Welcome to Internet of Things for Smart City: Green and Sustainability by Anthony Wong at IGF (20th of December 2017 in Geneva)

>> share this workshop Internet of things for smart city: Green and sustainability, WS42 for short. You may agree with me that smart city is the future of organization and its foundation is information technology especially in indicating IoT big data cloud computing and so on. This is what IoT is for smart city and how you can improve life quality, foster and the need of sustainability. In this workshop we have divided six speakers to give talks on various topics ranging from smart safety framework, security and policies. I hope you will find them affirmative and enjoyable. And I want -- let's -- I want to make brief presentation first.

……

Zhao zoo so I'd like to invite Mr. Wong, Mr. Wong is the president of Australia computer society and he's talking about experience of developing smart city in Australia. Mr. Wong, please,

thank you, thank you for the Chinese society for inviting me to speak today. **My topic is about IoT and smart cities** in Australia and particularly I'd like to take a different focus because she's going to talk about, smart security and spectrum of subjects about IoT and smart cities here on today so I'm going to focus more on the challenges particularly who owns the data from IoT. So my background is I'm a lawyer. I specialize in privacy, intelligent, intellectual property law, I'm a technologist, I'm the president of the society I'm on the board of the international federation for information processing, IFIP, that was created by, you know, necessary many years ago and based in Austria. I physically live in Sydney, Australia but we're part of the international society of computer societies around the world.

So professor Tao when he mentioned about what IoT is and where it's going on I'm particularly focused on Australia perspective, Australia being a developed country, as you can see from that slide, the penetration of IoT devices and mobility devices are pretty high. One of the statistics from a recent government report indicate that over 90% of Australians will be online by 2017 which is this year, really. And the average Australians own 24 devices already which are connected online. So these are some of the statistics. So we are heavily utilize devices in the Australian landscape. Also the next slide talks about McKenzie report looking at the benefit of IoT

in the Australian context and its contribution to the economic well-being of Australians.
Last year the Australian government announced the Australian smart city initiative to make Australian cities and region areas more liveable and using a more recent technology and smarter technologies in IoT. But as everybody knows, there are no real smart cities in the world.

Yes, we have many projects to do about smart cities and IoT but those are coming up but they're separate, discrete projects, there are no really functional smart cities that I can see today but that will be changing very shortly.
So in terms of the Australian landscape on smart cities initiatives you look at data for transport in Sydney and many cities around the Australia so you can get real time information about buses and trains and getting from A to B or even tracking the buses and trains and the time they arrive at your destination.

We're also looking at street lighting, meters, trails of autonomous cars, and many, many of those are smart city projects.
Australia in a recent ranking from the company easy park just last month rang Melbourne number 10 and Sydney number 12 in smart city assessment. Rated Melbourne and city very high in terms of 4G penetration, citizen participation in both Melbourne and Sydney's pretty high at 9.82% out of ten, 9.55 out of ten. So in terms of also smart penetration, 9.3 out of ten. So Australia fare pretty well in terms of using mobility devices and IoT but at the present time pretty poor in terms of clean energy and environmental protection.
So last year the Australian government has launched an initiative to fund IoT and smart city projects around Australia by investing in 50 million of that 28 million so we've been allocated to a number of cities and projects around Australia including in the city of Darwin, 5 million to make this Darwin city smart with smart lighting, parking, wireless and CCTV cameras.

In addition to that, 5 million's been allocated to a city north of Sydney, Newcastle in making the city smart and making it like a living digital map to experiment on the smart city concept in the many areas that we've already canvassed so I don't want to go through that detail but you can see from the slides those normal projects of IoT smart cities, those are now starting to roll out in

cities like Newcastle in Australia. Of particular interest to this topic because we're talking about green and sustainability living, recently just a couple weeks ago nearly a million dollars was granted to a regional park in Perth in terms of assistant and green eco tourism so utilizing IoT sensors satellites and drums to manage the diversity wetlands in real time so they can be used for the management and the running of the park which is very close to the city of Perth so this is just another example of what's happening to the smart projects in Australia.

Asia-Pacific from a recent ranking from Vodafone, barometer indicated the region is one of highest adopters of IoT. As you look at the slide 36% of Asia-Pacific cities have adopted IoT as opposed to 26% in America and 26% in Europe in terms of companies also committed to collaboration in IoT Asia-Pacific at 92% compared to 72 and 77 in America and Europe. Produce so what are the challenges of IoT and smart devices, as you know, there are many. One of the participants asked about privacy today. Unfortunately I'm not talking about privacy. I have a whole presentation for an hour just on privacy alone. So the six minutes that I have would not allow me to talk much about privacy but to mention that obviously that's an area of interest to a lot of people.
So what are some of the city challenges? I think one of the primary ones about the debate of interest between the public and the private interests, if you go in to build a new smart city or adapt an old city to make it smart, who's going to decide on what, when, and why some of these projects get to go about?

Obviously cities have evolved in some instances over centuries so there are laws and governance that have evolved in a piecemeal fashion over decades and hundreds of years. So we have to look at that and how do we change those structures and regulatory system to enable smart cities which require very different thinking. And the other issues also as some of the speakers mentioned today, some of the social economy issues and who are going to finance some of these projects in the smart cities. From a strength perspective the Australian government has allocated 50 million to help cities around Australia start on those projects.

And obviously I think one of the speakers is going to talk about critical infrastructure so when you have IoT devices connecting to our critical structure of energy, water, electricity, transport, even

hospitals, you can manage the reach of cybersecurity hacking, reliability of broadband or Internet to have them all connected because if something should happen to your telecom infrastructure how would those devices still function and how would the city function? So particularly in this presentation I'll talk more about the ownership of data. As you know, I was in a couple sessions yesterday where they talked about data, who owns data being some of the important issues coming up because IoT is all that data. We're collecting lots and lots of data. But who actually owned the data collected by those IoT devices? We don't really have a framework at the moment to deal with those questions, but those questions are coming up, and the debate is already here. Yesterday I was on a talk on the World Trade Organization about organization of data and translation of datas across national boundaries. Ultimately the question is who gets to control them, who gets to use them, and who actually gets to own them.

So data, from my perspective, is like you imagine in the days of the spice war from the east, nutmeg and how high they were, in terms of spices they were the currency of the past. Now data is the currency of the future. So how do we -- the burning question is how do we balance the needs of the public the private and the private citizens in the quest for the economy and the use of the data.
So the interests are extreme in some cases, it's been debated widely in this forum and (?) and other forms around the world.
So currently most of the laws around the different regions of this planet there are generally a reluctance to accept the ownership of data or even can see an interest in data. So obviously with this debate that's going on we need to create new mechanism to facilitate the management and exchange of data among a complex web of stakeholders. As IoT's my devices I'm going to create more and more of those. So we have seen that with platform users like Uber, Facebook, air B & B and Amazon they all revolve around data at one point in time. One of the issues with data is like drops of water, how do you control drops of water, once it's out there it means into seas and water, how do you manage the flow of water in into the river system and the sea so this is some of the big system and the big challenges that we've got to work on towards the future.

When people talks about owning data they're talking about the traditional concept of the right to possess, but as data is, they say can be used many times over is not -- it can be utilized over and over again, do you actually need to possess data in the concept because you can actually make multiple copies. Who gets the right to control the use of the data? Who gets to use it? And who remains to control it for the future?

