the direct authority of the Ministry of Planning and Investment, CIEM has its own legal identity and an independent ethos. Over the past six years, CIEM has strengthened its development research and policy analysis capacity (supported by DANIDA and GIZ). It produces significant amounts of research, forecasting and policy advice on economic laws and regulations, policies, planning and management mechanisms, business environment and economic renovation. In addition, its 95 staff members offer training and consultancy[xxxi]. It runs the VNEP Economic Portal, which is becoming an increasingly popular virtual venue for open debate on economic policy[xxxii]. It produces a series of working papers (supported by Friedrich Ebert Stiftung[xxxiii]). CIEM's Center for Information and Documentation has a full-text database of over 1,000 Vietnamese language economic development reports, and also access to many leading international economic libraries such as Blackwell Synergy and Eldis. The Department for Business Environment and Competitiveness was created in 2009.

CIEM recently collaborated with the Asia Competitiveness Institute at Lee Kuan Yew School of Public Policy at National University of Singapore (NUS) and the Institute for Strategy and Competitiveness at Harvard Business School to produce the Vietnam Competitiveness Report 2010 (CIEM & NUS, 2010). This level of collaboration on competitiveness is remarkable. Back in 2003, field trips were undertaken in Eastern Europe and Russia to learn the pros and cons of privatization processes. The Ministry of Planning and Investment's Development Strategy Institute and UNDP commissioned the Centre for Development Policy and Research, School of Oriental and African Studies, University of London to research the competitiveness of state corporations, state enterprises and private enterprises (UNDP 2010). CIEM also worked with the University of Copenhagen on a comparative competitiveness study between Viet Nam and Mozambique on the competitiveness.

But the Vietnam Competitiveness Report is different: "the first ever national report which provides comprehensive assessments ... from both microeconomic and macroeconomic optics" and "developed independently and objectively" by CIEM and NUS, according to Deputy Prime Minister Hoang Trung Hai, who supported and guided the collaboration. The report had a cross-sector advisory panel (UNIDO's industrial policy expert Manuel Albaladejo being the only non-Vietnamese participant) and a Partner Focus group made up of Vietnamese and international business representatives.

Launched at a high level event in November 2010, the report stresses the importance of collaboration and knowledge sharing. One of the key recommendations is to build up Viet Nam's "knowledge and skill infrastructure" for example through cluster mapping and detailed regional competitiveness studies. "The lack of dialogue between government agencies and companies is one of the most critical barriers towards removing the bottlenecks for growth. Pilot initiatives can be launched in clusters where there is sufficient critical mass for actions to affect a meaningful number of companies and the willingness of companies and public sector agencies to collaborate." As part of the follow-up on the country's competitiveness agenda, UNIDO has worked on an Industrial Competitiveness Report with MOIT and an investment survey 2011 with MPI/FIA (both 2011).

**VIET NAM PARTICIPATES IN NUMEROUS OTHER KNOWLEDGE NETWORKS. TO IDENTIFY JUST A FEW:**

- The Institute for Foreign Policy and Strategic Studies (Diplomatic Academy of Viet Nam) is a member of the network of Asian strategic think tanks ISIS, and works with Washington-based institutions, the China Foreign Affairs University, and Taiwan National University.

- The Viet Nam Business Forum (VBF) was created in 1997 by the Vietnamese government, the private sector, and the donor community, led by Ministry of Planning and Investment, the IFC and the World Bank, and has helped make public private dialogue the norm in the country.

- The Viet Nam Development Forum (VDF) is a joint research project of the National Graduate Institute for Policy Studies (GRIPS) in Tokyo and the National Economics University (NEU) in Hanoi[xxxiv].

- The Trade Knowledge Network: a global network of research institutions coordinated by the International Institute for Sustainable Development (IISD), TKN links members, strengthens research capacity and generates knowledge on the impacts of trade and investment policies on sustainable development. It has 20 member institutions located in 8 countries including Viet Nam (Ministry of Fisheries; Ministry of Science, Technology and Environment; and IUCN[xxxv]).

- The APMAS Knowledge Network was set up by IFAD and the Asian Institute of Technology under the Knowledge Sharing & Networking Platform for Asian Project Management Support Programme. APMAS recently provided practical training in Bac Kan on how to undertake the annual IFAD outcome survey[xxxvi].

- The Climate and Development Knowledge Network helps countries to deliver climate compatible development, offering advice, technical assistance, research, knowledge sharing and capacity building. Supported by DFID and the Netherlands Ministry of Foreign Affairs. CDKN launched a project in mid-2011 on water-related climate change risks and adaptation in the Mekong Region, with Asian Management and Development Institute (AMDI), National Institute for Science and Technology Policy and Strategy Studies and An Giang University, Viet Nam, plus counterparts in Cambodia and Thailand[xxxvii].

"In the coming period," says the Multilateral Trade Policy Department of MOIT, "Viet Nam has the opportunity to integrate more profoundly into the world economy via more complicated play grounds." CIEM and its local and international networks should be busy for the foreseeable future. Possible areas for future international networking could include:

- Facilitating overseas scholarships and fellowships;

- Engaging in joint economic research activities and co-publish research, e.g. on governance of public-private partnerships, FTAs;

- Setting up joint policy research with peers in other countries on regional/international issues; and

- Attending face-to-face meetings in conferences and seminars.

As the *Vietnam Competitiveness Report 2010* points out, trade is like a two-way street. It "exposes local producers to competition and it also offers access to knowledge in global markets."

*Sources: Interview with Dr. Nguyễn Thị Tuệ Anh, CIEM; http://www.moit.gov.vn/.*



# 3.7 Conclusions

As discussed above in Chapter Two, key dimensions of international networking are political (the number of embassies in a country, the number of international organizations of which the country is a member, the number of UN peace missions in which a country participated, and the number of international treaties a country signed) and economic (exports and imports of goods and services, foreign direct investments, the portfolio of investments, and the income payments to foreign nationals).

Among the countries for which data is available, the best networked are smaller European countries. From the study group, Ethiopia, Panama and Peru are among the top 50 countries, suggesting that international networking is not solely a function of income. Nor are successful networks easily suppressed by geopolitical adversity, as shown by the case of the Havana Trade Fair, which has overcome many obstacles on its way to success. In the Cuban case, it is likely that new networks will also be needed to meet the needs of a rapidly-changing economic policy.

The cases illustrate networks for politicians, such as the horizontal information-sharing Conference of African Ministers of Industry, and for researchers as in the 'triangular' CIEM competitiveness study with NUS and Harvard. They also illustrate the changing functions of networking: in the case of AfrIPAnet, the network moving from knowledge sharing to harmonization, via the application of the biannual investor benchmarking survey.

Dynamic networks tend to proliferate, producing regional variants (e.g. Latin America's Cleaner Production network). They also produce content-related offshoots to meet emerging needs. UNIDO's Centre for South-South Industrial Cooperation (UCSSIC) was established in 2007 in New Delhi. In cooperation with Vimta Labs in Hyderabad, UCSSIC in turn set up the South-South Training Facility for Testing Laboratories in 2010 to give training courses to technicians in developing countries lacking their own accredited laboratories[xxxviii]. Vimta had already in 2008 collaborated with UNIDO and WAITRO (the World Association of Industrial and Technological Research Organizations, based in Malaysia, with about 160 members worldwide) in launching LABNET, a virtual network for testing laboratories in developing countries worldwide. The LABNET portal is already attracting many visitors from countries such as India, Turkey, the Philippines, Mexico and Brazil.

If knowledge sharing has traditionally been bilateral and North-South, the emergence of regional research networks like ERIA and Red Mercosur shows the growing interest in building relevant, rapid, responsive networks that can produce the knowledge that is needed close to the target audience. "South-South cooperation is a visionary idea that is starting to pay off today," Rene Castro, Minister of Foreign Affairs of Costa Rica has said. "Due to their first-hand familiarity with the problems on the ground, actors in South-South cooperation can be more efficient and effective in identifying and implementing solutions[xxxix]."

In sum, these cases stress the importance of recruiting the right participants in the network, and giving them the mandate to generate and share knowledge.

# Chapter 4: From Dialogue to Collaboration: Inter-organizational Networks

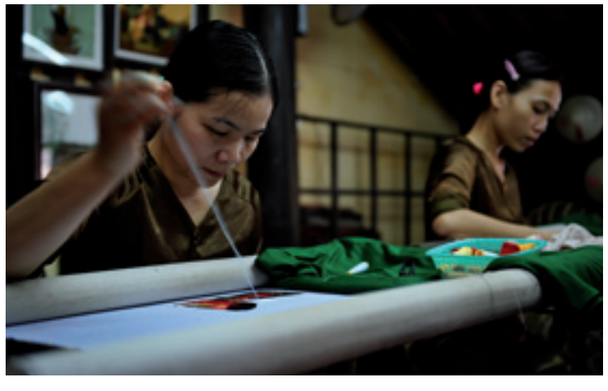
Kazuki Kitaoka, Alex MacGillivray, Axel Marx and Cormac O'Reilly

"Today, any serious industrial policy is one that focuses on how the state and the private sector can work together to generate jobs."

***Prof. Ernest Aryetey, Vice Chancellor of the University of Ghana, 2011***[xl]

## 4.1 INTRODUCTION

Inter-organizational networks or partnerships (including private sector development partnerships), are gaining prominence across the world. In a recent report, Rochlin, Zadek and Forstater (2008) mapped the ever-increasing partnerships and collaborative actions in the context of achieving sustainable development (see also Abbott & Snidal, 2009). These networks can take at least three forms: within the public sector, between public-private sector actors and purely private networks.



*Clusters offer small and medium enterprises (SMEs), at the very least, external economic advantages, including economies of scale and of scope.*



## 4.2 Public-public networks

These emerge mostly in the context of initiatives in the context of policy integration. As highlighted in chapter 1, private sector development, especially in the context of industrial policy, is driven by many interacting policy areas.

In order to achieve specific policy objectives which cut across the functional departmental borders of the administration, policy integration is needed. The most cited example of the application of the policy integration principle concerns the integration of environmental policies in other policies such as transport, energy, agriculture, tourism and others. The objectives of stimulating private sector development can also be integrated into fiscal policies, trade policies, industrial policies and related policy areas such as education (for example specialized courses for entrepreneurship). In order to make this integration successful, cooperation and collaboration across governmental departments is needed. This type of collaboration can take many forms, ranging from ad hoc meetings to joint strategic plans and permanent working groups.

A major problem for networking in the public sector can be the high turnover of staff: *"In Panama, Honduras, Nicaragua, Guatemala, Peru, and Ecuador, a mass replacement of officials occurs every time the administration changes. This type of "revolving door" is a problem because public policies need continuity of resources for follow up and control. If the most capable employees with specific knowledge are dismissed, then policies will be affected."* (Zuvanic et al., 2010).

Fortunately the "revolving door" practice is diminishing in countries such as Peru, as the case study shows (see section 4.5 below).

# 4.3 Public-private networks

The importance of public-private networks was emphasized in recent advice to South African policy-makers:

"A government should evaluate its industrial policy framework not by asking questions of the type: which tax breaks or subsidies are we using? which sectors have we identified? what is the budget we have allocated for industrial promotion? The relevant questions instead are: have we set up the institutions that engage the bureaucrats in an ongoing conversation of pertinent themes with the private sector, and do we have the capacity to respond selectively, yet also quickly and using a variety of updated policies, to the economic opportunities that these conversations are helping identify?"

***Hausmann, Rodrik & Sabel 2007***

In many countries, setting up a relevant, timely conversation on economic policy between public, private and voluntary sectors is hampered by years of tension and mistrust, with periodic false starts through unsatisfactory efforts at consultation. The *Charter of Good Practice in using Public Private Dialogue for Private Sector Development* is one effort at overcoming these problems. It was developed by participants at an international workshop in 2006, revised via feedback to a dedicated website (www.publicprivatedialogue.org).

The Charter covers 12 important design features of effective dialogue, from mandate and choosing participants through to monitoring and evaluation and exit strategies. Possibly reforms to the business climate have never been more rapid than during the 'Bulldozer Initiative' in Bosnia and Herzegovina, where an "*an SME outreach effort sponsored by international community succeeded in improving business regulation at a rate of 50 reforms in 150 days*" (Herzberg &Wright, 2006). But from Armenia's Business Support Council to Viet Nam's Business Forum, there is evidence that good quality dialogues amply repay the investments of time and effort in running them (Herzberg & Wright, 2006).



Public-private networks can take several forms. Governments can, for example, initiate innovation and change. In this model state-owned or dominated firms are set up in specific economic sectors. In analysing the strong growth in emerging economies, Amsden shows that in manufacturing state-owned enterprises (SOEs) were concentrated in heavy industries such as petroleum, metallurgy (iron and steel) and strongly influential on the development of other firms through their national leadership. "*SOEs [...] undertook exemplary technology transfers, strengthened professional management, invested in R&D, and became a training ground for technical staff and entrepreneurs who later entered private industry.*" (Amsden, 2001, pp. 213-214)

A similar catalytic role with strong spillovers can be observed in key areas such as research and development (R&D) support. Peter Evans (1995, p. 147) describes that in the case of the Republic of Korea investments in R&D multiplied in the 1980's and 1990's to reach levels higher or equivalent to those of most advanced countries. This increased investment in R&D continues to this day. Evans (1995, p. 147) argues that the initial investments by government and the interaction between state capital and private capital was key to achieve this strong increase.

Another inter-organizational network emerges out of public-private joint ventures in emerging sectors which then further develop and diffuse. Again, the Republic of Korea is often presented as a case in this respect. The Republic of Korea's first oil refinery was established in 1964 as a 50:50 joint venture between the Government and Gulf Oil. This type of joint venture became a model for other sectors which enhanced the development of the private sector (Amsden, 2001, p 218). Finally, an increasing number of public-private partnerships have developed to provide different kinds of services and infrastructure in support of private sector development.

Public-private dialogue is a necessary step, but only the first on the journey. Sectors often have to work together for years to build up successful collaborations, starting on safe ground before getting into the areas of more controversy. Fundación Chile is a well-known example: a non-profit private corporation established in 1976 by the Government of Chile and BHP-Billiton – Minera Escondida. Its mission is to develop high impact innovations and human capital to increase Chile's competitiveness "*by promoting and developing the economy, through technology transfer and in alliance with local and global knowledge networks*". Its best known interventions have been in aquaculture (salmon), but there are also successful cases in forestry, berries, vacuum packed meat, abalone and rape seed oil, among others. "*In our eagerness to move the boundary of possibility, we believe in the value of sharing and transferring knowledge*". How do they support knowledge networks? Through capacity building (especially internet-based education and training), development of standards, courses and seminars, debates, research reports, corporate ratings and awards, travel bursaries and so on. Fundación Chile has also developed a strong focus on sustainable development (notably in water and energy). Chile, like the Republic of Korea and Singapore, has been an inspiration to several countries in the group of countries studied, as the case of Panama (see section 4.5) shows.

In a study of 20 African nations, Te Velde (2010) showed that countries with stronger state-business relations (SBRs) grew faster. The strength of these relations was measured across four domains:

- Presence and length of existence of an umbrella organization linking businesses and associations.
- Presence and length of existence of an investment promotion agency (IPA) to promote business.
- Openness of cooperation through formal existing bodies (or informal 'suggestive' bodies with no entrenched power).
- Presence, length of existence and effectiveness of laws protecting business practices and competition as measures of avoidance of collusive behaviour.

The term 'state-business relations' somewhat simplifies the multiple interactions within the complex ecosystem of PSD. It does not adequately recognize that relations within the public sector itself need to be effective – for example between the ministries of economy and industry. Nor does it recognize that there are also frequent disconnects within the private sector, notably between large businesses represented by chambers of commerce, and micro, small and medium enterprises represented (if they are formal) by their own associations. Above all, with the blurring of 'state', 'regional' and even 'global' policy-making competencies (see further Part 3 below, Conclusions and Recommendations), an alternative term is preferred. We suggest a useful term might be simply 'public-private relations'.

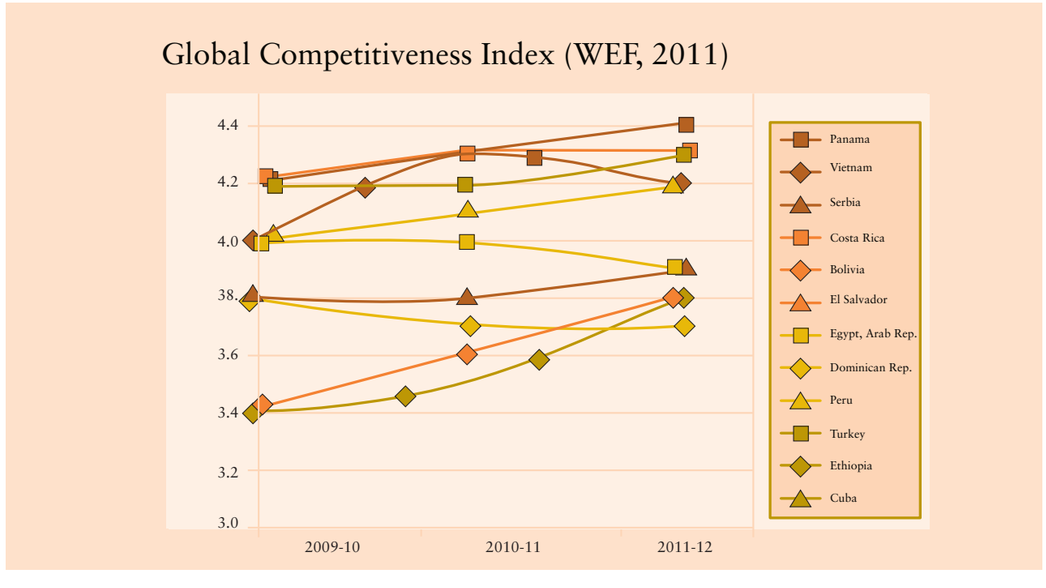
Te Velde found an encouraging enhancement of public-private relations in most countries in his sample in the period 1994-2004, including Ethiopia

(see section 4.5). Nonetheless, he acknowledges that measurement remains difficult, and calls for further research to build an enhanced theoretical underpinning of effective public-private relations. This could be achieved by modelling the economic behaviour of key actors involved, building a set of empirical studies on successful examples, and even constructing a worldwide index of effective public-private relations.