So these are some of the big questions that we're all struggling with, even now with the IoT and data emerging so there are competing interests in those perception, a value of data, ultimately the legal framework may have to consider attributing some value or rights or rights of control to data because those things are currently high on the agenda.

In the Australian context, from the IoT and devices, security devices concept about security, I know that (?) is going to speak on that, I have one slide on that concept. The Australian government is looking at giving IoT devices rating cyber kangaroo star rating similar on the energy rating on appliances so when people buy those devices they know what the ratings are for those particular IoT devices. So our advisory committee will be presenting their recommendation on this very concept towards the end of this year. So this is one of the developments that we currently have so on that note I don't want to consume all the speakers' slots so thank you, I'd be happy to answer any questions during the panel.

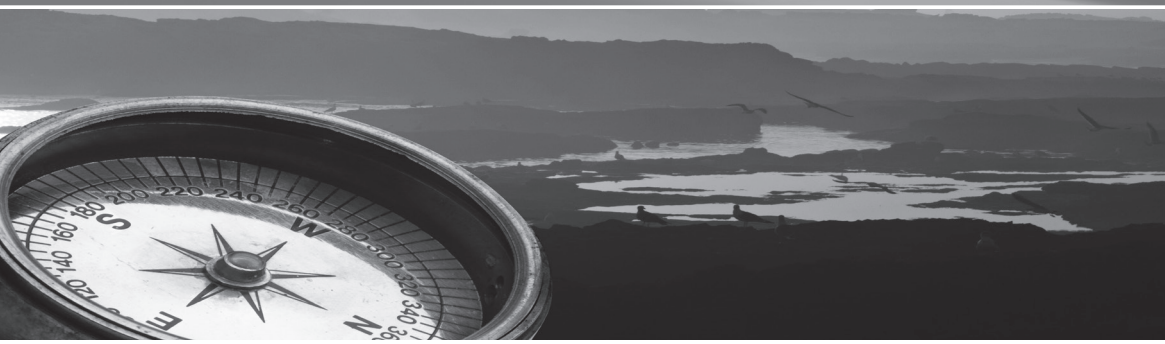
CONFÉRENCE DES NATIONS UNIES SUR LE COMMERCE ET LE DÉVELOPPEMENT

CNUCED

RAPPORT 2012 SUR LA TECHNOLOGIE ET L'INNOVATION

Innovation, technologie et collaboration Sud-Sud

APERÇU GÉNÉRAL



NATIONS UNIES
New York et Genève, 2012

NOTE

Dans le présent Rapport, les termes pays/économie désignent, selon le cas, des territoires ou des zones. Les appellations employées et la présentation des données n'impliquent de la part du Secrétariat de l'Organisation des Nations Unies aucune prise de position quant au statut juridique des pays, territoires, villes ou zones ou de leurs autorités, ni quant au tracé de leurs frontières ou limites. En outre, les appellations des groupes de pays sont utilisées à des fins purement statistiques ou analytiques et n'expriment pas nécessairement une opinion quant au niveau de développement de tel ou tel pays ou région. Les principales catégories de pays utilisées dans le présent Rapport reprennent la classification adoptée par le Bureau de statistique de l'ONU (voir l'annexe I du Rapport pour plus de détails).

Les frontières, les noms et les appellations figurant sur les cartes de la présente publication n'impliquent aucune approbation officielle de la part de l'Organisation des Nations Unies.

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UNCTAD/TIR/2012 (Overview)

PRÉFACE

Il ne fait aucun doute qu'un progrès technologique rapide peut aider le monde à relever les défis fondamentaux de notre époque. Et cependant, pour de nombreux individus dans le monde en développement, l'accès reste un problème majeur, qui entrave leur capacité d'apprendre à utiliser des technologies qui permettraient d'améliorer leur vie et de promouvoir le développement des entreprises. Ce problème apparaît démultiplié pour les responsables des politiques nationales qui entendent utiliser la technologie pour remédier à la précarité énergétique, à l'insécurité alimentaire et aux menaces environnementales et pour promouvoir la création d'emplois.

Réduire la fracture technologique est devenu une préoccupation fondamentale de l'Organisation des Nations Unies. Pour consolider et élargir les progrès qui ont été faits dans la voie de la réalisation des objectifs du Millénaire pour le développement, la communauté internationale devra trouver des moyens novateurs de réduire cette fracture.

L'accroissement des capacités d'un nombre toujours plus grand de pays du Sud constitue une dynamique riche de promesses, qui marque l'avènement d'une nouvelle ère pour le développement mondial. À mesure que de plus en plus de pays en développement s'engagent dans un processus de rattrapage industriel, la coopération Sud-Sud peut contribuer à la réduction de la fracture technologique.

Dans son *Rapport 2012 sur la technologie et l'innovation*, la CNUCED s'attache à montrer comment la collaboration Sud-Sud peut aider à surmonter les principales difficultés rencontrées par les pays en développement pour ce qui est du renforcement de leurs capacités. L'information et l'analyse présentées ici constituent une contribution bienvenue aux efforts d'ores et déjà engagés pour définir un ensemble d'objectifs de développement durable et esquisser pour l'après-2015 des priorités de développement. J'invite les gouvernements et les partenaires de développement à lire attentivement les recommandations figurant dans le Rapport, alors même que nous recherchons la meilleure façon de promouvoir un développement universel équitable, durable et partagé.

Le Secrétaire général
de l'Organisation des Nations Unies
BAN KI-moon

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TABLE DES MATIÈRES

APERÇU GÉNÉRAL

I. IMPORTANCE CROISSANTE DE LA COOPÉRATION SUD-SUD

À mesure que des pays en développement toujours plus nombreux s'engagent dans un processus de rattrapage industriel, de nouveaux pôles de croissance devraient de plus en plus contribuer à une nouvelle dynamique des relations internationales. Le processus qui avait commencé avec l'industrialisation rapide d'une première, puis d'une deuxième génération de pays d'Asie de l'Est dans les années 1960 et 1970[1] s'est poursuivi avec la croissance industrielle accélérée d'un nouveau groupe de pays, les pays dits «émergents» – Inde, Chine, Brésil et Afrique du Sud. Ce processus continu, quoique irrégulier, devrait s'étendre à d'autres pays, tels que le Nigéria et l'Égypte, qui devraient connaître une croissance analogue dans les années à venir.

L'expansion et la croissance économiques dans ces pays peuvent être attribuées à plusieurs facteurs importants et corrélés: expansion des capacités dans le secteur manufacturier et le secteur des services, accroissement des investissements dans le secteur des technologies et exploitation efficace des possibilités offertes par la mondialisation. La hausse du revenu par habitant et la croissance concomitante de la demande intérieure ont en outre contribué à accélérer la croissance générale dans ces pays, dont la croissance économique régulière a entraîné une intensification de la coopération Sud-Sud en matière de commerce, d'investissement et de technologie au cours des deux dernières décennies, ce qui leur a permis de devenir d'importants partenaires commerciaux mondiaux pour les autres pays en développement dans les années 2000 (tableau 1).

L'actuelle coopération Sud-Sud ne se limite pas à des facteurs économiques. Forts de leur influence économique croissante, certains pays en développement contribuent à une redéfinition des relations commerciales et économiques mondiales ainsi que des relations en matière d'aide internationale. En témoignent en partie leurs contributions croissantes à la coopération pour le développement et à l'aide au développement. D'après de récentes études, l'aide au développement provenant de pays en développement aurait régulièrement progressé, pour s'établir à 7,3 milliards de dollars en 2010 (OCDE, 2010)[2].