In September each year, economic policy-makers in most countries await the launch of the World Economic Forum's Global Competitiveness Index. WEF's index has become one of the most influential economic policy benchmarks, alongside rival surveys from the World Bank and IFC (Doing Business) and the Institute of Management and Development (World Competitiveness Scoreboard). As noted above, WEF includes in its annual survey of business executives a number of questions that touch on knowledge sharing, such as the extent of university-business collaboration and the degree of clustering. The Index also looks at ICT connectivity as a proxy of technological capabilities. However, knowledge sharing is not seen as a key pillar of competiveness by the main benchmarking studies.

Partly in response to the prominence of competitiveness benchmarks, many countries have established competitiveness councils of some format or other. Some are dominated by ministries and others by business associations; a few have genuine public-private balance. Irrespective of their governance arrangements, many competitiveness bodies are beginning to take knowledge seriously. In the study group (Cuba is not covered by WEF), the trend over the past three years has generally been one of improving competitiveness, with all countries now across the threshold score of 3.5 out of a maximum score of 7. The scores are suggestive of two broad groupings, with Panama, Costa Rica, Turkey, Viet Nam and Peru in one group scoring between 4.2-4.4, and Egypt, El Salvador, Serbia, Bolivia, Ethiopia, and Dominican Republic with scores between 3.7-3.9. As noted below, countries' progress towards cleaner production and 'green industry' (evidenced for example by reducing carbon emissions per unit of GDP) is mixed.

*Figure 4.1*






# 4.4 Private networks

These can take many forms: business associations, industry-university collaboration, private regulatory initiatives, etc. A key focus in the current literature is on economic clusters which are geographic concentrations of interconnected companies, specialized suppliers, service providers, and associated institutions in a particular field.

Leading examples include financial services (the City of London, New York), film (Hollywood and "Bollywood"), cars (Detroit, Modena, Toyota City, Wolfsburg, Stuttgart, etc.), watches (Switzerland and Japan), optical equipment (Tokyo), flowers (the Netherlands and Colombia), computer software (Silicon Valley, Bangalore), marine technology (Southwest Norway), mobile telecommunications (Stockholm and Helsinki), wine (Barossa Valley, Rioja, Bordeaux, Southern Chile and parts of California), or biotech, life sciences and medical instruments (Boston's Route 128, BioValley 21, Medicon Valley 22, and more recently Costa Rica) (European Commission, 2008).

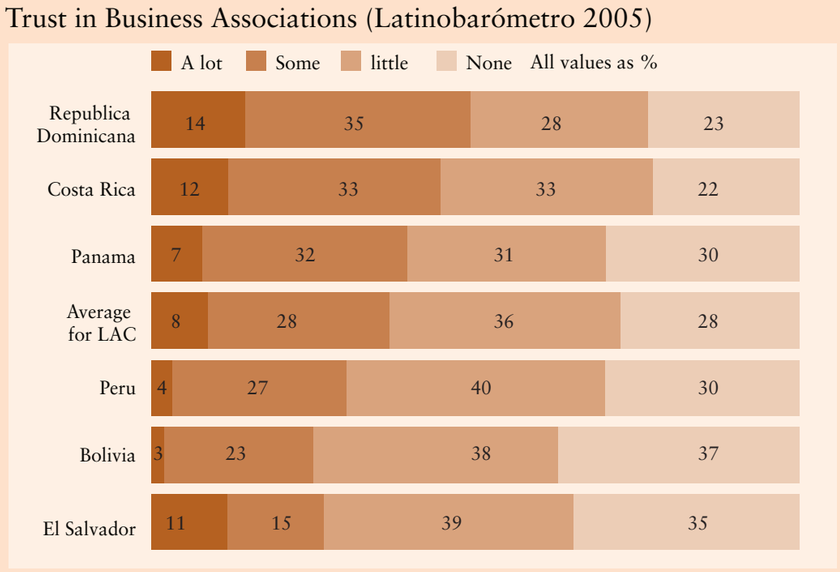
Clusters can be found in many economies around the world, each following its own trajectory and history (European Commission, 2008). Cluster development initiatives are, as Porter et al. (Porter, 1998, 2000; Delgado et al., 2011) argue, an important new direction in economic policy, building on earlier efforts in macroeconomic stabilization, privatization, market opening, and reducing the costs of doing business. A prominent example concerns recent efforts undertaken by the European Commission's Directorate General for Enterprise and Industry to further develop clusters (see European Commission, 2008a). The importance of clusters is also apparent in developing countries. Early work of Khalid Nadvi (1995 p. 4; see also Humphrey and Schmitz, 1995) notes that:

"The conclusion that emerges is that industrial clustering and networking can be of great importance to small firms in the South operating in environments that are industrially and infra-structurally underdeveloped. Clusters offer SMEs, at the very least, external economic advantages, including economies of scale and of scope. Co-operation between agents within clusters and networks, through the sharing of information, resources, knowledge and technical expertise, and other forms of joint action reduce transaction costs and further enhance competitiveness as well as accelerate learning and technical innovation. Finally, while there is evidence that inter-firm relations, set in motion by clustering and networking, offer a potential growth path that takes SMEs beyond a survival strategy to one of real, competitive and sustainable growth; it is also clear that structures and forms of organization associated with clustering and networking are themselves in a state of flux, continuously undergoing change."

Cowan and Jonard (2004), who modelled knowledge diffusion in various structures of network, challenge the assumption that KM is optimized in networks that are highly local or clustered. Indeed, they demonstrate that networks work better with up to 10 per cent of the linkages between distant participants. Their conclusion: "it is possible to have too much clustering. It is very important to maintain or even build strong links outside the cluster".

While most business surveys and opinion polls canvass entrepreneurs for their views on the competence of government, we know less about how policy-makers and the public view businesses and their associations. Latinobarómetro did ask about trust in business associations in 2005 (see figure 4.1), a question unfortunately not repeated by sister initiatives Asian Barometer and AfroBarometer[xli]. On average across the region, three times as many people had no trust in them (28 per cent) as had a lot of trust in them (8 per cent). This may indicate a broader problem of declining trust across institutions, both public and private, in Latin America. Given the ambition of business associations to be influential actors in the making of economic policy, rebuilding trust between government, business associations and the general public is an urgent priority.

*Figure 4.2*






# 4.5 Case studies

The first case study looks at governance and knowledge transfer in two sectors in Costa Rica. Is the theory on ideal network design supported in practice?

- Serbia provides an example of a country that is working hard to build a much-needed conversation between government and private sector.
- Ethiopia has seen progress in strengthening public-private relations in recent years. How has this been achieved?
- The Bolivian case study shows how new forms of collaboration among stakeholders are built using the potential for information technology to create transparency and trust in the contentious value chain of sugar.
- Panama provides a good illustration of how a small developing country tackles the challenge of creating knowledge networks.
- In Peru, the Ministry of Production is drawing on the long experience of the network of Tehnological Innovation Centres to make Government networks more stable and effective in general.
- The case of República Dominicana shows how the SME confederation CODOPYME works to secure a level playing field for SMEs in winning government contracts.

*The objectives of stimulating private sector development can also be integrated into fiscal policies, trade policies, industrial policies and related policy areas such as education. In order to make this integration successful, cooperation and collaboration across governmental departments is needed.*

# Case: The Electronics and medical devices / life sciences value chains in Costa Rica

"In Costa Rica foreign direct investment has contributed in a significant way to growth in Gross Domestic Product (GDP) , leading to increases in production and exports, the creation of more and better jobs, the transfer of technology and knowledge, the generation of productive linkages with locally based businesses, and improvements in competitiveness."

***Anabel González, Ministra de Comercio Exterior***[xlii]

Costa Rica's population of 4.6 million people has generally high levels of human development, ranking it number 62 of 169 countries and consistently ahead of the regional average[xliii]. With a life expectancy of 79 years, the population enjoys an exceptional record on health. Costa Rica is unusual in that its level of economic competitiveness is closely comparable to its human development. It is ranked 61 in the 2011-12 *Global Competitiveness Index*. Its macroeconomic environment, say executives, holds the country back from still higher performance.

In terms of industrial development, Costa Rica is making the transition from low / medium technology manufacturing, and now has an industrial performance ranked ahead of Brazil, India, Russia and South Africa (on UNIDO's CIP Index for 2009). The country is committed to progressing free trade agreements, and also to building a low-carbon economy. It has managed to contain its emissions intensity at the same level over the past decade (IEA, 2011).

By law, the Ministry of Foreign Trade (Ministerio de Comercio Exterior or COMEX) is responsible for defining and managing trade policy and foreign investment in Costa Rica. To implement policy, COMEX is supported by CINDE (a private, non-political and non-profit entity responsible for promoting inward investment) and PROCOMER (a non-state public body responsible for Costa Rican export promotion). Costa Rica has a good track record in growing exports and attracting foreign investment: the success of agriculture (notably bananas, pineapples, coffee, juice) and eco-tourism sectors are well known examples. In August 2011, the *Financial Times* rated it the "Best Country of the Future for Foreign Direct Investment in Central America and the Caribbean[xliv]".

The business ecosystem performs well by global standards on most measures of technological readiness, business sophistication and R&D. Costa Rica is engaged in five global value chains: electronics, medical devices/life sciences, automotive, aeronautic/aerospace and film/broadcasting devices. Of these, electronics is the most significant, with 10 firms accounting for 26 per cent of the country's exports in 2009 (Monge-Ariño, 2011). Intel's keystone investment has been evaluated positively by the World Bank after nine years: *"Beyond its obvious direct effects on the country's economy in terms of gross domestic product (GDP), foreign direct investment (FDI), and trade growth, Intel's investment decision was the catalyst for a realignment of Costa Rica's competitive platform as an investment location. Costa Rica worked resourcefully and with a novel sense of urgency to enhance the country's technical education, incentives law, regulation, and infrastructure. Over time the effects could be seen in an improved investment climate, a more focused, strategic approach to investment promotion, a developing technology cluster, and newly secured FDI projects in other targeted sectors. The Intel investment also reached far into the local community, affecting education and the country's knowledge base, workplace standards and business culture"* (MIGA, 2006)[xlv]. Researchers note that by no means all local firms have yet graduated from product distribution to product innovations. The most successful had strong networks internationally (Ciravegna and Seldin, 2008).



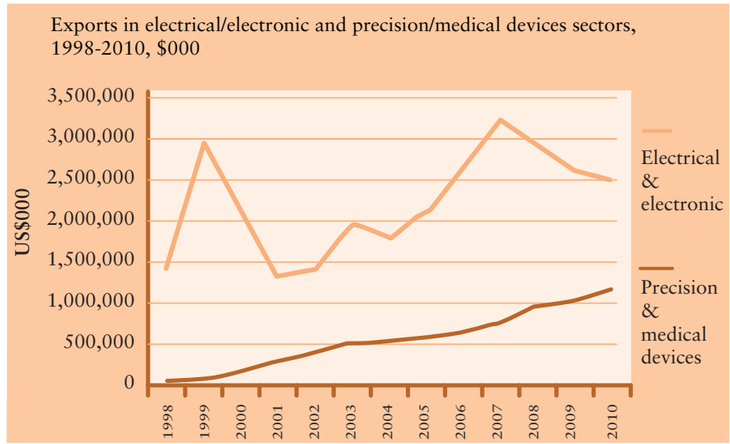



*Figure 4.3*

The medical devices / life sciences sector, while less well-studied, is equally dynamic. The first investment was back in 1987, when Baxter Healthcare established a manufacturing operation. Progress since then has been dramatic, first in medical devices and then in biotechnology. By 2011 the life sciences sector employed 12,000 people working in 41 foreign companies and their local supply base. With annual exports passing US$1 billion in 2009, it now accounts for 15 per cent of national exports (see figure 4.3).

"We have seen a positive evolution not only in the number of companies settled, but in the sophistication and the upgrade of processes carried out in our country", says Gabriela Llobet, Director General of CINDE. "Companies here are undergoing highly innovative manufacturing processes in areas related to the industry such as cardiovascular, neurovascular, orthopaedics, injection systems, nutrition, and women's health, among others. Along this line, the country offers a wide array of material and service providers in order for companies to encompass the complete production chain, positioning the country as a true export platform."

A recent analysis of Costa Rican production sharing focuses on the indicator of *Domestic Component of Exports (DCE)*[xlvi]. For the five global sectors mentioned above, this analysis shows that medical devices / life sciences performs well (59 per cent DCE), ahead of the average (36 per cent) and the electronics sector (around 20 per cent) (Monge-Ariño, 2011). Across all firms in global value chains, over one third of the value of exports is produced in Costa Rica, and a quarter of this is provided by other firms operating in Costa Rica (60 per cent services; 40 per cent goods).

Recognizing the potential to grow these contributions, COMEX in mid-2011 announced that it would look to adopt additional incentives to attract research-intensive businesses.[xlvii] What are the chief mechanisms for sharing knowledge across the Costa Rican end of the global supply chains? Medical firms have collaborations with a wide range of research institutions. "Costa Rica has a wide network of programs, supported by law, to strengthen the development of science, technology and innovation", says the recent EU ENLACE report *Guidelines on the CA innovation system*[xlviii], noting some 176 research institutions, including the Centro Nacional de Innovaciones Biotecnológicas. The Instituto De Excelencia Empresarial of the Cámara de Industrias de Costa Rica has also worked to develop linkages with life sciences multinationals, as has the team *Costa Rica Provee* (Costa Rica Supplies) which runs an online directory of 450 accredited domestic suppliers and undertakes active matchmaking.[xlix] Interestingly, while the ICT sector has its own Costa Rican business chamber, the life sciences sector does not. It will be interesting to follow the trends in Costa Rica's key export sectors over time, and understand which networks do most to increase the domestic component of exports.

*Sources: COMEX ; CINDE ; PROCOMER ; Monge-Ariño, F. (2011) Costa Rica: Trade Opening, FDI Attraction and Global Production Sharing, World Trade Organization Economic Research and Statistics Division Staff Working Paper ERSD-2011-09.*

# Case: Better dialogue between enterprises and government in Serbia

"Better implementation of knowledge and innovations is necessary in the development of products and introduction of new technologies in the production and distribution. The realization of that goal requires the adaptation of the education system to modern economic trends and needs."

***Nebojša Ćirić, Minister of Economy and Regional Development***
***Speaking at the Serbia-EU Forum, September 2011***[l]

Serbia's human development has been rising steadily since 2005, and is above the average for Europe and Central Asia, with a good record in health and education[li]. However, income growth for the country's nearly 10 million people has been lagging behind some of its neighbours, so that Serbian policy-makers face high expectations despite the current global economic crisis.

Competitiveness is on a modest upward trend, according to the World Economic Forum (see Graph 4.1), but as other countries are also improving, the country's rank is fairly static. Indeed, Serbia's economic and industrial performance could be significantly enhanced. Key challenges, according to executives surveyed by the Foundation for the Advancement of Economics (FREN), are upgrading institutions (particularly in the private sector); promoting more efficiency in local goods markets; and in building more sophistication in businesses (such as R&D investment and clustering).

International isolation during the 1990s and an ongoing 'brain drain' of skilled workers have led to significant knowledge and skills gaps for private sector development. There is a widely recognized need for knowledge upgrading, "starting from education, through all forms of transferring knowledge and technologies from the scientific-research sector to the economy," according to the 2008 *Human Development Report* for Serbia.[lii]

Industry's share of value added has fallen from 25 per cent in 2001 to 21 per cent in 2010 (accompanied by a fall in carbon emissions per unit of GDP), and there has been slow growth in manufacturing over this period.[liii] 51 per cent of GVA in industry is classed at low-tech, and a further 25 per cent as medium low-tech. Serbia was ranked behind Romania in UNIDO's 2005 Competitive Industrial Performance Index. The micro and small enterprise sector is relatively undeveloped (and the medium and large sized enterprise sectors are relatively overdeveloped) in Serbia compared to the EU-27 average (see table 4.1). Serbian SMEs could generate significantly more employment and value added, if they can tackle the knowledge deficit. Meanwhile, medium sized enterprises probably merit special support due to their disproportionate importance.

Serbian policy-makers are aligning national and regional policy to the EU's flagship Small Business Act (SBA). The SBA policy initiative covers ten principles to guide SME policies in Member States; skills and innovation is one of the principles. However, there is currently little information available about the level of knowledge networking among Serbia's SMEs.[liv] Indeed, there is an absence of relevant information at the European level on this issue, and thus in the national performance review. But anecdotal evidence suggests low levels of networking. Few enterprises of any size network with research organizations to create innovations. The *Support to Enterprise Investments in Innovation* grant scheme, run by the Ministry of Economy and Regional Development, aims to unleash a culture of innovation in SMEs, but the current funding is limited to approximately Euro 480,000.



*Table 4.1 Serbia: Key characteristics of the private sector*

| | Enterprises | | | Employment | | | Value added | | |
|---|---|---|---|---|---|---|---|---|---|
| | Serbia | | EU-27 | Serbia | | EU-27 | Serbia | | EU-27 |
| | Number | Share | Share | Number | Share | Share | Billion € | Share | Share |
| Micro | 69,235 | 84.9% | 91.8% | 135,899 | 13.9% | 29.7% | 2 | 11.4% | 21.0% |
| Small | 9,421 | 11.6% | 6.9% | 184,747 | 18.9% | 20.7% | 3 | 18.9% | 18.9% |
| Medium-sized | 2,350 | 2.9% | 1.1% | 240,413 | 24.5% | 17.0% | 3 | 21.1% | 18.0% |
| SMEs | 81,006 | 99.4% | 99.8% | 561,059 | 57.3% | 67.4% | 7 | 51.5% | 57.9% |
| Large | 523 | 0.6% | 0.2% | 418,794 | 42.7% | 32.6% | 7 | 48.5% | 42.1% |
| **Total** | **81,529** | **100.0%** | **100.0%** | **979,853** | **100.0%** | **100.0%** | **14** | **100.0%** | **100.0%** |

*Data refer to the non-financial business economy (NACE C-I, K) and represent estimates for 2008*
*Source Eurostat, elaborated by EIM for EU27 figures, Institute of Economic Sciences, Serbia for country figures*

*"We all know that all the world economies owe their success to successful entrepreneurs, the business people"*, says Slavica Đukić Dejanović, speaker of the National Assembly of the Republic of Serbia. *"Our economy is no exception. However, the extent to which the energy and creativity of this most productive segment … will be able to come into full swing depends primarily on the social milieu, the systemic framework for business activities."*

One exciting initiative to build just such a social milieu is the Serbian Parliament of Enterprises, held in the National Assembly in Belgrade in June 2011. Organized by the Serbian Chamber of Commerce and the National Assembly, 250 entrepreneurs were invited on a representative basis by the Serbian chambers system to initiate a solutions-oriented strategic dialogue with government. The day was divided into three sessions on the economic and systemic framework; finance; and export growth. In the closing session delegates were given the opportunity to vote electronically with real-time results flashed up on screens. The scale of the exercise, the thoroughness of the representation and the voting arrangements made the Parliament of Enterprises an unusually productive dialogue (Serbian Chamber of Commerce, 2011).

The Serbian initiative is modelled on the European Parliament of Enterprises (EPE), a successful innovation developed by EUROCHAMBRES (The Association of European Chambers of Commerce and Industry which represents over 19 million enterprises across Europe). EPE is designed to address a "democratic gap" between EU institutions and entrepreneurs. "EU legislators do not take sufficiently into account the entrepreneurs' concerns," according to EUROCHAMBRES. "On the other hand, the role and functioning of the European Union are insufficiently known to businesses." The first EPE was held in 2008 and the second in 2010. Three Serbian entrepreneurs participated in the 2010 EPE, among 750 entrepreneurs from 31 countries.

Building on constructive inputs from business, Serbia's *New Industrial Policy 2011-20* identifies four focal points for intervention: education; technology development and innovation, energy efficiency; and environmental protection. More specifically, the Industrial Policy envisages two new networks to drive technology and innovation:

- The *National Technological Platforms of Serbia* (NTPS); and
- The *National Innovation System* – a network of institutions from the private and public sector that through their interactions initiate, import, modify, and expand innovations.[lvi]

The key task now is to ensure that these new networks are effective and flexible, so that they can take note of the consensus emerging from future editions of the Parliament of Enterprises.

*Sources: Serbian Chamber of Commerce www.pks.rs, interviews.*

# Case: Ethiopia's Public Private Consultative Forum and PSD Hub driving accountability and dialogue

"The forum is important for both the government and the business community to come to terms and promote a common interest in view of creating a suitable environment for business and investment in the country".

***Eyesuswork Zafu, ECCSA President***[lvii]

Ethiopia's 85 million people in 2010 had a Human Development Index (HDI) of 0.328, positioning the country 157th out of 169 countries with comparable data. Among the Millennium Development Goals, raising educational attainment and reducing poverty are key challenges; improving health outcomes and building resilience to drought and climate change are also major priorities, as is providing access to modern energy (cooking and electricity) for some 83 per cent of the population.[lviii]

Building on the Sustainable Development and Poverty Reduction Programme of the early 2000s, the Government then launched the *Plan for Accelerated and Sustainable Development to End Poverty* (PASDEP, 2005/6-2009/10). Despite a history of differences between private sector and Government, PASDEP did receive policy inputs from the business community, and recognized the private sector as an engine for growth.[lix] In 2011, the Growth and Transformation Plan (GTP) established a target to double GDP within five years, a plan of such ambition as to require still closer cooperation between sectors.

Executives surveyed by the African Institute of Management, Development and Governance cite financial issues as paramount for doing business (access to finance, inflation, foreign currency regulations). These are seen as more important than tax or bureaucracy in Ethiopia. The country has significantly improved its competitive position in recent years, and has posted strong growth rates. The 2011 *African Economic Outlook Report* ranked Ethiopia the second fastest growing economy on the continent, after Ghana. It enjoys several distinct advantages over countries at similar levels of economic development, such as a large domestic market, endowments of natural resources and a relatively stable macroeconomic position. Economic success is across many sectors, from coffee, horticulture and brewing to leather, textiles and chemicals.[lx] As a result, Ethiopia's performance on industrial competitiveness improved significantly between 2005 and 2009, according to UNIDO, overtaking Malawi and approaching Tanzania and Ghana. Its carbon emissions per unit of GDP are stable and amongst the lowest in Africa (IEA, 2011). China is now considered the country's key economic partner, with trade exceeding US$1.4 billion in 2010[lxi].

Most competitiveness and business climate analysts in Ethiopia stress the pressing needs to tackle physical (e.g. roads) and technological (e.g. ICT) networks rather than building up knowledge networks.[lxii] However, the importance of institutional capacity and knowledge is in fact firmly on the agenda of Ethiopian policy-makers. Accordingly civil service reform is a policy priority. The Ministry of Health and HIV/AIDS Prevention and Control Offices (HAPCOs) are using the Balanced Scorecard as a tool for performance management, with support from UNDP.[lxiii] The Ethiopian Development Research Institute (EDRI), a semi-autonomous research think-tank founded by the government in 1999, undertakes good quality economic research with a range of global partners and its policy analysis is disseminated widely.[lxiv] In 2009, EDRI published a Social Accounting Matrix on the structure of the Ethiopian economy (2005/06), supported by the "Data Systems and Economy-Wide Modelling to Support Policy Analysis in Ethiopia" project, funded by the Ethiopian Government along with the Government of the Netherlands and the European Commission through UNDP.[lxv] Ethiopia's National Metrology Institute (NMIE) has recently been reorganized and upgraded. As a result of such reforms, Ethiopia's institutions are judged quite positively by business executives (in contrast to many Sub-Saharan African countries).

In terms of industrial development, Ethiopia's strategy (dating back to 2002) is a concise document that stresses the importance of better knowledge as a cross-cutting theme.[lxvi] The strategy's core principle remains Agricultural Development Led Industrialization (ADLI), while also recognizing the role of the private sector as an engine of growth, calling for more domestic-foreign investment partnerships, active participation from the public, and a government-private sector consultation forum. "The concept of knowledge", says UNCTAD in its 2002 *Investment and Innovation Policy Review,* "entails more than the results of R&D. It is a concept that includes product design, quality control, process engineering, management routines, marketing, information processing, maintenance, investment and change capabilities as well as networking and partnering skills."[lxvii]

The Government, supported by international cooperation, has undertaken a range of initiatives to build such knowledge. The Ethiopia Investment Agency (EIA) has strengthened its capabilities in recent years (see AfrIPAnet case above). UNIDO has supported the Leather and Leather Products Technology Institute (LLPTI), the Ethiopia Cleaner Production Centre (ECPC), the Eastern Africa Bamboo Project, a Food Safety Assurance System (FSAS) and a programme to 'unleash the potential' of SMEs in Ethiopia.[lxviii] The Ethiopia Commodity Exchange, launched in 2008, has become an effective mechanism for levelling the trade playing field for small coffee and cereal farmers.

But despite such dynamic developments, policy-makers have recognized since 2005 that there is a need for more positive dialogue and trust-building across the sectors. In 2010, the Ethiopian Public Private Consultative Forum (EPPCF) was finally agreed by a Memorandum of Understanding (MoU) between the Ministry of Trade and Industry and the Ethiopian Chamber of Commerce and Sectoral Associations (ECCSA). ECCSA was reconstituted in 2007, and its member chambers and associations represent 40,000 businesses across the country. The inaugural Forum was held in February 2011 at the Hilton Hotel. Well attended by both sides, this dialogue was just the beginning of an ambitious system of regular forums operating at state, sectoral, regional and local levels (Mihretu & Brew, 2011).



*Most competitiveness and business climate analysts in Ethiopia stress the pressing needs to tackle physical infrastructure rather than building up knowledge networks. However, the importance of institutional capacity and knowledge is in fact firmly.*

*Ethiopia's industrial strategy is a concise document that stresses the importance of better knowledge as a cross-cutting theme.*

Within the Ethiopian chamber system, a pivotal role is played by the Private Sector Development Hub. The PSD Hub has become a key actor in the policy space, issuing a series of influential reports on key business challenges, from road transport and ICT to female entrepreneurship and land leasing (supported by the Swedish Agency for International Development Cooperation SIDA). Naturally, the Hub has a focus on legal aspects (e.g. commercial codes, tax, competition, registration). But it has also become a thought-leader, proposing a strategy on private sector led economic growth (2008) and sharing good practice from around the world.[lxix]

More importantly, the PSD Hub turned the accountability spotlight on chambers and business associations, by publishing in 2009 a *Situation Analysis of Business and Sectoral Associations in Ethiopia*. Surveying 136 businesses in Addis Ababa, the team found that only 15 per cent were members of a sectoral association, calling into question the legitimacy of these institutions to represent a business voice. The team developed a Competency Index to review Ethiopia's business and sectoral associations, with a questionnaire examining organizational strength; governance and accountability; capacity to dialogue and provide business development services; and legitimacy.

What was the result of the questionnaires? The research team found a wide range of scores across 43 associations and chambers, from 20 per cent to 93 per cent, with an average of 36 per cent, leading them to conclude that "the real capacity of business and sectoral associations in Ethiopia to represent the interests of members in a wholesome way as well as to ... provide them with much needed business development services, is nearly non-existent". This is a little extreme: the main sectoral associations (coffee, tanneries, horticulture etc) and the AACCSA scored highly (from 73-93 per cent), as did the Amhara Women Entrepreneurs Association. But given the pattern of lower scores across the regions, this research certainly sets an ambitious agenda of institutional upgrading and knowledge sharing which is essential if Ethiopia's business associations are to play the effective and accountable role in economic policy envisaged by the EPPCF agreed in 2010.

*Sources: Interviews with Hailemikael Liqu, PSD Hub; Mihretu & Brew (2011); IEA (2011).*



# Case: Transparency in the sugar value chain, Bolivia

"We got here by working as a national team, and the Ministry of Trade and Industries has made a significant input into attracting foreign investors to Panama."

***Ana Teresa Morales Olivera, Ministra de Desarrollo Productivo y Economia Plural, August 2011***[lxx]

The Plurinational State of Bolivia's 10 million people have a level of human development slightly above the world average. Progress stalled in the mid-2000s, and began to rise again in 2008, according to UNDP.[lxxi] While Bolivians do face challenges in health and education, as well as across the other Millennium Development Goals, it is the low average levels of income and extreme inequalities (some 1.2 million people living on less than US$1.25 a day, mainly in rural areas), coupled with a strong indigenous consciousness, that are of immediate concern to policy makers. With poor households spending up to half their income on food, Bolivians feel vulnerable to global and local food prices, which have been a source of tension between public and private sectors. The country is also recognized for its vulnerability to climate change.

The Morales administration's national development plan is sub-titled "Bolivia Digna, Soberana, Productiva y Democrática para Vivir Bien" (*A Worthy, Sovereign, Productive and Democratic Bolivia to Live Well*). The focus is on plurality and quality of life, not competitiveness. The Unidad de Productividad y Competitividad (Competitiveness and Productivity Unit) has been trimmed back significantly from its heydays in the mid-2000s. Currently, UDAPE (the Unidad de Análisis de Políticas Sociales y Económicas) has more influence on economic policy. Bolivia has in fact made steady progress on both overall and industrial competitiveness in the late 2000s. While minerals, natural gas and agro-industry still dominate the economy, its industrial structure is now similar to that of Paraguay - and ahead of Panama (according to UNIDO's 2009 index).

The Ministry of Productive Development & Plural Economy (Ministerio de Desarrollo Productivo y Economía Plural or MDPyEP) and the Ministry of Work, Employment and Social Provision recently issued a joint *Plan Sectorial de Desarrollo Productivo con Empleo Digno*.[lxxii] The Plan deals with a plurality of economic models: the public, the social cooperative, the communitarian and the private. The Plan prioritizes production for local consumption over exports, particularly in the agribusiness sector, where a strategic group of public enterprises now exists in food, dairy, cement, paper and cardboard and sugar. In all, the government decided to invest US$1 billion of national reserves into key elements of the Plan.

The transition to a plural economy has been contentious, and nowhere more so than in the sugar sector. Traditionally, Bolivia has been self-sufficient in this commodity, and even able to generate modest surpluses (see figure).[lxxiii] But 2010/2011 saw serious price rises and massive queues, with accusations of production inefficiencies, deliberate shortfalls, corruption, hoarding and smuggling.[lxxiv] As dialogue broke down between government and private sector, MDPyEP intervened by guaranteeing fixed prices for consumers, imposing border controls including a temporary ban on exports, nationalizing a refinery, building up a strategic reserve of sugar[lxxv] and pressing for lengthy prison sentences for food hoarding.[lxxvi]

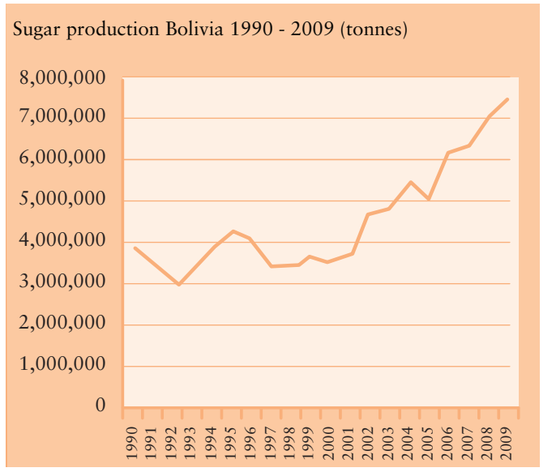



*Figure 4.4*

This level of state intervention in a sector would likely impact on productivity, unless information asymmetries could be minimized. So the final piece of the sugar sector policy was provided by the recent introduction by MDPyEP of the *Sistema Integral de Información para las Exportaciones y el Comercio Interno* (SIEXCO: or the Integrated Information System for Exports and Domestic Trade)[lxxvii].

SIEXCO is an innovative web-based platform for daily logging of sugar production and sales data, aiming to provide policy-makers with complete, confidential, real-time visibility across the entire sugar supply chain. Implementing SIEXCO has required close collaboration across the value chain, including sugar cane producers (Unión de Cañeros Guabirá, Federación de Cañeros de Santa Cruz, Federación de Cañeros del Norte, Unión de Cañeros Unagro y BIBOSI), refineries (IAG, IABSA, UNAGRO, La Bélgica y San Aurelio), the public enterprise AZUCARBOL[lxxviii], the Agricultural Chamber of El Oriente and government food company EMAPA. The software was developed by a Bolivian IT company.

At the time of writing, it was too soon to say whether SIEXCO will work as intended. Early indications are that sugar prices seem to have stabilized.

*Sources: Interviews with MDPyEP; Cámara Nacional de Comercio.*



# Case: Attracting knowledge investment: Panamá's SEM Office and Ciudad de Saber

"We have been guardians of the popular economy, we have worked hard so that prices can be kept affordable for the population and we are "We got here by working as a national team, and the Ministry of Trade and Industries has made a significant input into attracting foreign investors to Panama."