Tableau 1: Évolution des relations commerciales entre pays et régions développés et en développement, 1995 et 2010[a] (En pourcentage du commerce total)

	Importateurs					
	Pays en développement	Pays développés	Autres	Pays en développement	Pays développés	Autres
	1995			2010		
Pays en développement	41,58	57,64	0,78	55,82	41,88	2,31
Amérique latine et Caraïbes	28,91	70,10	1,00	40,42	58,45	1,13
Afrique australe	59,21	40,64	0,15	52,93	46,60	0,48
Asie du Sud	41,22	56,37	2,41	64,74	32,53	2,73
Asie du Sud-Est	44,91	54,64	0,45	64,63	34,42	0,95
Asie de l'Est	46,04	52,90	1,06	56,33	41,23	2,44
Asie occidentale	38,20	59,69	2,11	55,48	41,29	3,24

Source: UNCTADstat.

Note: Afrique australe: Afrique du Sud, Botswana, Lesotho, Namibie, Swaziland. Asie du Sud: Afghanistan, Bangladesh, Bhoutan, Inde, Iran (République islamique d'), Maldives, Népal, Pakistan, Sri Lanka. Asie de l'Est: Chine, Hong Kong (RAS de Chine), Macao (RAS de Chine), Mongolie, province chinoise de Taiwan, République de Corée, République populaire démocratique de Corée. Asie du Sud-Est: Brunéi Darussalam, Cambodge, Indonésie, Malaisie, Myanmar, Philippines, République démocratique populaire lao, Singapour, Thaïlande, Timor-Leste, Viet Nam. Asie occidentale: Arabie saoudite, Bahreïn, Émirats arabes unis, Iraq, Jordanie, Koweït, Liban, Oman, Qatar, République arabe syrienne, Territoire palestinien occupé, Turquie, Yémen. Amérique latine et Caraïbes: Anguilla, Antigua-et-Barbuda, Antilles néerlandaises, Argentine, Aruba, Bahamas, Barbade, Belize, Bolivie, Brésil, Chili, Colombie, Costa Rica, Cuba, Dominique, El Salvador, Équateur, Grenade, Guyana, Haïti, Honduras, Îles Caïmanes, Îles Turques et Caïques, Jamaïque, Mexique, Montserrat, Nicaragua, Panama, Paraguay, Pérou, République dominicaine, Saint-Kitts-et-Nevis, Sainte-Lucie, Saint-Vincent-et-les Grenadines, Suriname, Trinité-et-Tobago, Uruguay, Venezuela.

a Pour chaque année, 1995 et 2010, le total des chiffres indiqués horizontalement est de 100 %.

Cette évolution révèle l'émergence d'un nouveau paradigme de développement international, qui pourrait élargir les limites actuelles de la coopération jusqu'à englober des pays en développement – en particulier les pays les moins avancés (PMA) – actuellement marginalisés dans le système économique mondial.

1. Un élargissement de la coopération Sud-Sud pourrait profiter à tous les pays en développement

Les tendances à la hausse du commerce et de l'investissement Sud-Sud ont été considérées comme un signal positif indiquant que certains pays en développement pourraient stimuler de façon appréciable la croissance dans les pays en développement. Les études et les analyses font ressortir deux principaux aspects de la coopération entre pays en développement. Premièrement, cette coopération aiderait le Sud à se découpler des tendances cycliques mondiales de la croissance, encourageant ainsi une nouvelle forme de stabilité au sein du système économique mondial. Deuxièmement, étant encore en phase de développement, les pays émergents sont à même de bien comprendre les problèmes de développement, en particulier dans l'actuel contexte mondial, et pourraient définir un nouveau modèle de coopération et d'assistance technique vis-à-vis des pays en développement.

En outre, son expansion laisse espérer que la coopération Sud-Sud puisse être mise au service d'objectifs de développement spécifiques. Concrétiser le plein potentiel de cette coopération exigera de modifier sensiblement la façon dont l'économie mondiale est régie, afin de la mettre davantage au service du développement. Les politiques et les pratiques appliquées aux niveaux national et régional devront également être pleinement mises à contribution pour déterminer les moyens à mettre en œuvre à cet effet.

C'est sur la base de ces considérations que, dans son *Rapport 2012 sur la technologie et l'innovation*, la CNUCED estime que le moment est venu de dépasser le stade de l'analyse des tendances actuelles du commerce et de l'investissement Sud-Sud pour s'attacher à déterminer comment et dans quelle mesure la coopération Sud-Sud pourrait aider les pays en développement à surmonter certains obstacles à l'expansion et à la croissance économiques en vue d'assurer la réalisation d'objectifs de développement spécifiques. L'un de ces objectifs, qui continue de tenir en échec la communauté internationale, est de réduire la fracture technologique de façon à promouvoir l'industrialisation et une croissance équitable dans tout le monde en développement.

2. Le Sud peut devenir complémentaire du Nord dans la promotion de l'apprentissage technologique et des capacités d'innovation

La technologie et l'innovation sont l'une et l'autre difficiles à évaluer au sein des échanges économiques, et il n'existe pas d'indicateur unique permettant d'en établir une mesure globale. Des travaux de recherche empiriques menés depuis de nombreuses années ont mis en lumière un certain nombre de facteurs internationaux influant sur le processus de changement technologique et d'accroissement de la productivité. Un facteur qui contribue beaucoup à l'apprentissage technologique et au renforcement des capacités technologiques est l'importation de biens d'équipement. La participation aux réseaux mondiaux de production – et aux relations clients-fournisseurs-distributeurs au sein de ces réseaux – ainsi que l'investissement étranger direct (IED) sont d'autres facteurs qui peuvent promouvoir l'apprentissage et le renforcement des capacités grâce aux retombées technologiques auprès des entreprises locales, directement par l'octroi de licences et le transfert de technologie, ou indirectement par une accumulation implicite de savoir-faire par le personnel local. À cela s'ajoutent souvent d'autres moyens tels que le copiage, les relations avec les clients étrangers concernant la conception, les normes et les exigences de qualité, et la collaboration au sein de coentreprises.

L'efficacité de ces facteurs pour le renforcement des capacités dépend d'un certain niveau de capacité d'absorption. Leurs faiblesses institutionnelles font que de nombreux pays en développement, en particulier les PMA, auront probablement du mal à mettre à profit le commerce et l'investissement Sud-Sud pour renforcer leurs capacités technologiques et promouvoir des activités encourageant le changement structurel et la diversification économique.

Face à ces contraintes, des politiques volontaristes doivent être engagées à divers niveaux des relations Sud-Sud. Les pays émergents ont eu recours à diverses mesures pour surmonter les obstacles au commerce et à la protection des droits de propriété intellectuelle dans le contexte de leur propre développement économique, dont on peut tirer d'importants enseignements pour les autres pays en développement. Leur expérience montre non seulement comment on peut renforcer les capacités technologiques, mais aussi quelles mesures peuvent être utilisées pour promouvoir le développement national dans le contexte de l'actuel régime commercial multilatéral. La similarité de leur expérience de développement est importante, et s'explique par les contraintes héritées de leur trajectoire de croissance s'agissant de promouvoir un développement durable.

Un échange d'expériences et le renforcement de leur collaboration restent essentiels et pertinents pour des pays en développement qui doivent encore trouver les moyens de créer un environnement harmonieux et cohérent pour l'innovation locale et la politique industrielle. D'où de nombreuses analyses, aussi bien empiriques que théoriques, consacrées aux enseignements pouvant être tirés de l'expérience des pays émergents pour le développement, en général, et pour le renforcement des capacités, en particulier.

Un deuxième avantage, peut-être plus pertinent, des pays en développement pour la promotion de l'apprentissage technologique dans le Sud est que la plupart d'entre eux ont procédé de la même façon pour renforcer leurs capacités, passant de l'ingénierie inverse à un processus progressif d'innovation de produit et de procédé, puis à un accroissement des activités de recherche-développement (R-D) et des activités de production dans les secteurs technologiques de pointe. Mais même dans les pays en développement dits émergents, si l'on trouve un certain nombre d'industries dans les secteurs technologiques les plus avancés, beaucoup d'autres industries ou entreprises restent confrontées à des difficultés ordinaires en matière d'innovation, analogues à celles que l'on observe dans d'autres pays en développement, y compris dans les PMA. Cela signifie que, à des degrés divers, la question de la promotion des capacités d'absorption de la technologie continue de se poser dans ces pays.

La similarité de nombre de ces obstacles à l'innovation tend à confirmer l'idée que les technologies produites par des pays en développement peuvent souvent être plus accessibles – et plus appropriées – à d'autres pays en développement et à leurs entreprises, d'où l'importance d'encourager une plus grande collaboration Sud-Sud dans ce domaine. La collaboration en matière de technologie et d'innovation est peut-être l'un des éléments les plus essentiels de la solidarité Sud-Sud, avec la promesse réelle d'un développement durable dans l'ensemble du monde en développement. Toutefois, parce que cette collaboration met en jeu des pays se situant à des niveaux de développement très différents, elle implique nécessairement certaines contraintes pour beaucoup de ces pays, tout en leur ouvrant aussi des perspectives. Ces contraintes concerneront, par exemple, la nécessité de respecter certaines obligations imposées par divers accords en matière de commerce international ou de protection des droits de propriété intellectuelle (tels que les obligations concernant l'atténuation des changements climatiques et l'adaptation à leurs effets, la transition vers une économie verte, la protection des droits de propriété intellectuelle), tout en assurant un développement industriel équitable et durable.

3. La collaboration en matière de technologie et d'innovation n'est pas nécessairement automatique

Les possibilités qu'offre la coopération Sud-Sud de promouvoir l'apprentissage technologique ne manquent pas de susciter un vif intérêt, s'agissant par exemple de déterminer comment utiliser cette coopération pour renforcer les capacités technologiques et les capacités d'innovation, et comment intégrer les besoins technologiques de tous les pays en développement et des PMA dans un programme équilibré de coopération et d'échanges.

D'après la théorie classique de l'économie du développement, la croissance économique est un processus permettant de mobiliser et de combiner des facteurs complémentaires – accumulation du capital, changement technologique, diversification économique – pour faire évoluer et élargir la structure de production d'un pays. Dans le cas des pays en développement, toutefois, la croissance économique, d'un côté, et les capacités technologiques et capacités d'innovation, de l'autre, entretiennent des liens synergiques. Les capacités technologiques et les capacités d'innovation contribuent beaucoup à un type de croissance économique résultant de l'évolution des structures de production. La croissance économique permet souvent l'apprentissage technologique et une plus grande sophistication, et dans le même temps, les capacités technologiques contribuent fondamentalement à une croissance productive et régulière.

Ces synergies ne se produisent toutefois pas spontanément. En particulier, dans le contexte des relations Sud-Sud, même s'il existe un potentiel de croissance continue du commerce et de l'investissement pouvant favoriser l'apprentissage technologique, beaucoup reste à faire pour exploiter ce potentiel. Les entreprises en quête de croissance via l'accès à de nouveaux marchés ou des économies de gamme et d'échelle peuvent n'être que faiblement incitées à nouer des relations de collaboration ou à créer des coentreprises avec des entreprises des pays d'accueil. Les incitations sont généralement de nature commerciale, selon les caractéristiques spécifiques des entreprises des pays d'accueil qui en font des partenaires intéressants – ce peut être leurs réseaux de commercialisation et de distribution dans le pays d'accueil, leurs capacités de R-D ou leurs compétences technologiques, ou encore leur capacité de produire dans des conditions compétitives tel ou tel bien. Toutefois, ces incitations liées au marché n'encouragent les entreprises à nouer des alliances qu'avec les entreprises des pays d'accueil qui possèdent un certain niveau de compétences, illustré par leur création de valeur ajoutée. En matière d'apprentissage technologique, de telles incitations seront

insuffisantes pour amener les entreprises à décider d'elles-mêmes de nouer des alliances d'apprentissage technologique avec des partenaires ayant un faible niveau de compétences technologiques.

De plus, en dépit de l'importance de ces questions, les études consacrées à la coopération technologique Sud-Sud sont relativement peu nombreuses et s'intéressent généralement à la contribution possible de la coopération entre pays en développement à la solution de problèmes internationaux pressants concernant, par exemple, la santé publique ou les changements climatiques. Les analyses ont tendance à être plutôt générales, et les données sur des questions relatives au changement technologique et à la capacité d'innovation sont rares ou peu accessibles. Le présent Rapport vise à combler ce manque et à jeter un éclairage nouveau sur ce domaine complexe.

Il y est ainsi avancé que la similarité des expériences de développement des pays du Sud (en particulier pour la promotion des capacités d'innovation) et le caractère approprié de leurs technologies font des relations Sud-Sud un complément essentiel des actuelles interactions Nord-Sud. Le message essentiel du *Rapport 2012* est que les pays en développement, notamment les pays émergents, peuvent être d'importants partenaires pour la promotion des capacités technologiques dans le Sud et que, par voie de conséquence, analyser comment la collaboration Sud-Sud en matière de technologie et d'innovation peut être encouragée de façon systématique pour promouvoir un développement durable et équitable devrait être une priorité.

Il s'agit donc de déterminer si et dans quelles conditions les relations Sud-Sud peuvent aider au renforcement des capacités technologiques. À partir d'une analyse des actuelles relations Sud-Sud en matière de technologie et de d'innovation, le Rapport vise à identifier les questions clefs et à déterminer les meilleures pratiques pour encourager le développement de ces relations.

II. DIVERSITÉ ET RICHESSE DES ÉCHANGES SUD-SUD

Le dynamisme économique et commercial de certains pays en développement a alimenté l'expansion des marchés et entraîné un certain niveau de collaboration technologique avec d'autres pays en développement. Dans ce contexte, les importations de biens d'équipement et une participation croissante aux réseaux mondiaux de production peuvent aider les entreprises locales à acquérir des connaissances concernant non seulement les aspects techniques de la production,

mais aussi la gestion, l'activité commerciale et la qualité. L'IED et l'octroi de licences peuvent également parfois jouer un rôle important dans l'acquisition de la technologie et l'apprentissage technologique. Toutefois, déterminer dans quelle mesure, et si la croissance économique dans le Sud et l'accroissement consécutif du commerce et de l'investissement Sud-Sud contribuent bel et bien à une augmentation de l'apprentissage technologique et au développement des capacités d'innovation reste une question pertinente d'un point de vue aussi bien théorique que pratique.