***Ricardo A. Quijano Jiménez, Ministro de Comercio e Industrias***[lxxix]

In September 2011, the Ministers of Economy and Finance (MEF) and Trade and Industry (MICI), together with the heads of the Economic Secretariat and the *Centro Nacional de Competitividad* (CNC) celebrated Panama joining the ranks of the 50 most competitive economies globally.[lxxx] The country of 3.5 million people also has seen continuous improvements in human development, notably in terms of health. Panama's competitiveness depends on its well-developed infrastructure and financial markets, according to hard data and executives surveyed by the Latin American Center for Competitiveness and Sustainable Development (CLACDS) at INCAE Business School. The prevalence of banks in the economy and Panama's pivotal location, major infrastructure investments and primary asset, the canal, are indeed strong foundations.

Of course, policy-makers in both the previous and current administrations have recognized ongoing challenges. In a process called *Agenda País*, convened by the Cámara de Comercio, Indústrias y Agricultura and media group Medcom in the run-up to the 2010 elections, a series of opinion polls and debates identified priorities in areas such as education, transport and inclusion (particularly among indigenous groups).[lxxxi] There has also been concern that foreign investors have not fully appreciated the benefits of locating in the country. There is also discussion about the extent to which local businesses gain from the trade passing through the canal, and in terms of industrial performance UNIDO's CIP index shows that Panama's industrial sector is relatively undeveloped.

To address these concerns about inward investment, Law 41 of 2007 set up a range of incentives for multinationals wanting to set up regional headquarters in Panama ("*Sedes de Empresas Multinacionales*" or SEM). *Panamá's Plan Estrategico de Gobierno 2010-2014* (Government Strategic Plan) noted that the country lacked "a well-coordinated and professional interaction with the international business community. Businesses looking to invest in Panama have to navigate their way through an intricate network of government and private institutions to get doors opened." One of the key priorities was thus to set up an investment promotion agency to attract more SEMs.

The SEM Office, located in MICI, provides this function. It was inspired by the models of Chile's CORFO (InvestChile[lxxxii]) and Singapore's Economic Development Board, which has been established for 50 years.[lxxxiii] It is fair to say that the SEM Office is operating at a more modest scale than its peers in Singapore and Chile. In mid-2011, it had a staff of five people, and its promotional materials and website provide the essentials, but are not yet world-class. Despite these constraints, the SEM office has enjoyed some notable successes: to date, the country has attracted nearly 60 multinationals, bringing with them a direct investment of US$350 million and creating some 860 local jobs.[lxxxiv] Companies have been attracted in all priority sectors: logistics (e.g. Maersk), tourism (e.g. Thunderbird), agriculture (e.g. Nestlé) and financial services (e.g. Safra Asset Management). The SEM office plans to expand in future.

*In Panama, the 'knowledge economy' is clustered in the City of Knowledge, a technology park and incubator, an international organization and NGO hub, and an academic campus all rolled into one.*

The attraction of world-class firms is particularly important given the patchy track record of local enterprises in providing training. In the World Bank's 2010 Enterprise Survey, just 11 per cent of firms said they offered formal training (far lower than any other country in the study group). The biggest benefit of world-class enterprises may not be the direct jobs but the knowledge spillovers generated as local staff move from one employer to another. Such spillovers have not arisen from the Panama Canal Authority, where jobs are so highly prized that there is minimal staff turnover. There are high expectations for the foreign enterprises now locating in Panama.

Panama's inward investment strategy is focused not just on attracting large multinational businesses but also high-tech companies and international organizations, an approach also used by Singapore's EDB to good effect. In Panama, the 'knowledge economy' is clustered in the Ciudad de Saber (City of Knowledge or CDS). CDS is a technology park and incubator, an international organization and NGO hub, and an academic campus all rolled into one. It is located on the attractive former US military base of Clayton. Like other 'knowledge economy hubs', it has a convention centre, hospitality villas, good internet provision and the ambition of being sustainable and a centre of excellence on human development. It is also run by a non-profit foundation.

But what makes the CDS unique is its stated goal of being a knowledge management network.[lxxxv] The three strands to this network are an interactive online directory of services; connections to 12 local institutions; and affiliations with 25 global networks.[lxxxvi] There are still gaps in the vision: no wifi cloud, for example. But the 'third places' so necessary for informal knowledge networking – cafés, canteens, concerts etc – are gradually beginning to appear. The ultimate indicator of success will be if knowledge is recognized as a key sector in the next Government Strategic Plan.

*Sources: interviews with SEM Office & MICI, CNC, CCIAP, CDS.*



## Case: Sharing technology in Peru's pisco, footwear and gastronomy sectors

"Competitiveness is central, if we want to take advantage of the opportunities on offer, for example through free trade agreements, and it's important for social inclusion that SMEs benefit from these trade treaties. So often, policies are developed by different parts of government, resulting in heterogeneity both of objectives and beneficiaries. In general, we have a sort of disorder, without a real level of coordination among programmes, and this is not an efficient use of resources."

***Kurt Burneo, Ministro de Producción***[lxxxvii]

Peru has achieved a solid performance in competitiveness in recent years, approaching the level of Panama, Costa Rica, Turkey and Vietnam in WEF's 2011-12 Global Competitiveness Index. There is broad consensus on the need to tackle remaining challenges including infrastructure, institutions, higher education and training, and business innovation, according to the survey of executives coordinated by the Centro de Desarrollo Industrial (CDI) at the Sociedad Nacional de Industrias.

Peru's nearly 30 million people have a rising level of human development and in the year 2000 pulled somewhat ahead of the average for Latin America and the Caribbean. While Peru has enjoyed rapid economic growth, policy-makers raise concerns about the model, notably its reliance on natural resources where success has been driven by rising commodity prices. There are significant variations in human development at regional and provincial levels, according to UNDP. There are also major discrepancies in 'state density', the overlapping provision of core services such as identity, health, education, sanitation and electricity.[lxxxviii] Concern about income inequality was a dominant theme in the 2011 electoral campaigns. Water security is a major concern in the face of climate change. The Humala administration's commitment to inclusive growth is evidenced by the creation of a new Ministry of Development and Social Inclusion *(Ministerio de Desarrollo e Inclusión Social)*.

In terms of industrial development, the country has improved its competitive performance according to UNIDO between 2005 and 2009, but as other countries in the region have also improved their performance, Peru still lags behind Colombia and Chile. Entrepreneurs are so negative about levels of R&D and collaboration between private and public sectors that they rate Peru's performance on innovation the same as Zambia's, which has a GDP/capita of US$1,221. UNCTAD and OECD have also made constructive critiques of science policy in Peru. On the positive side, Peru's carbon emissions intensity has declined in the past decade (IEA, 2011).

Thus incoming Production Minister Borneo, who led the Perú Posible process, has announced the creation of a single entity responsible for coordinating all competitiveness activities, the Central Agency for Competitiveness Policy *(Agencia Centralizada de Políticas de Competitividad)*. Moreover, Prime Minister Salomón Lerner Ghitis announced at a Scientific Meeting in August 2011 the creation of a new Ministry of Science and Technology and a tenfold increase in the national R&D budget, which should reach 1 per cent of GDP by 2015.[lxxxix]

These new institutions will need to draw on the existing ecosystem of actors, and notably the network of technological innovation centres (Red de Centros de Innovación Tecnológica, or Red de CITEs). The network consists of 17 CITEs located in nine different regions of Peru. The CITEs cover agro-industry, wood, furniture, leather and footwear, textiles and fashion, logistics and software. The Red

de CITEs has as its goal to share knowledge and achieve synergy between these 17 centres. It does so through training, technical assistance, laboratories and standards, product development, specialized information and model plants to enhance productivity. Thus, it is an energetic and ambitious network. What is the performance of the CITEs? Two CITEs were recently reviewed as part of the Latin American and Caribbean Research Network Project "Innovation, R&D Investment and Productivity in Latin American and Caribbean Firms." CITEvid supports the wine-derived spirit Pisco and its value chain in Ica, which has enjoyed rapid growth in quality and sales over the past 10 years.[xc] It is sponsored by the Ministry and Spanish technical cooperation. CITEccal has been supporting the footwear sector in Lima, with its complex value chain, since 1998, again with Spanish support.[xci] Although a mature industry, exports of shoes also increased rapidly in the 2000s. Despite various innovations, both are considered low/medium technology sectors.

"Of particular interest is the role of technical standards as a means of technological diffusion", says Juana Kuramoto at the research institute Grade. Pisco has 10 technical norms and the industry is now seeking World Intellectual Property Organization denomination (Chile also makes a pisco but the Peruvian producers consider it inferior). In the leather shoe sector, some 45 technical standards act as a coordination mechanism to enhance productivity along the value chain, which is relatively fractured (Kuramoto, 2011).

Eight out of 10 Pisco firms interviewed by Kuramoto reported that CITEvid's services helped increase their knowledge. Firms were using traditional methods without knowing why; CITEvid "helped firms to open the "black box." Half of them are now confident to build experimentation into their processes. Firms are well-networked with universities and often belong to business associations.
In footwear, firms reported satisfaction with the CITE, though more for help with technical compliance than with knowledge or growing market share. Firms in the footwear sector across Lima are weakly associated with each other – they cannot be said to form a cluster. However, roughly half of them are linked to universities and business associations.

A challenge for the CITE network is Kuramoto's finding that "as firms grow and begin demanding more sophisticated technological services, the CITEs cannot meet their demands. This has to do with insufficient funds to upgrade the CITEs' services and to hire high skill personnel."

A further dilemma for the Red de CITEs is posed by the emergence of a dynamic gastronomy sector in Peru over the past decade. Because this is an unconventional sector, statistics are not available on its size, employment or GVA. But by all available measures this is a 'hot' sector. Lima now claims more cookery schools than any other city in the world, tourists stay extra days in the capital, not just to enjoy its signature seafood dish ceviche but many other distinctive products too. There is a Casa de Gastronomia and the charismatic celebrity chef Gaston Acurio. There are food fairs like Mistura, a fast growing chain of Peruvian restaurants (La Mar), and certificates of origin for numerous food items.[xcii] High quality food is available from street vendors and on petrol station forecourts.

"So why, despite all these indicators, don't we see Peruvian restaurants all over the world?", asks Gastón Acurio. "The answer is more than obvious. We've got the resources, we've got the produce. What we need are the brands. Peruvian brands for Peruvian culinary products worldwide. That's the key."[xciii] The gastronomy revolution has succeeded without much state support, let alone its own CITE, until now. So the question is, what support, if any, is appropriate? As competitiveness policies become more focused and funding for R&D increases massively, what is the best format for developing technological standards and capturing tacit knowledge? This is sure to be a lively debate for the new and existing institutions in Peru.

*Sources: Interviews with José Padilla, Mincetur; Juana Kuramoto, Grade; Mercedes Inés Carazu, PRODUCE; web sites & PDFs.*



# Case: SMEs accessing government contracts, República Dominicana

"Micro, small and medium enterprises are the second generator of employment in the economy after agriculture. They are a pillar of economic and social development."

***Lic. Manuel García Arévalo, Ministro de Industria y Comercio***[xciv]

The República Dominicana is at a critical point in its economic policy. The country's 10.2 million people have an average Human Development Index value of 0.663 and a GDP per capita of US$5,200, and the country has enjoyed growth rates averaging 4.5 per cent in recent years. A key feature of the country identified by interviewees is the sheer diversity of trading opportunities offered by its unique location. The country looks towards both Central America (linguistically, and is part of the DR-CAFTA free trade agreement) and the Caribbean (geographically). It shares an economically-active border with Haiti, the poorest country in the LAC region, yet also has export linkages to a large Caribbean diaspora in North America (with the DR-CAFTA free trade agreement). The country also has strong cultural and economic ties with Spain, and the rest of the EU.

Despite these opportunities, the country has struggled to improve its competitiveness in recent years. Indeed, it was overtaken by Bolivia and Ethiopia in WEF's 2011-12 Global Competitiveness Index. The major economic challenges facing the country identified in various recent studies and by interviewees are primarily institutional: tackling corruption and crime, improving bureaucratic efficiency, reaching consensus on tax rates, enhancing overall education and worker skills, providing better finance for business, and solving electricity supply problems. The country has been steadily reducing the carbon emissions intensity of the economy in the past decade (IEA, 2011).

To tackle these competitiveness challenges, the Consejo Nacional de Competitividad (CNC) was set up by decree in 2001, and ratified in 2006. Its broad mission is to implement the Plan Nacional de Competitividad Sistémica (Integrated National Competitiveness Plan, 2010). The plan set an ambitious goal for 2020, for RD to be "fully integrated into the global economy, with a platform of competitive, sustainable and equitable development". It has a particular focus on cluster development in tourism, agro-industry, manufacturing, construction and ICT.

Over 100 workshops and focus groups fed into the national competitiveness plan. For example, the 2007 Global Entrepreneurship Monitor study was led by the Pontificia Universidad Católica Madre y Maestra (PUCMM), supported by the Centro de Exportación e Inversión de la República Dominicana (CEI-RD), the Chamber of Deputies, Gallup Dominicana and Grupo Vicini, as well as the CNC.[xcv] According to Latinobarómetro, entrepreneurs are significantly more trusted in the República Dominicana than in many countries in the region - which explains the high level of multi-stakeholder policymaking.
Other competitiveness strategies in developing countries have also set ambitious goals, used thorough stakeholder engagement, and produced substantial reports. As Dr. Andrés Van der Horst, executive director of CNC has said, "now, the challenge is successful implementation".

So what is CNC's implementation capability? It is a high-level council compared to some others in the region, chaired by the President and with six

ministers on board, as well as 11 representatives from the private sector. Unusually, the council is consultative, while the executive director is a state secretary. The plan dedicates five of its 186 pages to implementation, setting out the logic for strengthening the CNC, by setting up a mixed financing fund; new implementation, evaluation, follow-up and communication functions; an Observatory of Competitiveness (supported by UNDP); and five Centros Empresariales de Articulación Productiva to support the clusters, and teams to work on regulation and business climate; innovation and technology development; government competitiveness; and SME competitiveness. The CNC has thus enhanced its implementation responsibilities significantly. Some early successes will help to overcome scepticism among some stakeholders about the effectiveness of this type of initiative.

Taking the SME work stream as an important example, what mechanisms are in place for successful implementation of the plan? Policy-makers focus on small enterprise numbers as a key indicator of performance (Acs & Szerb, 2010). Much effort is expended in counting the numbers of SMEs in different size and turnover categories, and working on incentives or regulation to formalize them; and mechanisms to scale up training and credit for them. However, many SMEs remain informal and resistant to credit and growth. Based on the best data assembled in interviews for this report, Table 4.2 shows that different countries have quite different densities of SMEs per 1,000 people (the figures do need to be handled with caution due to differences in data quality and definitions). The República Dominicana has a reasonably healthy entrepreneurial base compared to its peers, with an estimated 600,000 micro, small and medium enterprises (MSMEs), providing in excess of a million jobs and generating a quarter of GDP.[xcvi] Some 17 per cent of the adult population is at the early stages of enterprise; four in ten entrepreneurs are women (van der Linde et al., 2008). This is a healthy density of entrepreneurs by regional and international standards.[xcvii] Bananas, cocoa, beauty products and plastics are all growth clusters.

*Table 4.2: Estimated SME density in study group countries*

| Country | Micro, Small & Medium Enterprises (MSMEs) (most recent year) | MSMEs per 1,000 people |
|---|---|---|
| Bolivia (Plurinational State of) | 800,000 | 76.7 |
| Costa Rica | 100,500 | 22.0 |
| Dominican Republic | 600,000 | 64.0 |
| Egypt, Arab Rep. | 3,322,476 | 41.2 |
| El Salvador | 461,642 | 74.5 |
| Panama | 539,000 | 158.3 |
| Peru | 2,500,000 | 84.9 |
| Serbia | 314,827 | 43.1 |
| Turkey | 3,000,000 | 40.7 |
| Vietnam | 2,718,000 | 31.1 |



However, a survey in 2005 suggested that only about 10 per cent of Dominican businesses were exporting directly. These figures were lower than most other countries in the study group (Enterprise Survey 2005). Only 44,600 SMEs are registered (8 per cent). A panel of 36 local experts identified that knowledge and R&D transfer to new enterprises was one of three major obstacles to their growth, in addition to public policy and finance (van der Linde et al., 2008). To address this challenge, the Competitiveness Plan has been translated into the 2010 strategic plan of the Ministry of Industry and Commerce. The Ministry's Strategic Plan sets out five actions to support SMEs:

- Mechanisms to enable better access to appropriate finance;
- Training and assessment to enhance productivity and innovation;
- Simplifying legal and tax procedures to increase formalization;
- Promoting entrepreneurial initiatives; and
- Securing better access by SMEs to state procurement.[xcviii]

Do SMEs need more finance and capacity building? For a country of 10 million people, there are numerous bodies supporting SMEs. To name only the most prominent:

- Consejo Nacional de Promoción y Apoyo a la Micro, Pequeña y Mediana Empresa (PROMIPYME)
- Corporación de Fomento Industrial (CFI)
- Centro de Exportación e Inversión de la República Dominicana (CEI-RD)
- Instituto Nacional de Formación Técnico Profesional (INFOTEP)
- Instituto de Innovación en Biotecnología e Industria (IIBI)
- Fondo para el Financiamiento de la Microempresa (FONDOMICRO)
- Asociación Dominicana para el Desarrollo de la Mujer (ADOPEM)
- Fundación Dominicana de Desarrollo (FDD)
- Centro de Apoyo a la Micro, Pequeña y Mediana Empresa (CAMPE) and Centro de Emprendedurismo e Innovación (CEIINTEC) at the Universidad INTEC
- Red de Cajas de Herramientas MYPYME, a GIZ supported portal / tool kit for Guatemala, Nicaragua, and Dominican Republic;[xcix]
- Programa de Apoyo a las Pequeñas Empresas Privadas Dominicanas (PROEMPRESA)
- Confederación Dominicana de la Pequeña y Mediana Empresa (CODOPYME)

*According to Latinobarómetro, entrepreneurs are significantly more trusted in the República Dominicana than in many countries in the region – which exlains the high level of multi-stakeholder policymaking.*

In all, well over a dozen institutions[cc] are actively engaged in supporting SMEs. Indeed, as a result some entities are underfunded and others compete with each other to reach the same SMEs.