1. Les pays en développement importent de plus en plus de biens d'équipement du Sud

Les pays en développement ont dépassé les pays développés en tant que principaux partenaires d'autres pays en développement pour le commerce des biens d'équipement. Non seulement les importations de biens d'équipement contribuent à l'expansion de l'activité économique et de la consommation dans ces pays, mais elles montrent aussi que les pays en développement, en particulier les pays émergents, proposent de plus en plus souvent des produits compétitifs dans une diversité de secteurs faisant appel à tout un éventail de technologies.

Les données disponibles montrent que le commerce des biens d'équipement entre pays en développement a sensiblement augmenté depuis le milieu des années 1990. De fait, les tendances globales indiquent clairement que les pays développés ont cessé d'être une source majeure de tels biens pour les pays en développement au cours de la période 2005-2010, en particulier après le ralentissement économique de 2008. Dans le contexte d'un commerce Sud-Sud en expansion, la part des importations des pays en développement provenant d'autres pays en développement a régulièrement augmenté, passant de 35 % en 1995 à 54 % en 2010 (tableau 2), ce qui montre que les pays en développement sont devenus la principale source de biens d'équipement pour d'autres pays en développement.

L'accroissement des importations de biens d'équipement des pays en développement implique une expansion de la capacité dans le Sud de produire de tels biens, au moins dans certains pays, et témoigne aussi des efforts croissants déployés par les pays en développement pour renforcer leurs capacités productives. Ces importations sont en effet importantes pour le renforcement des capacités productives, car elles peuvent favoriser un transfert de technologie dans la mesure où les biens importés font l'objet d'études rétrotechniques. Elles peuvent

Tableau 2: Part régionale des importations de biens d'équipement dans les importations totales en provenance des pays en développement et de pays développés, 1995 et 2010 (En pourcentage)

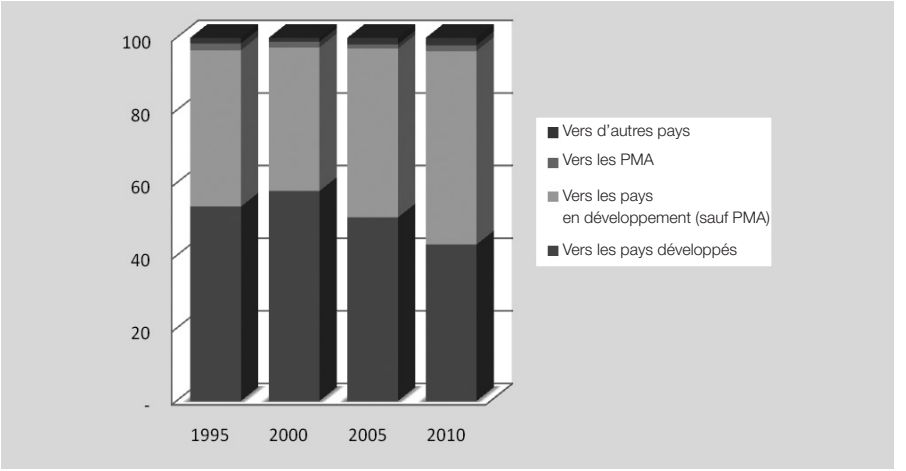
	Importateurs					
	Pays en développement	Pays développés	Autres	Pays en développement	Pays développés	Autres
	1995			2010		
Pays en développement	35,36	62,21	2,43	53,99	43,78	2,23
Amérique latine et Caraïbes	30,42	68,80	0,79	39,27	60,02	0,71
Afrique australe	..	..	..	57,90	41,46	0,64
Asie du Sud	32,45	65,00	2,56	56,06	42,36	1,57
Asie du Sud-Est	44,13	55,43	0,44	62,57	36,67	0,76
Asie de l'Est	45,52	53,73	0,75	50,21	47,03	2,76

Source: UNCTADstat.

également directement améliorer la productivité lorsqu'elles sont affectées à des activités de production. Les incidences des importations de biens d'équipement sur l'accroissement de la productivité dans les pays en développement sont en partie illustrées par la part croissante des exportations d'articles manufacturés de ces pays dans leur ensemble, exportations dont une grande partie est destinée à d'autres pays en développement (figure 1).

À l'intérieur de ces larges tendances, on note une hausse régulière des importations de biens à forte intensité de technologie dans les pays en développement. En regardant de plus près l'intensité de technologie croissante des importations Sud-Sud, on observe qu'en moyenne plus de 53 % de l'ensemble des produits de haute technologie importés par les pays en développement en tant que groupe provenaient d'autres pays en développement en 2010 (tableau 3). Si l'on compare les niveaux d'intensité de technologie (faible, moyenne et forte) des importations des pays en développement, on constate que les importations d'articles manufacturés à forte intensité de technologie et de compétences dépassent les importations d'articles manufacturés à moyenne intensité de compétences et de technologie. Ces tendances accréditent l'idée que les pays en développement sont de plus en plus capables d'exporter des biens à plus ou moins forte intensité de technologie dans le monde, et en particulier vers le Sud.

Figure 1: Ventilation des exportations d'articles manufacturés des pays en développement, 1995-2010 (En pourcentage))



Source: UNCTADstat.

Tableau 3: Importations de biens d'équipement à forte intensité de technologie provenant de pays en développement en pourcentage des importations totales, par groupes régionaux, 1995 et 2010

	Importateurs					
	Pays en développement	Pays développés	Autres	Pays en développement	Pays développés	Autres
	1995			2010		
Pays en développement	24,85	74,07	1,08	53,04	46,23	0,73
Amérique latine et Caraïbes	26,62	73,31	0,07	34,14	65,35	0,51
Afrique australe	..	..	..	58,60	40,74	0,66
Asie du Sud	52,13	37,76	10,11	47,60	45,06	7,34
Asie du Sud-Est	42,93	56,64	0,43	54,61	44,82	0,56
Asie de l'Est	42,14	57,19	0,67	64,67	33,89	1,44

Source: UNCTADstat.

2. Les pays en développement participent de plus en plus aux réseaux mondiaux de production

Un facteur prédominant expliquant la tendance à la hausse des importations de technologie est l'expansion des réseaux mondiaux de production, sous l'impulsion de quelques-uns des pays en développement technologiquement le plus avancés. Un autre facteur est la demande intérieure croissante de telles importations dans certains pays émergents – en particulier la Chine et l'Inde – en raison de leur population nombreuse et du pouvoir d'achat croissant de leurs classes moyennes, ce qui contribue à un essor des importations de produits technologiques en provenance d'autres pays du Sud. Beaucoup de ces importations, comme des données tendancielles le montrent, visent à répondre à une demande alimentée par l'expansion de l'activité économique et l'évolution des modes de consommation dans ces pays. De plus, certains pays émergents sont désormais capables de fabriquer un certain nombre de produits de haute technologie à des prix compétitifs et de les exporter vers des pays en développement qui les importaient auparavant de pays développés.

Ces tendances sont toutefois inégales selon les régions et s'expliquent en grande partie par la mise en place de réseaux de production dans des pays d'Asie de l'Est, et plus récemment d'Asie du Sud-Est et du Sud. Ces pays ont accru leur sophistication technologique, comme le montre leur capacité de produire des biens à forte et moyenne intensité de technologie à l'aide de techniques de production modernes. Cela facilite d'autant leur capacité d'absorber de nouveaux produits à forte intensité de compétences et de technologie, beaucoup mieux que d'autres régions indiquées dans le tableau 3, par exemple l'Afrique australe. Des tendances analogues peuvent être observées pour les importations de produits à moyenne intensité de technologie.

Généralement, un pays peut importer des biens d'équipement pour autant qu'il peut les payer. Toutefois, ce qui est important pour la croissance de la productivité, c'est la façon dont ces biens importés seront utilisés pour créer des revenus, autrement dit comment les entreprises et les secteurs adapteront et utiliseront les technologies incorporées dans ces importations pour accroître la productivité. Sur la question de la contribution des importations de biens d'équipement au renforcement des capacités technologiques, deux tendances sont discernables.

Premièrement, les pays en développement qui possèdent déjà un niveau minimal de capacités technologiques réalisent un important commerce de biens d'équipement avec d'autres pays du Sud. Cela montre qu'il faut posséder

un certain niveau de capacités technologiques pour participer au commerce des biens d'équipement, tout en faisant ressortir le fait que si n'importe quel pays peut importer des biens d'équipement, ceux qui participent de façon soutenue à ce commerce utilisent beaucoup de ces importations pour renforcer leurs propres capacités de production[3]. La deuxième tendance, qui dans une certaine mesure étaye la première, est que les pays qui sont importateurs de biens d'équipement sont très souvent aussi exportateurs de biens à plus ou moins forte intensité de technologie. Ces pays, relativement peu nombreux, sont ainsi capables de tirer parti des actuels courants de commerce et d'investissement pour stimuler leurs capacités technologiques et leurs capacités d'innovation.

Sans nier l'existence et l'importance des échanges technologiques dans d'autres pays du Sud, on peut en inférer que beaucoup de pays sont limités par la petite taille de leur marché, de faibles capacités de paiement et une activité économique générale à relativement faible intensité de technologie.

Les tendances concernant les importations de machines et de matériel de transport révèlent des écarts croissants entre les pays en développement, qui confirment les tendances générales présentées ici concernant les capacités technologiques des pays. En tant que groupe, les pays en développement ont accru leur part des importations totales de machines et de matériel de transport – de 27 % en 1995 à 53 % en 2010 –, mais pour les pays à faibles capacités technologiques – tels qu'un grand nombre de PMA – l'accroissement a été minime de 0,04 % en 1995 à 0,08 % en 2010, soit une part relative beaucoup plus faible que celle des autres pays en développement[4]. Parmi les PMA, ce sont les exportateurs de pétrole qui représentent la plus grande partie de la hausse de ces importations, ce qui montre que celles-ci concernent principalement le secteur des produits de base des PMA exportateurs de pétrole[5].

3. Hausse de l'IED Sud-Sud

Les pays en développement ont accru leurs investissements étrangers directs (IED) ces dernières années, ce qui a multiplié les possibilités que ces investissements contribuent à l'apprentissage technologique dans divers autres pays en développement. L'importance des pays en développement en tant que source d'IED a sensiblement et régulièrement augmenté au cours des quatre dernières décennies[6] malgré un certain repli en 2008 après le déclenchement de la crise économique et financière. La part des pays en développement dans le total des sorties d'IED est passée de 15 % en 2005 (132 milliards de dollars) à 27 % en 2010 (400 milliards de dollars), mais d'après des estimations préliminaires, elle pourrait

être retombée à 21,4 % en 2011[7]. L'analyse de l'IED Sud-Sud conduit à faire les observations suivantes:

– Malgré la forte hausse générale des IED Sud-Sud, on observe d'importantes variations régionales concernant les sorties d'IED qui ont des incidences sur la part de la formation brute de capital fixe dans les pays. L'Asie de l'Est représente la majorité des sorties d'IED des pays du Sud, suivie de près par l'Asie du Sud-Est et l'Amérique latine[8];

– Au cours des deux dernières décennies, la composition sectorielle des IED des pays en développement a sensiblement évolué, avec une augmentation des investissements dans le secteur manufacturier et dans les services. Une grande partie de ces investissements concerne d'autres pays en développement. D'après des estimations, au début des années 1990 près des trois quarts des investissements à l'étranger des pays en développement allaient vers le secteur manufacturier, qui représentait 27 % de ces investissements. Outre le secteur manufacturier, les services absorbent une part importante des IED des pays en développement, en grande partie destinés à d'autres pays en développement – par exemple, pour la période 2008-2010, les services ont représenté près de 70 % de ces IED, à plus de 55 % destinés à d'autres pays en développement.

En résumé, les IED des pays du Sud ont globalement augmenté, principalement dans le secteur des services et le secteur manufacturier. Cette orientation sectorielle implique normalement un potentiel d'apprentissage technologique. Toutefois, les données montrent que les IED dans ces secteurs proviennent principalement de pays émergents, en particulier d'Asie de l'Est et du Sud-Est, et sont en grande partie destinés à des pays en développement qui possèdent de solides réseaux de production dans ces secteurs ou attirent ces investissements grâce à leurs capacités technologiques. Cela vaut pour une grande partie des IED dans le secteur des services allant vers des pays en développement. Les IED dans les industries des biens électroniques et de l'automobile concernent également l'Asie de l'Est et du Sud-Est, qui possèdent des pôles de production compétitifs au niveau mondial. Ces IED contribuent ainsi à renforcer les capacités technologiques existant déjà dans ces pays dans le cadre des réseaux de production en place.

Dans le cas des pays en développement sans réelles capacités technologiques mais riches en ressources naturelles (dont les pays africains), les flux d'IED se concentrent en grande partie sur les industries extractives et le secteur des ressources naturelles; cette forme d'IED n'a généralement pas d'incidences technologiques directes[9].

III. COOPÉRATION SUD-SUD ET APPRENTISSAGE TECHNOLOGIQUE: UN POTENTIEL ENCORE À EXPLOITER

Dans les pays en développement, le changement technologique et la croissance économique entretiennent des liens synergiques. La croissance économique durable due à la hausse de la productivité n'y dépend pas entièrement des innovations de pointe, comme dans les pays industrialisés; elle dépend plutôt de la réalisation du potentiel d'apprentissage et du potentiel de développement de technologies existantes. Pour ce faire, ces pays doivent investir non seulement dans le secteur manufacturier mais aussi dans tout un éventail d'activités propres à soutenir le développement industriel – services de commercialisation et de gestion et services financiers – ainsi que dans les infrastructures et la formation. Cela renforce les capacités d'absorption ainsi que les capacités d'adaptation et de mise en œuvre des technologies existantes (produits et procédés) grâce aux innovations locales, entraînant une augmentation progressive de la productivité dans tous les secteurs. Cette croissance est indissociable du mode d'évolution des structures de production ainsi que des facteurs, des politiques et des institutions qui sont mis en œuvre pour assurer la diffusion des connaissances technologiques dans les entreprises de tous les secteurs économiques du pays.