CODOPYME (the Dominican Confederation of the Small and Medium Sized Business Inc.) is unusual in focusing its lobbying efforts on the concrete opportunity of better access by SMEs to state procurement. CODOPYME is a non-profit organization established in 1983-85, with an executive committee of 12-13 members, and represents some three-dozen affiliated associations (federations, cooperatives, associations, unions), supporting SMEs at the local and sectoral level. It offers a range of technical services to members, including representing their interests in numerous national councils and commissions.[ci]

SMEs face many obstacles in winning state contracts. This is the case even in the EU, where public procurement is one sixth of total GDP, and where 2004 directives mandate a level playing field for small businesses.[cii] A recent study found that SMEs won only 34 per cent of European public procurement in the period 2006-2008, despite that fact that they account for 52 per cent of European GDP.[ciii] Only in a few European countries, like Germany and Slovakia, do SMEs win their 'fair share' of public contracts.

In República Dominicana, public procurement is well worth pursuing, as public contracts are worth Pesos 65 billion (approximately US$1 billion) a year. But SMEs face an uphill battle. Although the SME Law mandates a share of 15 per cent of public procurement, in 2009 they won a modest 7 per cent of Ministry of Education spending. Enterprises face difficulties in obtaining information; lack of knowledge about tender procedures; the large size of contracts; insufficient time and money to prepare bids; administrative hurdles; jargon; restrictive qualification requirements; and prohibitive financial guarantees required. On top of this, one in seven companies say they have to give a gift to win a government contract (2005 Enterprise Survey) and over 40 per cent of government agencies do not fully comply with public procurement laws, according to research by Participación Ciudadana, the local chapter of Transparency International.[civ] Slow payment is also a norm.

Consequently, CODOPYME still has a huge task – both high-level networking and basic knowledge sharing - to level the procurement playing field for its members. "We are riding on a lion", says Francisco Capellán, President of CODOPYME.

*Sources: interviews with Francisco Capellán & Eduardo Martínez of CODOPYME; CNC website, PDFs.*



# 4.6 Conclusions

As outlined in Chapter Two, the key measures of inter-organizational networking available for a large country sample include the quality and quantity of local suppliers; the state of cluster development; the extent to which business and universities collaborate on research and development (R&D) in a country (all from the annual WEF enterprise survey); the degree to which individuals are involved and active in professional associations (from the World Values Survey). It is disappointing that competitiveness surveys and public opinion polls do not gather more directly relevant data on knowledge networking. Ideally, one would like to learn the views of executives, policy-makers, researchers and the general public on the trust-worthiness and willingness to engage of the respective sectors, as well as views about the quality of dialogue between the sectors on economic matters. One-off studies have also asked what percentage of senior economic policy-makers have private sector experience. Such information should be gathered much more systematically.

Countries that perform well on competitiveness indices, such as Japan, the USA, Switzerland, Sweden and Germany, also do well on the measure of inter-organizational networking, which is not surprising given the crossover of indicators. More unexpected perhaps is the strong performance of countries like Dominican Republic, Viet Nam and Turkey in the top 50 for inter-organizational networks. Ethiopia and South East European countries come lower down the list. The recent efforts on building better dialogue between public and private sectors in those countries, featured in the cases of the Serbian Parliament of Enterprises and Ethiopia's PSD Hub, should over time help to improve public-private relations. Bolivia's experiment with using a web platform to add transparency in the contested sugar value chain, is also worth watching. Trust is the oxygen exhaled by growing networks.

While business associations may enjoy higher levels of public trust than usual in countries like the Dominican Republic, this does not automatically translate into winning victories for their members (for example to level the playing field for SMEs in government procurement). In the cases of Costa Rica and Panama, the challenge is more about benefiting more fully from existing success in attracting foreign investment. For Costa Rica, the lesson may be that local firms need to constantly refresh their networks to avoid 'knowledge lock-ins' and mature into product and process innovation. For Panama, the challenge is to nurture a multiplicity of informal networks in the City of Knowledge. In Peru, an issue for policy-makers is whether and if so how to intervene in one of the country's fastest growing sectors, gastronomy. The answer may be in moving from knowledge exchange to harmonization by offering technical standards that support the sector. The Costa Rican and Peruvian cases also underline the importance of granularity: each sector has its own evolving knowledge needs and speeds, and the design and governance of knowledge sharing networks must therefore be flexible. Finally, it is noteworthy that while many national strategies are now discussing the opportunities of 'green industry', the range of practical initiatives remains quite limited and the overall energy intensity of the economy is rising or static in some countries.

While policy-makers now routinely talk about the importance of knowledge sharing in their industrial policies, this chapter underlines the diversity and complexity of establishing knowledge networks in economic policy. Walking the talk by initiating and coordinating effective inter-institutional networks is a substantial task, and will only be undertaken by those who are convinced that knowledge networks are the key to prosperity.

# Chapter 5: The Knowledge Organization: Intra-organizational Networks

Kazuki Kitaoka, Alex MacGillivray, Axel Marx and Cormac O'Reilly

'Well managed network connectivity is critical to performance, learning and innovation."

***Cross and Parker***[cv]

## 5.1 INTRODUCTION

The basic premise of a social network approach within organizations is that knowledge creation and information exchange *primarily* occurs between persons notwithstanding the exponential growth of technical knowledge management tools such as databases, the internet, repositories, etc. within organizations. Organizational research has consistently shown that internal interconnectedness is crucial for organizational performance, *"because relationships are critical for obtaining information, solving problems and learning how to do your work"* Robert Cross and Andrew Parker (2004) *The Hidden Power of Social Networks*.

*There are many possibilities to share expertise online through exchange, debate and collaboration.*



## 5.2 Improving government organization for development

"Informal networks give the bureaucracy an internal coherence and corporate identity that meritocracy alone could not provide".

***Peter Evans***

The most prominent studies on the importance of strong internal networks among governmental authorities for economic development have been conducted by Peter Evans, alone and in collaboration with James Rauch. Pointing to the case of Japan, Evans (1995, p. 49) argued that all descriptions of the Japanese state emphasize the indispensability of informal networks for the efficiency and effectiveness of government action:

*"Informal networks give the bureaucracy an internal coherence and corporate identity that meritocracy alone could not provide, but the character and consequences of these networks depend fundamentally on the strict selection process through which civil servants are chosen. The fact that formal competence, rather than clientelistic ties or traditional loyalties, is the prime requirement for entry into the network makes it much more likely that effective performance will be a valued attribute among loyal members of the various batsu."*[cvi]

Evans further explored this topic in collaboration with economist James Rauch. In two successive articles published in 1999 and 2000 they explore the effects of the way in which a government administration is organized, first on the state's economic performance (Evans and Rauch, 1999), and later on the performance of the administration itself (Rauch and Evans, 2000). Their turn towards this topic, situated at the intersection of sociology, development economics and political economy, was neither unexpected nor illogical. As they explain in Evans and Rauch, 1999, Weber's and Polanyi's interest in bureaucracy as a policy instrument, respectively from a sociological and an economic angle, although present in the first half of the 20th century, was trumped in neo-classical political economy by what they call the "Smithian" view. According to this view, government involvement would even actively hinder growth as soon as it went beyond protection of property rights (Evans and Rauch, 1999, p. 749). Following a paradigm shift in economics, away from the stark anti-statism of neo-classical economics and towards more emphasis on endogenous growth models by the 1990s, more attention was given to the effects of organizational structure on economic performance. In a quick overview, however, Evans and Rauch find that most of the work so far has been hampered by a lack of proper data on the organizational setup of government administrations (Evans and Rauch, 1999, p. 750).

The main innovation in their approach lies in the development of an indicator of the extent to which a given government organization resembles Weber's ideal-type of a professionally-run administration. They operationalize this ideal-type in terms of meritocratic recruitment and the existence of a

predictable career ladder which provides long-term tangible rewards (Evans and Rauch, 1999, p. 751). As theoretical links between these characteristics of an administrative system and the economic growth rate a state experiences, they propose both direct and indirect effects. Direct effects of meritocratic recruitment imply that those recruited possess certain minimum capabilities, while direct effects of a stable career trajectory reduce incentives for short-term personal gain through corruption. These direct effects also influence the internal network strength of an administration since *"the stability provided by internal promotion allows formation of stronger ties among them"* (Rauch & Evans, 2000, p. 52). Indirectly, a capable and dependable bureaucracy acts as a stimulus for private initiative and investment (Evans and Rauch, 1999, 752).

Their findings are remarkable, in the sense that their 'Weberianness' indicator is found to be strongly correlated to economic growth, even when controlling for initial levels of GDP and human capital (Evans and Rauch, 1999, 756). Furthermore, this indicator is found to significantly increase the predictive power of existing cross-national growth models (Evans and Rauch, 1999, 759). Follow up research by Henderson et al. (2007) found an evenly strong effect on poverty reduction. This evidence suggests that the setup of a performance-based bureaucratic system can strengthen intra-organizational networks and can indeed have profound effects on the economic performance of states.

Despite the growth of interest in knowledge sharing in the government and international organizations concerned with development, there is vastly more experience in the corporate sector. Governments are now tapping into this experience. Work on 'intellectual capital' (e.g. Stewart, 1997) was adapted by the Danish Ministry of Science, Technology and Innovation in a 1998-2003 programme to encourage companies to produce 'Intellectual Capital Statements', although the Ministry did not report on its own intellectual capital. However, the Danish Ministry of Trade and Industry did undergo a process of knowledge transformation in the early 2000s (Kjølby, 2004), as did many development agencies. There are also examples of developing country governments undertaking knowledge sharing initiatives:

- Between 1999-2003, government agencies in Thailand introduced results-based management (RBM), with its focus on personal performance indicators and rapid feedback;
- Knowledge management practices were found to be similar in public sector and private sector organizations in a study of 77 Kuwaiti organizations (Al-Athari and Zairi, 2001); and
- Centro Latinoamericano de Administración para el Desarrollo (CLAD) maintains a database (SIARE) with numerous examples of successful modernization and reform initiatives in Latin America.

Most cases focus on ministries such as planning, finance, health and education. There is less experience on knowledge sharing in the area of industry and trade. Most recent economic strategies recognize the importance of the 'knowledge economy' as a future driver of economic performance. In practice, these policy initiatives tend to focus on developing an ICT or creative industries cluster. Economic and trade ministries are only now beginning to examine their internal knowledge networking arrangements, and address the issue of how to share knowledge across the whole ecosystem of other state and private bodies.

One example is Malaysia, where knowledge management has been studied in the Ministry of Entrepreneur Development (Syed-Ikhsan & Rowland, 2004), the Implementation Coordination Unit, and the Public Works Department (Singh Sandhu et al., 2011). These surveys found high levels of enthusiasm for knowledge management. However, many respondents were uncertain as to whether their institutions actually had knowledge management strategies in place or not. In general, the information technology aspects of knowledge management were seen as less of a challenge than 'soft factors' such as behavioural change and knowledge sharing with external networks.

Another example is South Africa, where the Industrial Development Corporation (IDC) is a good example of a well-established institution which has recently been reinvigorating its mission of providing finance for industrial development in South Africa and the rest of Africa with a new focus on knowledge. The February 2011 version of the *New Growth Path and 2011/12-2013/14 Industrial Policy Action Plan (IPAP 2)* makes repeated reference to the challenge of managing tacit knowledge in emerging sectors.



# 5.3 Social networks

## How do individuals share knowledge? The Latinobarómetro survey across Latin America asked respondents about their strategies for finding information. The answer: they ask friends.

In 2010, respondents reported that their favoured strategy, over and above all formal means (radio, TV, reading, internet, meetings, contacting government), was asking friends (52 per cent of all respondents). Reliance on personal networks is particularly marked in Dominican Republic (67 per cent), Bolivia (58 per cent) and Panama (55 per cent). For private sector development, the most important people in personal networks may be those run their own business. Knowing someone who has started a business in the past two years is thus considered a key indicator of entrepreneurial potential (Acs & Szerb, 2010).

Among the general public, the prevalence of such "enterprise networks" varies from country to country, according to Global Entrepreneurship Monitor data for 41 countries. While four in ten people know an entrepreneur in Bolivia (38 per cent) and Egypt (40 per cent), half or more of those interviewed in Peru (50 per cent), Serbia (52 per cent) and Dominican Republic (54 per cent) have this personal network. Yet in Turkey, just over one in four people knows a recent entrepreneur (27 per cent).

There are gender differences at play in terms of personal knowledge networks. In Peru, more women than men know an entrepreneur (61 per cent versus 57 per cent) (Serida et al, 2010). There are also generational effects. In a Romanian study, the younger generation was more likely to be entrepreneurial while the older generation had more limited networks of existing entrepreneurs (Lafuente & Vaillant, 2008).As noted above, for the Connectedness Index we used data from the World Values Survey on membership of professional associations, which is capturing a similar type of connectivity.

There are many possibilities to share expertise online through exchange, debate and collaboration. The most popular sites on knowledge and development include:

- *Capacity4Dev* an EU-promoted community of 3,300 development practitioners, with a topic on private sector, trade & regional integration;[cvii]
- *Knowledge Management for Development (KM4Dev)*, an independent online community of 2,200 development practitioners primarily interested in knowledge management / sharing;[cviii]
- The *Donor Committee for Enterprise Development knowledge portal* to various private sector development resources, databases, blogs and groups in 15 countries, including Egypt, Ethiopia and Viet Nam (interactive functions are restricted to Donor Committee members).[cix]

Policy-makers, recognizing the importance of word-of-mouth, are now exploring the potential of internet-based social networking to engage with the general public. Ministries are opening up their intranets and setting up Facebook groups and it is not unusual for an industry minister to use Twitter.

# 5.4 Case studies

## The following examples illustrate internal reform of organizational capacity with a view to strengthening internal network capacity:

- El Salvador's strong progress in the mid-2000s in upgrading its bureaucratic capabilities.
- The efforts of the Egyptian Ministry of Industry's Technology and Innovation Centres to increase their collaborative potential.
- The strong emphasis on implementation, monitoring and coordination mechanisms in Turkey's ambitious industrial strategy.
- *Teamworks*, the ambitious UNDP-led social knowledge network.

*Egyptians are scientifically and technologically savvy. Indeed, Egypt has a far higher density of both researchers and scientific papers per million inhabitants than most other countries in Africa.*



## Case: Bureaucratic reform in El Salvador

"We have worked very intensively with the country's industrial sector and with the industrial sector associations. Primarily the Ministry of Economy, but also other key state institutions, in order to define our industrial policy."

***Dr. Héctor Dada Hirezi, Minister of Economy, May 2011***[cx]

Between 1980 and 2010 El Salvador's human development rose by 1.2 per cent annually. This progress saw the country of just over 6 million overtake the world average in the mid-1990s, although it still lags behind the regional average in 2010, held back by contraction and then sluggish growth in 2009 and 2010. Pockets of deprivation exist across the country, according to detailed poverty mapping by the El Salvador office of FLACSO. In common with other Central American countries, El Salvador is vulnerable to climate change, suffering in particular from heavy rainfalls.

The country's competitiveness has also remained static over this period, impacted significantly by security issues. Executives surveyed by INCAE also report concerns about the quality of the whole 'supply chain' of mathematics, science and engineering, from primary school right through to research institutions and company R&D. A Harvard study on economic potential by Ricardo Haussmann and Dani Rodrik recommended focusing strongly on capacity building so that the country could identify its own initiatives.

To add to these challenges, El Salvador has suffered from a long-standing reputation for inefficient government bureaucracy. Executives tend to criticize government bureaucracy in every country in competitiveness surveys. But in the case of El Salvador, these criticisms seem to be valid, according to an in-depth 2004 study that ranked El Salvador 12th out of 18 Latin American countries in bureaucratic capacities (Echebarría (ed), 2006; Zuvanic et al., 2010).

A comparable study was completed in 2008-09 for seven countries, as part of the Regional Plan for Strengthening and Modernization of the Civil Services and Public Administration in Central America and the Dominican Republic, supported by Spanish cooperation (AECID, FLACSO & SICA, 2010).[cxi] The 2004 and 2008 studies measured bureaucratic capacity across the same five sub-indexes assessing efficiency, merit, structural consistency (strategic coherence, consistency of direction and process), functional capacity (competence, incentives, flexibility) and integrating capacity. These sub-indexes were assessed across eight sub-systems of the civil service, such as human resources, planning and pay. The methodology, developed originally by Profesor Francisco Longo, is consistent with the *Carta Iberoamericana de la Función Pública*, formally approved by the region's governments in 2003.