Il reste toutefois encore beaucoup à faire pour exploiter pleinement ces synergies, cruciales pour les pays en développement. Par exemple, on a souvent fait valoir que la croissance et l'évolution des structures de production de certains pays émergents, passés de la fabrication de produits de bas de gamme à des produits plus avancés faisant davantage appel aux connaissances, avaient laissé le champ libre à d'autres pays en développement, en particulier les PMA, qui avaient pu profiter de nouveaux débouchés. L'argument est séduisant, mais les choses ne sont pas aussi simples. Pour engager un processus d'industrialisation centré sur des secteurs à valeur ajoutée et nécessitant donc une main-d'œuvre qualifiée nombreuse, il faut d'abord investir dans le renforcement des capacités d'absorption. Il faut aussi modifier les conditions sous-jacentes qui prévalent dans de nombreux pays en développement, en insistant notamment sur les facteurs qui permettent d'améliorer l'apprentissage technologique et les capacités d'innovation, mais aussi en tenant compte des avantages comparés et de la demande intérieure de ces pays. Les difficultés qu'il y a de mettre à profit la croissance économique pour améliorer l'apprentissage technologique sont mises en évidence dans l'analyse des données et des faits issus des études de cas présentées dans le *Rapport 2012 sur la technologie et l'innovation*. Cette observation est étayée par les constatations suivantes:

– D'après les informations disponibles sur les relations technologiques Sud-Sud, les pays en développement, en particulier les pays émergents, doivent la poussée de leur croissance économique en grande partie à l'amélioration de leurs capacités technologiques. L'augmentation de leurs importations de biens d'équipement, ces dernières années, en témoigne. Malgré cette augmentation et bien qu'elles soient considérées comme un indicateur d'apprentissage technologique, on observe qu'une grande partie des exportations et des importations de biens d'équipement tendent à se concentrer dans un sous-groupe de pays en développement: ceux qui bénéficient d'un niveau d'aptitude technologique suffisant pour s'intégrer dans les réseaux mondiaux de production et d'une croissance économique leur permettant d'importer ce type de biens. Il convient d'ajouter que beaucoup de pays en développement, en particulier les PMA, ne sont ni de gros importateurs ni de gros exportateurs de biens d'équipement;

– Grâce à l'augmentation de leurs capacités manufacturières, un certain nombre de pays en développement, en particulier le Brésil, la Chine, l'Inde et l'Afrique du Sud, ont pu exporter davantage de biens d'équipement. Ces capacités accrues leur ont aussi permis de s'intégrer dans les réseaux mondiaux de production, aussi bien dans la fabrication de produits à bas coût que dans des secteurs de haute technologie à valeur ajoutée. En outre, la mondialisation ainsi que la modernisation technologique et le passage à l'économie de la connaissance, en particulier aux technologies de l'information et de la communication (TIC), ont donné la possibilité à ces pays de faire appel à leur main-d'œuvre qualifiée pour qu'elle acquière davantage de connaissances et d'encourager l'apprentissage technologique;

– Les tendances de l'IED coïncident avec les tendances à l'autonomisation technologique, qui se concentrent plutôt dans certains pays, principalement des pays de l'Asie de l'Est ainsi que des pays tels que le Brésil, la Chine et l'Inde. Les pays émergents sont les principaux destinataires des IED provenant de pays en développement, y compris dans le cadre d'opérations de fusion-acquisition Sud-Sud. Si les flux d'IED Sud-Sud s'orientent vers divers secteurs, y compris les services et la santé, ils tendent à se concentrer dans certaines activités qui font l'objet d'une relation entre pays. On constate ainsi que quelques pays en développement prennent une part croissante à des relations technologiques mutuellement avantageuses;

– L'examen des études de cas de collaboration technologique Sud-Sud présenté dans le Rapport[10] montre que les initiatives interentreprises Sud-Sud

menées dans ce domaine par le secteur privé sont, semble-t-il, motivées principalement par des considérations d'ordre économique et/ou par des mesures publiques d'incitation. Dans le secteur public ou dans le cas de projets conduits par les gouvernements, si les initiatives sont plus variées, elles portent plus souvent sur les aspects scientifiques et techniques que sur la collaboration technologique ou sur l'apprentissage au niveau des entreprises proprement dits. Il existe également un certain nombre d'initiatives gouvernementales qui visent à promouvoir les relations et l'apprentissage technologiques au niveau régional et dans le cadre des relations Sud-Sud, notamment les sommets annuels des BRICS (Brésil, Fédération de Russie, Inde, Chine et Afrique du Sud) et le Forum de dialogue Inde-Brésil-Afrique du Sud (IBSA). Toutefois, ces initiatives seraient plus utiles aux pays en développement si elles définissaient les modalités de la collaboration. Elles devraient, de surcroît, être plus étroitement coordonnées avec les politiques et les initiatives publiques des différents pays. Aujourd'hui en effet, les programmes d'assistance scientifique et technique des organismes publics sont souvent menés isolément des programmes de collaboration technologique (R-D, formation dans certaines disciplines) entre organismes publics et privés. Pour que la collaboration profite aux pays bénéficiaires, la coordination est essentielle;

– S'il existe bel et bien un certain niveau de collaboration technologique Sud-Sud, la plupart des pays concernés n'ont pas les capacités technologiques de base qu'il leur faudrait pour mieux en tirer parti. Il convient d'ajouter que le Sud contribue actuellement à entretenir la dépendance des PMA à l'égard des produits de base, les empêchant de diversifier leur production[11]. Si ce phénomène est clairement lié à l'expansion économique des pays émergents, il n'en demeure pas moins nécessaire de faire converger les intérêts de tous les pays en développement vers la disparition de la fracture technologique;

– L'analyse montre également que, dans les pays où la collaboration en matière de technologie et d'innovation a été la plus dynamique, l'environnement national, en favorisant l'innovation, a contribué au renforcement des capacités technologiques. Dans les pays émergents, les progrès réalisés dans des domaines tels que l'investissement dans la R-D, la formation, les tendances en matière d'octroi de brevets et de licences, le nombre de chercheurs par million d'habitants, les infrastructures et les TIC améliorent encore les capacités d'innovation.

Ces résultats pointent deux questions fondamentales. Premièrement, l'actuelle collaboration Sud-Sud pourrait faire davantage encore pour que les pays en développement, y compris les PMA, puissent profiter de leur croissance économique pour promouvoir le changement technologique. Par exemple, l'analyse de l'IED montre que, malgré sa concentration régionale actuelle, l'IED Sud-Sud, qui est très concentré dans le secteur manufacturier et dans le secteur des services, pourrait être assoupli et orienté vers des projets contenant un volet «renforcement des capacités». La part croissante d'IED réalisés par des pays en développement dans le secteur des services, par exemple, crée aussi des possibilités de collaboration technologique qui ne sont pas pleinement exploitées[12]. En prenant connaissance des initiatives en cours dans ce domaine, on constate qu'il existe un certain nombre d'initiatives intéressantes de collaboration scientifique et technique, tant publiques que privées. Or, elles non plus ne semblent pas réaliser pleinement le potentiel que représente la collaboration Sud-Sud en matière d'apprentissage et d'innovation technologique.

On pourrait faire valoir que la collaboration technologique Sud-Sud n'en est encore qu'à ses balbutiements, d'où son manque de coordination, mais il semble tout de même nécessaire de s'atteler à cette tâche essentielle qu'est sa promotion systématique. Cela conduit directement à la seconde question: comment s'assurer que les initiatives publiques des pays en développement accordent à cette collaboration l'importance qui convient et que les diverses plates-formes de collaboration Sud-Sud parviennent effectivement à un meilleur apprentissage technologique. Il faudra prendre des mesures qui encouragent une coordination plus étroite entre les priorités fixées par les gouvernements et les projets de collaboration technologique et scientifique en cours et qui favorisent également les alliances technologiques interentreprises dans le cadre plus large de la collaboration Sud-Sud.