How did the 2008/09 study show El Salvador? The key finding is that government capacity can be substantially enhanced in a four-year period. The

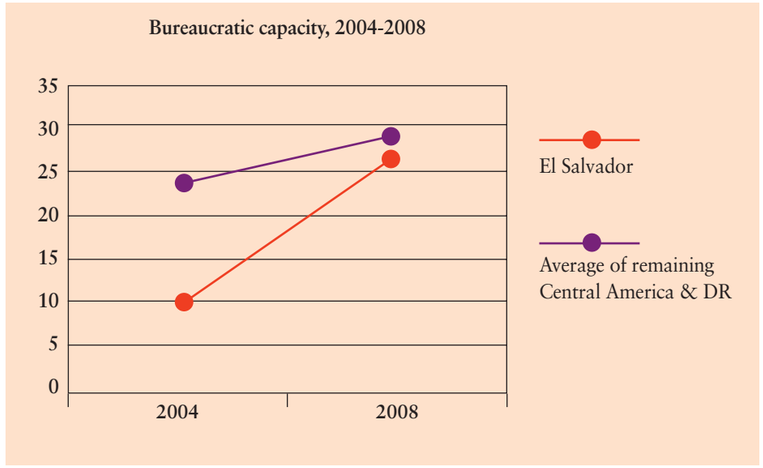



*Figure 5.1*

scale and speed of the reforms is an important challenge to those who claim that governance reform takes decades. In the period between 2004 and 2008, the civil service in El Salvador transformed itself. In 2004 it lagged far behind the average for the other countries in the region, justifying the negative views of executives in one competitiveness study after another. By 2008/09, the bureaucracy was operating at a position of near parity with the regional average, ahead of some neighbours and among the best in some sub- indexes.

How has El Salvador managed this transformation from worst in region to better-than-average in a relatively short space on time? The study does not ask specifically about KM practices within institutions, but it does address enabling conditions such as planning, training, good management and performance incentives. These reforms were led by the Secretaría Técnica (Technical Secretariat) of the Presidency and by the Ministerio de Hacienda. El Salvador was noted particularly for improvements in its merit and efficiency sub-indexes over this period.

In the aftermath of the economic crisis of 2009, the incoming FMLN administration maintained pressure on state institutions through the process of revising the Plan Quincenal de Desarrollo (Five Year Development Plan), which was launched in mid-2011. Among the initiatives were the following:

- A multi-stakeholder Economic and Social Council (CES), with membership from business, unions, NGOs and academia, meeting as often as 1-2 times a month;
- Departmental cabinets representing all ministries at local level, to listen carefully to local concerns and improve accountability;
- A new Industrial Policy, building on numerous, voluminous studies and focusing on agriculture and food security, agro-industries, high-tech industry, tourism and logistics; and
- A new Sistema Nacional de Planificacion (SNP or National Planning System, drawing on advice from CEPAL and ILPES).

Some 13 per cent of executives still see policy instability as one of the major problems for El Salvador. But if the government can build on the progress made up to 2009, and successfully embed new initiatives such as the SNP, Industrial Policy and CES, then business confidence and prosperity should steadily follow.

*Sources: IHDI, WEF, Informe Barómetro, interviews with Alfonso Goita & Gina Navas, Technical Secretariat & Pedro Antonio Argumedo, FUSADES.*



# Case: Egypt's Industry Council for Technology & Innovation

"The government is keen to support the Egyptian industry and justify the relation between public interest and competiveness of the industrial sector."

***Dr. Mahmoud Eisa, Minister for Industry and Foreign Trade (from July 21 2011)***[cxii]

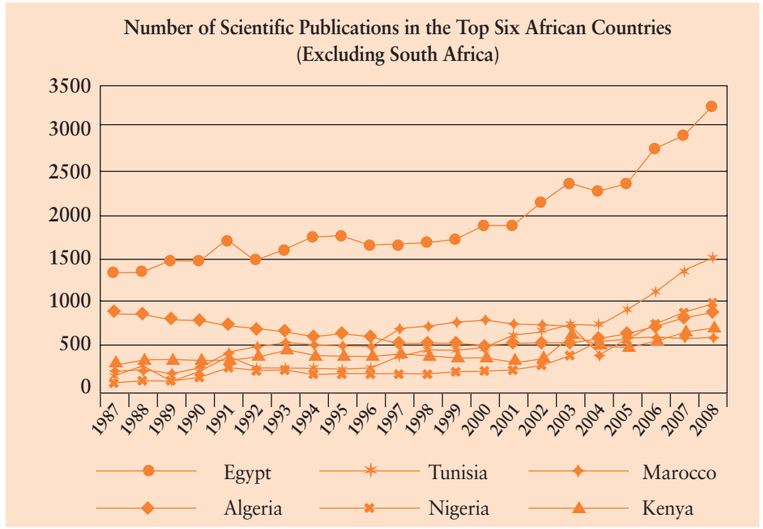
Between 1980 and 2010, human development in Egypt improved by 1.5 per cent annually, and today the country's 84.5 million people have a level of human development which is somewhat above the average for the Arab World. Of the three components of the Human Development Index, it is poverty and education that require most attention, and job creation has become a pressing demand from Egyptian youth (nearly 20 million 18-29 year olds).[cxiii] GDP per capita, though on an upward path for the decade to 2010, lags behind the oil-rich nations of the Arab World.

There are many studies on competitiveness in Egypt, including a detailed series of annual reports by the Egyptian National Competitiveness Council which advocated the concept of a 'green economy'. Mostly these studies converge on a view that the country has not managed to enhance its competitive position in the past three years, and has therefore seen its ranking relative to peer nations fall back over this period. According to executives surveyed by the Egyptian Center for Economic Studies, policy instability and workforce skills are seen as the most problematic features of doing business in the country followed by access to finance and bureaucracy (WEF 2011).

On the other hand, foreign investors and donors have renewed their interest in opportunities in Egypt since the Revolution. They recognize its strategic location, large internal market and diverse industrial base, which was galvanized by an ambitious 2004 National Industrial Development Strategy.[cxiv] Indeed, the industry sector did improve its performance significantly between 2005 and 2009, pulling ahead of countries such as Colombia, Pakistan and Mauritius in its transition from low to medium technology (UNIDO 2011). This growth has seen carbon emissions rise per unit of GDP over the past decade (IEA, 2011). Other big countries in the region have become major trading partners: Turkish investments for example have increased 20 times over in three years.[cxv]

Egyptians are scientifically and technologically savvy. Indeed, Egypt has a far higher density of both researchers and scientific papers per million inhabitants than most other countries in Africa, comparable to South Africa and Tunisia (see Figure 5.2, taken from Gaillard, 2010). It is an important conduit for knowledge flows between the Arab World and SSA (Royal Society 2011). Egyptian businesses are quite sophisticated and able to adopt technology. So what is preventing further industrial innovation? There are two major impediments to entrepreneurial take off: a lack of 'growth mentality' among entrepreneurs (Ducker, 2010); and a strong culture of informality among Egyptian SMEs. Six in ten Egyptian firms (62 per cent) identify the practices of competitors in the informal sector as a major constraint (Enterprise Survey, 2008). This is

*Figure 5.2*




significantly higher than the average for the study group (36 per cent). One well-known example is the cluster of 1,000+ recycling workshops in Mokattam, only able to export plastics to China through formal third parties that have export licences.[cxvi]

Numerous programmes seek to address the issues of informality and entrepreneurialism, including programmes that are likely to be ongoing from two institutions established under the Mubarak regime, the Industrial Modernization Centre and the Social Fund for Development. For example, IMC developed initiatives on Industrial Vertical Integration and on linking university students to businesses, alongside its capacity building, productivity, marketing and HR support for SMEs and clusters.[cxvii] The Social Fund for Development, established in 1991, has led many programmes on small enterprise and microfinance.[cxviii] The Industrial Development Authority has made land available. Many other actors have also been active, in complex permutations of state, NGO, private sector and donors.

Despite serious efforts at coordination, there has inevitably been a degree of both duplication and redundancy in these initiatives. Policy-makers are quick to point out that there is no shortage of pilot projects, but rather a lack of capacity to learn from them and share the lessons. Consultants have little incentive to share tricks of the trade gained in executing projects, while a fear of failure has made institutions risk averse to sharing experience of failure. There has also been a simple lack of IT, as a 2005 *Mapping & Assessment of Egyptian Technology & Innovation Infrastructure* by the IMC found: "despite the recent advancements in information technology, yet several ministries do not have adequate and reliable databases. In many cases data collection depends on the attitude of those in charge and on the level of clearance".

Within this complex ecosystem sit the Technology and Innovation Centers (TICs). TICs are specialized technology resources whose goal is "to reinforce knowledge, experience, capacity, know-how, and technology transfer between those who have them and those who need them".[cxix] The first TICs were established in the early 2000s by Dr Hany Barakat and colleagues at the Ministry of Industry who were alarmed at the "tremendous deterioration in Egypt in the past decades [...] in the fields of handicrafts, pottery, jewellery, embroidery and hard textiles. It has seen no growth, no new interest, no new employment and no experts taking an interest."



*Egyptian businesses are quite sophisticated and able to adopt technology. So what is preventing further industrial innovation?*

There are now over a dozen Technology Centers, located in eight cities across Egypt. Most are focused on sectors such as Fashion and Design; Marble and Quarries; Plastic; Food; Leather & Tanning; Furniture; Jewellery; Textiles & Clothing; Engineering; and Agriculture & Agro-industries. Other TICs are cross-cutting (Egypt National Cleaner Production Centre; Productivity and Quality Improvement; Packaging; Technology). Donors including UNIDO have been actively engaged. Each TIC has traditionally worked with a European or Japanese partner to provide training, testing, technology transfer agreements and other services. In 2007/08, some 7,350 trainees and 2,300 companies benefited from the services, with nearly 200 technology transfer agreements.[cxx] Inevitably, some TICs were achieving more than others. Opportunities may also have been missed due to informal governance and the scattered TIC network.

In 2010, a new Industry Council for Technology & Innovation was tasked by the Ministry of Industry with rejuvenating the work of the TICs. The key task is not to initiate further research but to make better connections, notably with universities and NGOs. One example of acting as a catalyst for existing know-how is work with experts at the American University Cairo on technology for recycling marble waste at the Shaq Al-Thu`ban marble cluster.[cxxi] The Industry Council also recognizes the need to upgrade or consolidate some TICs, as well as to form new teams to focus on emerging opportunities, such as medicinal plants, technical fibres or pharmaceuticals.

Egypt can learn from successful models of applied research, such as at Stanford; the Fraunhofer Institute; and Italy's experience with SME export consortia. The Council can also learn more from the small group of 'early adopters' in Egypt itself.

To do this, the TICs need to continuously refocus on innovation from the perspective of the entrepreneur. Evans & Rauch (1999) stress the importance of private sector experience for effective civil servants. The Industry Council's Chairman Ahmed Samy has a private-sector background, in EDS and then Hewlett-Packard. In Egypt, there is a need to encourage this trend of cross-sector experience. An induction programme for senior executives moving from private sector to public sector would improve the ability of appointees to hit the ground running and navigate their way through complex and unfamiliar procedures.

*Sources: Interview with Ahmed Samy, Chairman, Industry Council for Technology & Innovation.*

# Case: Capacity building in the Turkish Ministry of Science, Industry and Trade

"Who do not know where to go cannot go anywhere even if all the roads are open. Because if you do not know where to go, there is no [importance] where you arrive. With this [Industrial Strategy] document, we make the road way of industry and the instruments we will use in this road."

***Nihat Ergün, Minister of Science, Industry and Trade, February 2011***[cxxii]

Human development for Turkey's almost 76 million people has been rising steadily: between 1980 and 2010 the Human Development Index rose by 1.2 per cent each year (UNDP, 2011). Turkey's GDP per capita has passed the US$10,000 threshold, with a solid recovery in 2010. The 2008 *Human Development Report* urged policy makers to strengthen the capabilities of the 12 million young people who will be of working age in 2020, "to live lives of freedom and dignity, enlarging considerably their knowledge and choices" (UNDP, 2008). Improvements in general expenditure on education (as a percentage of GDP) and particularly an increase in female enrolment rates at secondary and tertiary levels would be important measures.

The country's long-term industrial vision is to become "the production base of Eurasia in medium and high tech products." The 2003 industrial policy was comprehensively revised through multi-stakeholder consultations and a far more ambitious 2011-14 strategy was published in 2010 (Republic of Turkey Ministry of Industry and Trade, 2010). The country has strong industrial foundations to deliver on its vision. Turkey is among the top 35 countries and at a comparable level to Norway or Poland, according to UNIDO's Competitive Industrial Performance index (UNIDO, 2011). Turkey has more industrial breadth than many G20 countries; the strategy covers seven broad sectors, from automotives and machinery to textiles and food. One result of this industrial breadth is that Turkey's carbon emissions intensity ($CO_2$/unit GDP) has remained static over the past decade (IEA, 2011).

The strategy also focuses on eight horizontal policy areas: a state aid system, which is a part of an effective investment and business environment that can direct firms towards increasing their productivity; international trade and investment; skills and human resources; SME access to finance; technological capacities of firms; infrastructure upgrading to reduce input costs; improving environmental compliance and reducing climate risk; and regional development.

Turkey's competitiveness has certainly improved in recent years. According to WEF, the economy is already transitioning to become innovation-driven. Turkey's inward FDI track record has shown rapid growth in recent years, with stocks rising from around 10 per cent of GDP in 2008 to around 25 per cent in 2010. The 2008 enterprise survey by the World Bank showed that Turkish managers had more experience than their counterparts in the rest of the study group, and that nearly a third of firms have internationally recognized quality certification. More credit is available for entrepreneurs, reaching nearly 70,000 SMEs in 2009. Research in Izmir shows that local policy networks are as important as other widely recognised factors of competitiveness in driving local economic performance (Eraydin et al., 2008). "Turkey has improved its scientific outputs at a rate almost rivalling that of China ... and now spends more annually in cash terms than either Denmark, Finland or Norway" (Royal Society, 2011).



*Turkey has more industrial breadth than many G20 countries; the strategy covers seven broad sectors, from automotives and machinery to textiles and food.*

Specific challenges remain, of course. Executives are concerned about tax and currency regulations; worker skills; and labour market rigidities, according to the survey by TUSIAD Sabanci University Competitiveness Forum (WEF, 2011). The percentage of firms offering formal training is below average, and executives admit that they are reluctant to delegate authority (see Table 5.1. from the 2008 World Bank Enterprise Survey). In all, the strategy envisages some 73 actions to address such challenges; sector strategies are also being produced.

The greatest challenge for any industrial strategy, however, is coordination. *"A government should evaluate its industrial policy framework not by asking questions of the type: which tax breaks or subsidies are we using? which sectors have we identified? what is the budget we have allocated for industrial promotion?"* warn Ricardo Hausmann, Dani Rodrik and Charles Sabel (2007). *"The relevant questions instead are: have we set up the institutions that engage the bureaucrats in an ongoing conversation of pertinent themes with the private sector, and do we have the capacity to respond selectively, yet also quickly and using a variety of updated policies, to the economic opportunities that these conversations are helping identify?"* In other words, industrial policy should follow the account-ability principles of relevance, inclusivity and responsiveness. (AccountAbility, 2009).

*Table 5.1 Turkey: some key characteristics of enterprises in international comparison*

| Country | Years of Experience of the Top Manager Working in the Firm's Sector | % of Firms With Internationally Recognized Quality Certifification | % of Firms Offering Formal Training |
|---|---|---|---|
| Bolivia, Plurinational State of | 21 | 22 | 57 |
| Costa Rica | 20 | 13 | 55 |
| Dominican Republic | - | 10 | 53 |
| Egypt, Arab Rep. | 10 | 21 | 22 |
| El Salvador | 20 | 14 | 61 |
| Ethopia | 15 | 4 | 38 |
| Panama | 11 | 23 | 11 |
| Peru | 22 | 14 | 60 |
| Serbia | 18 | 22 | 37 |
| ***Turkey*** | ***24*** | ***30*** | ***29*** |
| Viet Nam | 15 | 17 | 44 |
| Average | 18 | 17 | 42 |

The Ministry of Industry and Trade is tasked with developing the implementation, monitoring and coordination mechanisms to execute the strategy. The Ministry recognizes the need to coordinate the contributions of a wide range of institutions. To name just some of the most important:

- Permanent Committee for the Development of Industrial Competitiveness
- State Planning Organization Undersecretariat
- Undersecretariat of Treasury
- Undersecretariat for Foreign Trade
- Secretariat General for EU Affairs
- Ministry of Finance
- Revenues Administration
- Ministry of National Education
- Ministry of Energy and Natural Resources
- Ministry of Environment and Forestry
- Ministry of Labor and Social Security
- Ministry of Transportation
- Investment Support and Promotion Agency of Turkey (ISPAT)
- Coordination Council for the Improvement of Investment Environment in Turkey (YOIKK)
- Scientific and Technological Research Council of Turkey (TÜBITAK)
- Turkish Academy of Sciences (TUBA)
- Information and Communication Technologies Authority
- Small and Medium Industry Development Organisation (KOSGEB)
- Turkish Patent Institute (TPE)
- Turkish Standards Institution (TSE)
- Turkish Accreditation Agency (TURKAK)
- The Union of Chambers and Commodity Exchanges of Turkey (TOBB)
- The Confederation of Turkish Tradesmen and Craftsmen, Turkish Industrialists' and Businessmen's Association (TÜSİAD)
- Istanbul, Gaziantep and Kocaeli Chambers of Industry
- Economic Development Foundation
- Economic Policy Research Foundation of Turkey (TEPAV)

It is one thing to solicit a wide range of inputs into an industrial strategy; quite another to coordinate ongoing, timely action from such an array of institutions, each with their own knowledge sharing processes. To achieve this, the Ministry of Science, Industry and Trade decided to form a Monitoring and Steering Committee involving key stakeholders. A monitoring and evaluation report is to be prepared not annually but every six months. The Ministry's Entrepreneur Information System will also be a basic tool. The Ministry also recognizes that it is necessary to improve its own administrative capacities as well as those of its project partners, and "to establish an effective dialogue mechanism." Support from the EU IPA (Instrument for Pre-Accession Assistance, started in 2007) is envisaged for this ambitious institutional building task.[cxxiii]

*Sources: Republic of Turkey Ministry of Industry and Trade (2010); interviews with Ministry of Science, Industry and Trade (May 2011).*



# Case: Knowledge networks for development: UNDP's *Teamworks*

"The more the tool is used to store knowledge, experience, and lessons learned, the more useful it becomes. We must all take responsibility for doing our bit to make knowledge sharing a reality."

***Helen Clark, UNDP Administrator, December, 2010***[cxxiv]

In the five years after 1996, when the World Bank branded itself as the 'knowledge bank', many other development agencies followed its lead by launching knowledge management or knowledge sharing programmes, with substantial but incomplete success (King & McGrath, 2004). As much as 80% of knowledge residing inside institutions is thought to be tacit and thus hard to share except face to face (Serrat, 2008), and yet most knowledge initiatives were designed before the launch of Facebook in February 2004.

To fill this gap in 'social knowledge networking', the UNDP Bureau for Development Policy, Knowledge Management Group, began developing its own knowledge management platform, called *Teamworks* in 2009. By November 2010 it had 7,500 users of its blogs, multimedia, social networking, community, gallery and other features, with substantial customization options. By November 2011, users had doubled to 14,500, with up to 500 active users online in a 24 hour period.[cxxv] *Teamworks* is designed to provide a forum for social networking, in order to share knowledge assets, create several types of collaborative "spaces," and establish communities of practices linking together thousands of staff members, experts, consultants, external partners and clients around the world.

Users from three dozen UN agencies are beginning to join the platform through dedicated areas, either in their own domains or under an umbrella (http://one.unteamworks.org).Trusted partners, consultants, alumni, and retirees can also be invited to join, with the intention that the tool becomes a secure online collaboration platform for development practitioners more broadly to share their knowledge and expertise. For the eight thematic areas and their individual Joint Programmes of the MDG Achievement Fund, a dedicated area has been created on *Teamworks*, accessible at https://mdgf.unteamworks.org.

Within the MDG-F *Teamworks* platform, users can:

- Network with colleagues and project partners for specific trouble-shooting and knowledge exchange;
- Establish more generic or thematic networks across the UN system and outside it;
- Profile one's work, experience and practices, promote events and improve the outreach and advocacy of one's programmes and activities;
- Build databases of private sector service providers (consultants, writers, photographers, etc.)
- Communities of Practice: create or join moderated or free-flowing Communities of Practice or ad hoc user groups;
- Pool knowledge by uploading files, bookmarks, pictures/videos, news articles, meeting minutes and blogs; and conduct research on resources provided by colleagues of different thematic areas and UN agencies; and
- Seek solutions or policy advice.

*Teamworks is to provide a forum for social networking, in order to share knowledge assets, create collaborative "spaces", and establish communities of practice linking together thousands of UN staff, experts and external partners around the world.*

The *Teamworks* platform is being used for the MDG-F Joint Programmes (JP) in the Private Sector and Development window via a general open space for the thematic window as a whole and individual Joint Programme spaces for each of the 12 countries, with restricted access. The general space features: professional knowledge, experience and information (reports, links, bookmarks, manuals, guidelines etc.); a virtual "Community of Practice" in PSD; Discussions; Newsletter (Bulletin board); Cross-fertilization with related areas or windows through cross-posting of uploaded content (to other groups on *Teamworks* including user spaces or thematic spaces related to the programme (e.g. the Youth Employment and Migration thematic user space). The 12 specific Joint Programme country level spaces are linked to the PSD thematic space; and in addition have event spaces; related project and organizational documentation etc.

The online platform has already been a valued tool for collaboration and interaction between JP coordinators involved in the MDG-F programmes. This was particularly the case in the run-up to and follow-up from the March 2011 Panama Meeting for MDG-F JP coordinators in PSD. There is strong support of other initiatives or programmes for cross-fertilization of the various thematic user spaces related to the general PSD space. For instance, the Value Chain Development Group user space of the UNDP hosted domain links relevant content and uploads to the PSD window space and vice versa, in order to have outreach to a wider spectrum of users. Unlike some project websites, longer-term continuity, language capabilities, IT support and a critical mass of users is assured on the *Teamworks* site. Like many networks, however, usage tends to decline when Joint Programme coordinators get drawn back into activities in the field where online access may be more limited. Recent usage statistics for the PSD window user spaces shows more traffic from UNIDO and MGD-F head offices in Vienna and New York, and a mixed level of engagement from the 12 country teams.

UNDP support for the use of *Teamworks* is now largely in place, with a steady growth in total users and active users. What remains is the promotion of the network to other stakeholders inside and outside the UN system, and some 'success stories' showing how knowledge is flowing to where it is needed. While the numbers and usability are impressive compared to other KM and development networks, there is a long way to go when compared to Google+, Facebook or LinkedIn.

*Source: Angela Heitzeneder, UNIDO.*



# 5.5 Conclusions

As indicated in Chapter 2, key measures of organizational networking available for a large country sample come from the WEF and World Bank surveys and include the percentage of firms offering formal training; the local availability of specialized research and training services; and the extent to which companies invest in training and employee development.

As discussed, important indicators include the strength of personal networks (possibly using social network analysis); the years of experience of managers and staff; their cross-sectoral work experience; and finally, gauges of the quality of institutional KM systems (knowledge mapping and audits). To date, there are no large samples of measures looking at public sector knowledge sharing practices. The Central American exercise cited in the El Salvador case did not assess KM specifically as a gauge of bureaucratic competence. Designing knowledge sharing surveys should be a fruitful area for discussion with experts on institutional capacity building.

As one might expect, enterprises in countries such as Switzerland, Denmark, the USA, Sweden and the Netherlands perform well on these self-assessed measures of training provision. Only Costa Rica from the study group is in the top 50 and several study group countries come low down the list. Some countries present a paradox when it comes to intra-organizational networking. In the case of Turkey, managers are experienced but tend not to provide much formal training, so policy-makers should probably focus on encouraging informal on-the-job training.

On the other hand, Egypt, like Turkey, has excellent scientific and technical capabilities, but the informal networks originally tasked with transferring that knowledge to entrepreneurs have been struggling, and need more coordination. There is no one-size-fits-all approach to institutional capacity building in either public or private sector, as the experience of the National Cleaner Production Centres shows (see Chapter 1). In Turkey's industrial planning process, serious attention is paid to the issue of implementation – the space devoted to implementation in strategy documents is probably a good gauge of how likely they are to be implemented. Policy-makers also need to ensure that implementation networks have the resources and sustainability they need to deliver on their expanded remits, given that institutional transformation processes can easily take four years (as in the case of El Salvador), or even longer, making them vulnerable to cut-backs by incoming administrations.

Many of the 200+ policy-makers, business people and researchers interviewed told us that knowledge sharing is less about technical platforms than about culture and incentives. The UN's *Teamworks* experience is that the technology has to be right before the social network gets started.

# PART 3: Networks for Prosperity: Findings and Recommendations



# Networks for Prosperity: Findings and Recommendations

Kazuki Kitaoka, Alex MacGillivray, Axel Marx and Cormac O'Reilly

"Building the basic capacity to govern in countries that often lack sufficient material and human resources to pass, implement, and apply laws effectively is itself an important and valuable consequence of government networks."

***Anne-Marie Slaughter***[cxxvi]

Knowledge networking and network governance in the field of economic policy is certainly not a new phenomenon; neither is the realization that the development of a strong private sector is necessary for achieving economic, social and environmental objectives. With the rapid globalization in all spheres of our societies over the past decades, however, economic successes and the realization of social cohesion and environmental sustainability in one country depend more than ever on the performance and behaviours of its neighbours, regional leaders and global economic powers. Accordingly, both the scope of knowledge networking and the nature of the private sector have altered dramatically. This requires a closer look at the interrelationships between the knowledge networking capacities of a country, its private sector development policies and its economic, social and environmental performance.

In view of the relevance of these interrelationships for domestic policymaking and international relations alike, it is all the more surprising how under-researched they have remained in the past and how unappreciated they seem to be among policymakers and development specialists. This report has therefore made a first attempt to improve the overall understanding of these complex interrelations and has presented cases from around the world that illustrate the numerous approaches governments are currently taking in responding to their domestic, regional and global challenges through knowledge networking.

*Networks are still highly under-researched and under-appreciated among policymakers and development specialists.*

In this context, it can be observed that networks are increasingly emerging as a distinct form of governance which includes different types of public and private actors within and across organizational and national boundaries. Different types of networks exist, whether for learning, information exchange or knowledge creation.

*Networks are a distinct form of governance with important potential for knowledge creation and development performance.*

There could be significant benefits from ensuring that networks are successfully embedded. However, vibrant knowledge networking cannot only depend on existing networks but requires a living "institutional ecology", with new organisms providing new knowledge and opportunities.

*Significant benefit can be gained from networking strategies to institutionalize or "embed" networks.*

Thus successful networking implies the development of solid networks which continue over time and are built on trust, as well as a constant movement between relevant networks to capture new information.

To achieve this, more empirical evidence will be necessary on knowledge networking and there is a need for more conceptual thinking on how to measure knowledge networks and connectedness. With these caveats, a Connectedness Index has been constructed in this report for 75 countries, using the most relevant available data from a wide range of sources.

*Initial findings through the Connectedness Index are clear: networks matter for development effectiveness.*

The results show a significant variation in networks across countries and also within countries across levels of networks. There is a strong positive correlation between the Connectedness Index and government effectiveness, industrial development and economic development. Indeed, a key conclusion from the literature, from the best available international metrics, and from the 16 case studies from countries of all shapes, sizes and levels of development, is that knowledge networks could be the missing ingredient in strategies for sustainable development and prosperity.

Policymakers' interest in knowledge networks appears thus to be justified, despite the limited evidence on the causalities. They find intergovernmental knowledge networks particularly useful to better understand and freely choose from the various policy options, to coordinate policies with other members of the network and to implement policies requiring concerted action.

*Knowledge networking is not about ICT as the 'knowledge economy' but about building trust, dialogue and collaboration across sectors and borders.*

Knowledge networks can facilitate the exchange of policy-relevant knowledge among their members and the production of new knowledge and solutions. In some cases, this is being scaled up and leads to policy coordination (or even harmonization) and mutual learning. With their informal, flexible and trust-building nature, knowledge networks can lead to global/regional agenda- and norm setting and help in harmonization processes, particularly when rapid decision-making is required during crisis periods. Knowledge networks can thus be particularly useful in processes of regional and/or inter-regional integration, where a prior harmonization process can ease, support and speed up policy implementation and operations.

The role of intergovernmental knowledge networks in norm and standard setting/diffusion deserves a particular attention, in particular due to the increasing rise of private standards ruling the international private sector, thus influencing the economic performance of countries indirectly.

*Knowledge networking can be crucial in norm-setting and diffusion through peer-to-peer interaction and learning. Successful knowledge sharing depends less on IT platforms than on interests and incentives.*

This mirrors the gradual move away from the traditional model, in which international organizations were established with the primary function of developing standards and then persuading Member States to adopt them. Standard-setting knowledge networks usually work out of lean structures, are driven by policy priorities and interest of its public and/or private members, and work through a combination of policy-relevant knowledge exchange and peer pressure. In fact, through their peers, policymakers might be exposed to new practices and policy options, or even discover entirely new models or paradigms for policymaking in a specific field.

This is particularly relevant for peer-to-peer networks among developing countries and might provide a better understanding of how "South-South Cooperation" could be better operationalized in the future.



*Successful knowledge sharing depends less on IT platforms than on interests and incentives.*

Networks have a tendency to proliferate, and it is costly to participate in networks, so individuals, organizations and countries need to develop clear networking strategies. Also, despite the growing discourse on the importance of knowledge networks for development, experience on effective networking strategies and managing effective and efficient networks is limited. There is strong demand among policy-makers to learn from best practices on network management and the development of network strategies, especially in the context of private sector development. This can be achieved via study visits, workshops, mentoring, case studies and social networking. These activities can contribute to identifying success factors for network management and international organizations can support such effort as catalysts and facilitators where network structures and human and financial resources are limited.

*Further research is needed to identify success factors for network management and international organizations should support this effort.*

Cross-cutting agendas such as 'green industry', energy for all and climate adaptation, where new networks are being rapidly proliferated, may particularly benefit from such experience.

*Effective networks tend to build close working relationships with formally governed international organizations, and also with other networks.*

A final consideration regarding the need for increased cross-border knowledge exchange and policy coordination is the recently-revived call for "regional integration". Again, the nature and shortcomings in the current international system of governance has led to the concept of a 'multi-level' form of governance, extending from the local to the global level and thus speeding up problem-solving for issues of cross-border dimension. This concept is, again, closely linked to the thinking that emphasises the networked aspects of governance in order to deal with interdependencies across policy levels (local to global) and policy domains (economic, social, environmental). In many regions can be observed the parallel processes of 'regionalization' of policy and the progressive upgrading of the micro-regional level in policy processes. Indeed, there is now a wide consensus that governance is not limited to the level of the state alone but requires a system of participatory policymaking, involving those parts of society that are affected by the policies.

It can thus be argued that (1) regional governance is not incompatible with and does not negate global governance – on the contrary, it has the potential to strengthen global governance; and (2) we are today witnessing a new current in multilateral governance that gives a prominent role to regions but still maintains a series of problematic issues to be settled at the global level. To return to the knowledge network aspects above, 'good' global governance may well imply not exclusive policy jurisdiction but rather an optimal partnership between the national, regional and global levels of actors, and between state, intergovernmental and non-governmental categories of actors.

Central to this will be the intensified and better exchange of knowledge between global and regional multilateral institutions as well as their interaction and collaboration with non-state actors. Again, knowledge networks can be seen as a solution for closing the knowledge gaps and advancing necessary policy coordination in order to ensure that countries can reap the fruits from regional economic integration efforts. Central to this consideration is the establishment of a common understanding across all levels of the embedment of the knowledge gathered from multilateral networks into the actual implementation of policies and programmes. Existing international organizations can and should play a crucial role in these knowledge management processes.

*'Triangular' regional networks offer real potential for timely knowledge sharing and solution finding.*

# Recommendations

Based on these findings and conclusions, the following recommendations have been formulated for consideration by Member States:

- ***The international community should actively promote knowledge networking and network governance structures for achieving local, regional and global development objectives.*** This may include, *inter alia*, to foster international and national knowledge networking approaches in all capacity development activities; to improve national ownership through multi-stakeholder networking arrangements in the policymaking processes at all levels; to make the international system more inclusive through engagement of more countries and institutions in solution-finding processes; and to support networking arrangements with the goal of enhancing innovation and private sector development.

- ***Member States should encourage and facilitate the international knowledge networking capacities of their public and private institutions.*** This may include, *inter alia*, formulating networking strategies in relation to the achievement of development objectives and reforms; to actively support regional policy and research network participation; to invest in institutional infrastructure and innovation networks domestically and internationally; to actively upgrade the knowledge networking capacities and capabilities of domestic institutions; and to provide suitable incentives for the formation of new networks in specific fields of strategic interest.

- ***International organizations should improve their inter-institutional information and knowledge exchange systems and facilitate better knowledge networking among their members.*** This may include, *inter alia*, improving thematic information exchange in communities of practice, to provide more user-friendly platforms for knowledge sharing among members; to actively seek the involvement of non-state actors in consultation processes; and to actively support knowledge network development in relevant fields.

- ***An international and cross-sectoral consultation network should be established to further develop the initial findings*** on connectedness and knowledge networking for the achievement of development goals, and recommend measures and programmes for development effectiveness through increased knowledge networking, in particular in the field of private sector development policy.

# Annex 1: Screened Datasets

| Dataset | Source Website |
|---|---|
| A Cross-Country Database for Sector Investment and Capital | http://www.cid.harvard.edu/ciddata/ciddata.html |
| Afrobarometer - A comparative series of national public attitude surveys on democracy, markets, and civil society in Africa | http://afrobarometer.org/data2.html |
| Agricultural Measures | http://www.cid.harvard.edu/ciddata/geographydata.htm#agricultural |
| Asian Barometer Survey - A Comparative Survey of Democracy, Governance and Development | http://www.asianbarometer.org/ |
| Balance of Payments Statistics – BOP | http://www2.imfstatistics.org/BOP/ |
| Banisar - Freedom of Information | http://www.freedominfo.org/ |
| Bribe Payers Index | http://www.transparency.org/policy_research/surveys_indices/bpi |
| CEPII-Distance measures | http://www.cepii.fr/anglaisgraph/bdd/distances.htm |
| Commodity Trade Statistics Database (COMTRADE) | http://comtrade.un.org/ |
| Corruption Perceptions Index | http://www.transparency.org/policy_research/surveys_indices/cpi |
| Database of Political Institutions | http://go.worldbank.org/2EAGGLRZ40 |
| Digital Access Index | http://www.itu.int/ITU-D/ict/dai/index.html |
| Direction of Trade Statistics – DOT | http://www2.imfstatistics.org/DOT/ |
| Doing Business | http://www.doingbusiness.org/ |
| Easterly and Levine – AFDATA | http://go.worldbank.org/K7WYOCA8T0 |
| Economic Freedom of the World | http://www.freetheworld.com/release.html |
| Electoral Democracy | http://www.freedomhouse.org/ |
| Enterprise Surveys | http://www.enterprisesurveys.org/ |
| E-readiness rankings | http://www.eiu.com/site_info.asp?info_name=digitaleconomy_2010&page=noads |



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|---|---|
| Estimated Household Income Inequality Data Set (EHII) | http://utip.gov.utexas.edu/data.html |
| Eurostat Government Finance Statistics | http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database |
| Eurostat Structural business statistics (SBS) | http://epp.eurostat.ec.europa.eu/portal/page/portal/statistics/search_database |
| Failed States Index | http://www.fundforpeace.org/web/index.php?option=com_content&task=view&id=452&Itemid=908 |
| Fiscal Decentralization Indicators | http://www1.worldbank.org/publicsector/decentralization/fiscalindicators.htm |
| Foreign Direct Investment database | http://unctadstat.unctad.org/ |
| Freedom in the World | http://www.freedomhouse.org/template.cfm?page=439 |
| Freedom of the Press | http://www.freedomhouse.org/template.cfm?page=274 |
| Geert Hofstede Cultural Dimensions | http://www.geert-hofstede.com/hofstede_dimensions.php |
| Global Competitiveness Report | http://www.weforum.org/ |
| Global e-government | http://www.insidepolitics.org/policyreports.html |
| Global E-Government Survey | http://www2.unpan.org/egovkb/datacenter/CountryView.aspx?ddl=0 |
| Global Integrity Index | http://www.globalintegrity.org/data/downloads.cfm |
| Hercules Interdisciplinary Database | www.globalgovernancestudies.eu |
| Human Development Reports | http://hdr.undp.org/en/statistics/data/ |
| IDEA - Unified Database | http://www.idea.int/uid/search-adv.cfm |
| ILO - ISHIKAWA AND LAWRENCE | http://www.ilo.org/integration/resources/papers/lang--en/docName--WCMS_079175/index.htm |
| Index of Economic Freedom | http://www.heritage.org/index/Explore.aspx?view=by-region-country-year |
| International Crisis Behavior Project | http://www.cidcm.umd.edu/icb/data/ |
| International Financial Statistics – IFS | http://www.imfstatistics.org/imf/ |
| Johnson and Wallack - Database of Electoral Systems and the Personal Vote | http://dss.ucsd.edu/~jwjohnso/espv.htm |
| Kaufmann – Worldwide Governance Indicators | http://info.worldbank.org/governance/wgi/index.asp |
| KOF Index of Globalization | http://globalization.kof.ethz.ch/ |
| Köppen-Geiger Climate zones | http://www.cid.harvard.edu/ciddata/geographydata.htm#agricultural |
| Kucera Freedom of Association and Collective Bargaining Index | http://www.ilo.org/integration/resources/papers/lang--en/docName--WCMS_079117/index.htm |
| Laborsta database on labour statistics | http://laborsta.ilo.org/ |

| | |
|---|---|
| Latinobarómetro - Opnion Pública Latinoamericana | http://www.latinobarometro.org/latino/LATDatos.jsp |
| LIRGIAD Database | http://www.law.kuleuven.be/lirgiad/ |
| LSE Global Civil Society Index | http://www.lse.ac.uk/Depts/global/yearbook05.htm#introduction |
| Minorities at Risk | http://www.cidcm.umd.edu/mar/data.asp |
| OECD Industry and Services Statistics | http://oberon.sourceoecd.org/vl=754344/cl=67/nw=1/rpsv/dotstat.htm |
| OECD International Trade and Balance of Payments | http://oberon.sourceoecd.org/vl=1552319/cl=25/nw=1/rpsv/dotstat.htm |
| Open Budget Index | http://internationalbudget.org/what-we-do/open-budget-survey/?fa=Rankings |
| Penn World Table | http://pwt.econ.upenn.edu/php_site/pwt_index.php |
| Political Finance Disclosure | http://www.transparency.org/publications/gcr/gcr_2004#download |
| Political Instability Task Force - Internal Wars and Failures of Governance | http://globalpolicy.gmu.edu/pitf/pitfpset.htm |
| POLITICAL TERROR SCALE | http://www.politicalterrorscale.org/download.php |
| Polity IV Project: Political Regime Characteristics and Transitions | http://systemicpeace.org/polity/polity4.htm |
| Preliminary Transparency Index | http://go.worldbank.org/HOY0LQW0L0 |
| Press Freedom Index | http://en.rsf.org/press-freedom-index-2010,1034.html |
| Quality of Government Institute -Time Series Dataset | http://www.qog.pol.gu.se/ |
| The Cingranelli-Richards (CIRI) Human Rights Dataset | http://ciri.binghamton.edu/myciri/my_ciri_login.asp |
| The Johns Hopkins Comparative Nonprofit Sector Project (2004) | http://www.ccss.jhu.edu/index.php?section=content&view=9&sub=3 |
| The NGO Sustainability Index | http://www.usaid.gov/locations/europe_eurasia/dem_gov/ngoindex/2008/ |
| THE POLITICAL CONSTRAINT INDEX (POLCON) DATASET | http://www.management.wharton.upenn.edu/henisz/ |
| Trade Analysis and Information System | http://www.unctad.org/Templates/Page.asp?intItemID=1907&lang=1 |
| Vanhanen - Measures of Democracy | http://www.fsd.uta.fi/english/data/catalogue/FSD1289/ |
| World Development Indicators | http://databank.worldbank.org/ |
| World Governance Assessment | http://www.odi.org.uk/projects/00-07-world-governance-assessment/Dataset.html |
| World Values Survey | http://www.worldvaluessurvey.org/ |



# Annex 2: Methodological Note on the Connectedness Index

## 1. SELECTION OF VARIABLES

Three researches screened the identified datasets and made a selection of a first group of indicators. The aim was to identify variables which either directly measured a degree of connectedness or of networks or phenomena which are instrumental to strengthen networks. This initial selection was further refined considering the following criteria. First, we took into account the data coverage, both in terms of number of countries and years. Some of the selected indicators contain data only for a few sets of countries (typically, for one specific region such as barometers), and others only for one specific year that does not match with other selected indicators. As a result they were excluded from the index construction. Secondly, we performed an analysis of the content of each specific variable in order to identify indicators containing mixed concepts, i.e., composite indicators which contain networks measures but also capture other concepts that were not related to networks. If we could not separate them out we did not include them. Lastly, we performed an analysis to identify whether two or more indicators measured the same concept in order to avoid overload the composite connectedness index aggregating several times the same concept. Strongly related indicators were not included. For example, several indicators measure the economic flow between countries using more or less the same data. Another indicator initially selected for inclusion, as a proxy for inter-organizational networks, was patents. There is a significant body of literature which identifies patents as an interesting source for uncovering relations between organizations since several patents are co-owned between organizations (see Owen-Smith and Powell, 2004). However, patents do overlap with industry-university collaboration.

## 2. RE-SCALING OF VARIABLES

After the selection of indicators, the first step on creating the connectedness index and its three sub-indices was to re-scale each of the original indicators from 0 to 1, in order to normalize all indicators according to one identical scale. Normalization was required prior to data aggregation because the indicators have different measurement units (Nardo et al, 2005). In other words, as the original indicators have different scales - for example, 0-100 in the case of KOF political globalization, and 1-7 in the case of University-industry collaboration – we have transformed all the original indicators to one common scale ranging from 0-1, to make them comparable. We also applied the standardization method (Freudenberg, 2003), also called z-scores, that converts indicators to a scale with a mean of zero and standard deviation of one. The results of both methods were very similar and we opted for the re-scaling method, since it produces a small interval (0,1), increasing the effect of each part in the composite indicator, more than the z-scores transformation(Nardo et al, 2005).

*The following procedure was used to calculate the indices.*

*Firstly, for the international networks sub-index:*

i. Re-scale Political and Economic Globalization 2008 on 0-1 scale using the formula:

$$\text{(1) Re-scaled score} = \frac{\text{(Country Score – Minimum Country Score)}}{\text{(Maximum Country Score – Minimum Country Score)}}$$

The minimum and maximum values of all countries available in the KOF Index of Globalization 2008 were considered.

ii. Calculate the arithmetic mean of the re-scaled Political and Economic Globalization

iii. Re-scale the average using formula (1)

*Secondly, the Inter-organizational networks sub-index:*

i. Re-scale Networks and supporting industries using formula (1). The minimum and maximum values of all countries available in the Global Competitiveness Report 2008-2009 were used.

ii. Re-scale University x Industry Collaboration using formula (1). The minimum and maximum values of all countries available in the Global Competitiveness Report 2008-2009.

iii. Professional Association is the percentage of interviewees that are member of one professional association. It was created in the following way:

a. For countries for which the question "Belong to professional associations" is available

$$\text{Professional Association} = \frac{\text{No. of members}}{\text{No. of interviewees}}$$

b. For countries which the question "Active/Inactive membership of professional organization" is available

$$\text{Professional Association} = \frac{\text{(No. of active + No. of inactive members)}}{\text{No. of interviewees}}$$

iv. Re-scale Professional Association using formula (1). The minimum and maximum values considering all countries in the selected surveys were used.

v. Calculate the arithmetic mean of the three re-scaled components

vi. Re-scale the average

*Thirdly, the Intra-organizational networks sub-index was created as follows:*

i. Re-scale the % of Firms Offering Formal Training using formula (1). The minimum and maximum values were used, considering the most recent survey for each country.

ii. Re-scale On-the-job training using formula (1). The minimum and maximum values were used, considering all countries available in the Global Competitiveness Report 2008-2009.

iii. Calculate the arithmetic mean of the two components. When only one component was available, the single value was considered without averaging.

iv. Re-scale the average using formula (1).



*Lastly, the connectedness index was calculated as the arithmetic mean of its three components:*

international networks, inter-organizational networks and intra-organizational networks.

For the aggregation of the indicators we choose the arithmetic mean - equal weighting(Nardo et al, 2005, p. 21) -, since this is an exploratory study and we do not intend to give privilege to one specific indicator over another one, setting distinct weights for each indicator. Also, the possibility was considered to use geometric aggregation in order to avoid full compensability, i.e. poor performance in one indicator being compensated by a high performance in other (Nardo et al, 2005, p. 79). However, as we have natural zeros in the professional association indicator, applying geometric aggregation would imply a loss of variance in our composite indicator.

## 3. COMPARING THE CONNECTEDNESS-INDEX ON THE BASIS OF MEDIAN

It could be objected that in theory, through the re-scaling method, the interpretation of the median may be misleading since there is a theoretical possibility for interconnectedness to be low, although the median is high, because the maximum observation in a dataset (real observations) is far removed from a theoretical maximum. In other words, one could, on the basis of theory, construct a theoretical maximum for the sub-indices and compare that with the observed maximum in the dataset. If there is a significant gap between the theoretical maximum and the observed maximum, the median might be high, but the interconnectedness theoretically low. This argument could also be reversed with regard to the minimum scores. As a result, we assume that the observed maximum and minimum correspond to a significant degree to the theoretical maximum and minimum. We did not find indications that this might not be the case. In addition, we use the median mostly for comparative purposes.

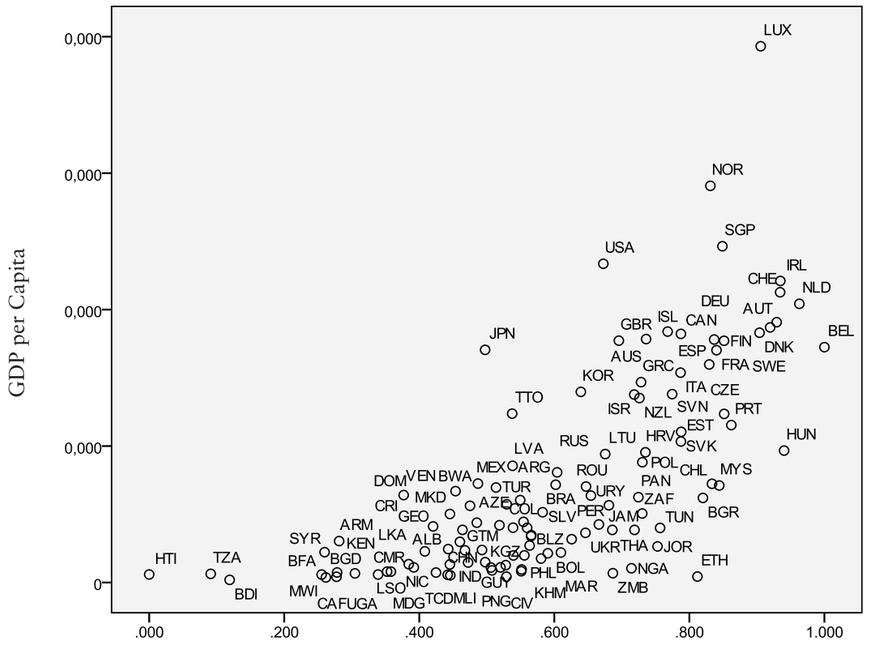
## 4. USE OF THE PEARSON CORRELATION COEFFICIENT

Given the linear relationship between the variables (see graphs 2.4-2.7) the Pearson Product-Moment Correlation Coefficient was used to calculate the correlation between the different indicators. The Pearson correlation(r) measures the degree of linear relationship between two variables and ranges from -1.0 to +1.0. The closer r is to +1 or -1, the more closely the two variables are related. The sign of the correlation coefficient (+ , -) defines the direction of the relationship, either positive or negative. A positive correlation coefficient means that as the value of one variable increases, the value of the other variable increases; as one decreases the other decreases. A negative correlation coefficient indicates that as one variable increases, the other decreases, and vice-versa.

The significance (probability) of the correlation coefficient is determined from the t-statistic. The probability of the t-statistic indicates whether the observed correlation coefficient occurred by chance if the true correlation is zero. In other words, it asks if the correlation is significantly different than zero.

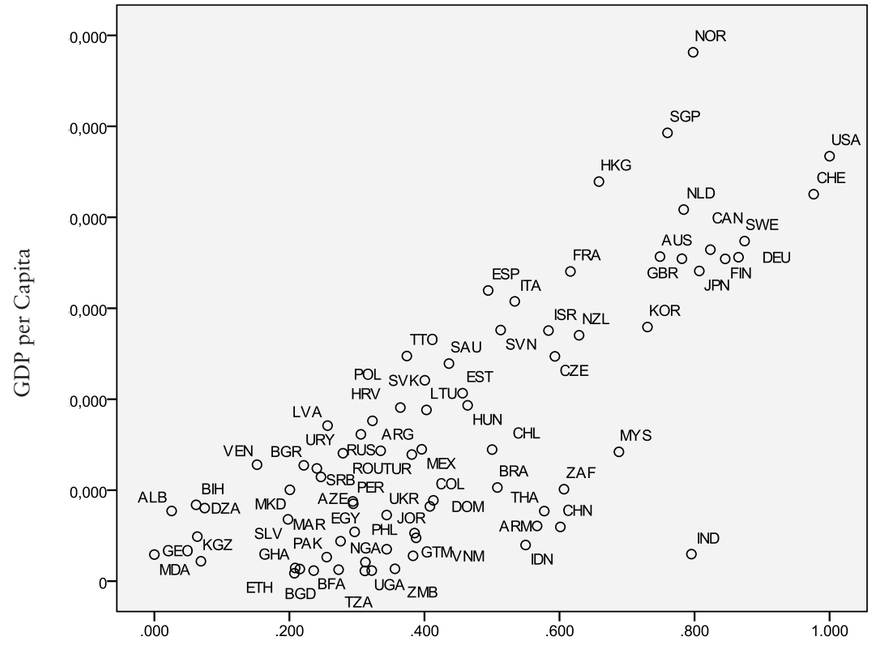
# Annex 3:
## The Relationship between Gross Domestic Product and International Networks

*Graph 1: GDP per capita PPP x International Networks Index*






*Graph 2: GDP per capita PPP x Inter-organizational Networks Index*



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