IV. UN CADRE S'IMPOSE POUR PROMOUVOIR LA COLLABORATION SUD-SUD EN MATIÈRE DE TECHNOLOGIE ET D'INNOVATION

Pour véritablement se saisir de ces questions, le *Rapport 2012 sur la technologie et l'innovation* formule quelques principes qui pourraient servir à élaborer un cadre de collaboration Sud-Sud pour la technologie et l'innovation. Ce cadre devrait être en mesure de répondre aux questions soulevées dans le Rapport. En premier lieu, les objectifs à court terme concernant l'ouverture commerciale et l'importation des moyens de production nécessaires à l'industrialisation devraient s'inscrire dans les

objectifs de développement technologique à plus long terme visés par le monde en développement considéré dans son ensemble. Tout cadre qui vise à promouvoir la collaboration Sud-Sud devrait donc contribuer à faire converger les intérêts de tous les pays concernés dans ce domaine très important. De plus, bien que la technologie et la connaissance soient essentielles aux processus de rattrapage (et de convergence) à travers lesquels les pays en développement absorbent les idées et les systèmes appliqués dans les secteurs de pointe, l'acquisition de capacités technologiques sera impossible sans l'accompagnement et le soutien institutionnels exprès de la communauté internationale et des pays en développement eux-mêmes. C'est pourquoi le *Rapport 2012 sur la technologie et l'innovation* suggère que les pays en développement renforcent leur coopération en insistant tout particulièrement sur la *collaboration pour la technologie et l'innovation*, et propose un cadre qui favorise les interactions à trois niveaux:

– Échanges d'expériences sur l'élaboration de politiques et la conception de cadres d'action pour la technologie et l'innovation;

– Échanges et flux de technologies visant à renforcer les capacités d'absorption dans le secteur privé et le secteur public;

– Transfert de technologie dans des secteurs clefs importants pour le bien-être de la population, comme l'agriculture, la santé, les changements climatiques et les énergies renouvelables.

Un tel cadre ne doit pas se contenter de fixer des priorités et se borner aux déclarations d'intention; il doit proposer une feuille de route précise et concrète. Le Rapport énonce une série de principes qui pourraient servir d'orientations à ce cadre international. Ces principes s'inspirent de quelques-uns des problèmes relevés dans le domaine de la diffusion des technologies et des méthodes innovantes à l'échelon mondial et entre pays en développement. Ils sont présentés brièvement ci-après.

1. Les besoins technologiques de tous les pays en développement devraient être mieux pris en compte dans le cadre des relations Sud-Sud (principe 1)

Réduire l'écart qui existe dans de nombreux pays en développement, en particulier dans les PMA, entre les structures de production formelles et informelles et promouvoir les capacités nationales réclament des réponses plus volontaristes et structurées aux besoins technologiques de ces pays. Ces réponses passent non seulement par une hausse des investissements dans l'enseignement supérieur,

la formation et le renforcement des compétences au niveau national, mais aussi par un meilleur accès aux connaissances et au renforcement des capacités technologiques par le biais, par exemple, de la coopération interentreprises, des coentreprises et des accords de licence. Il est donc essentiel de soutenir les activités fondées sur les connaissances pour que l'économie des pays en développement puisse s'orienter vers des activités qui créent une plus forte valeur ajoutée et qui sont d'une meilleure rentabilité.

2. L'expérience des pays en développement en matière de renforcement des capacités et d'innovation devrait faire l'objet d'échanges plus systématiques (principe 2)

Les pays émergents ont appliqué des politiques et des stratégies industrielles et de développement très diverses pour promouvoir le rattrapage technologique. Les politiques d'innovation en sont un volet essentiel. Ces politiques peuvent être conçues comme une série de mesures raisonnées et d'incitations mises en place par les gouvernements pour favoriser l'apprentissage mutuel et la coopération entre tous les acteurs économiques et non économiques du système. Ces politiques ont été utiles pour surmonter les imperfections du marché qui font obstacle au progrès technologique et qui sont omniprésentes, en particulier dans les pays en développement. Faire profiter les autres de cette expérience est utile pour deux raisons principales. Premièrement, elle permet de tirer des enseignements généraux et de définir les meilleures pratiques en matière de promotion du rattrapage économique. Deuxièmement, elle peut aussi se révéler très précieuse pour élaborer des mesures qui permettront de créer des synergies entre les différentes composantes des politiques d'innovation. Si toutes les mesures ne sont pas d'application universelle, leur mise en commun pourrait constituer une sorte de «catalogue» auquel les pays en développement pourraient avoir recours lorsqu'ils cherchent, par exemple, à promouvoir l'investissement, à rattacher la protection des droits de propriété intellectuelle et le développement des entreprises à la politique d'innovation, et à coordonner la recherche entre l'université et le secteur industriel.

3. L'apprentissage doit être promu à travers des alliances et le transfert de technologie Sud-Sud (principe 3)

La collaboration Sud-Sud en matière de technologie et d'innovation doit être revue en profondeur et s'orienter résolument vers la promotion de l'apprentissage technologique fondé sur l'expérience riche et diverse des pays du Sud eux-mêmes,

mise en évidence dans le Rapport. Certains outils d'apprentissage, comme le transfert de technologie, sont réclamés par les pays en développement au niveau international depuis des décennies. Toutefois, le développement technologique ne passe pas seulement par la promotion des importations de technologies dans le cadre des IED ou du commerce des biens d'équipement. Comme on l'a vu plus haut, le plus important, c'est le renforcement des capacités à travers le développement des compétences et le transfert des savoir-faire en matière d'exploitation et de maintenance qui favorise le progrès technologique.

Les mécanismes de collaboration technologique ont toujours suivi un axe Nord-Sud mais il est aussi possible de créer des mécanismes d'échange d'expériences Sud-Sud qui pourraient être particulièrement bien adaptés dans le contexte des pays en développement qui connaissent des problèmes de développement communs. Ces mécanismes pourraient venir compléter les efforts déployés pour favoriser le transfert de technologie Nord-Sud, en se concentrant plus spécifiquement sur l'apprentissage technologique et le renforcement des capacités locales en matière d'innovation. Un de ces mécanismes est la formation d'alliances technologiques stratégiques entre certains pays en développement, notamment les pays émergents, et d'autres pays en développement pour encourager l'apprentissage dans des secteurs d'activité où les bénéficiaires disposent déjà d'un certain niveau de capacités technologiques. Le transfert de technologie et le partage des connaissances tacites sont un autre instrument auquel le Sud pourrait recourir pour trouver des solutions inédites aux problèmes qu'il rencontre.

4. Les IED doivent être plus orientés vers les technologies pour favoriser le renforcement des capacités technologiques (principe 4)

Beaucoup de pays ont mis à profit les IED pour promouvoir l'absorption des technologies et renforcer leurs capacités d'innovation. Ainsi, la République de Corée a fait de l'utilisation de l'IED comme source de technologie un élément de sa stratégie de développement industriel. L'IED Sud-Sud a aussi eu des effets positifs sur le renforcement des capacités technologiques nationales. Les cas de l'Ouganda et de l'Éthiopie[13] sont intéressants à cet égard, illustrant la manière dont les gouvernements de ces pays ont su promouvoir le transfert de connaissances tacites de l'investisseur étranger à son partenaire local. Ces cas montrent que l'IED peut être combiné avec beaucoup d'autres mesures. Or, il existe souvent, entre les politiques d'innovation et les politiques en matière d'IED, un hiatus qui doit être comblé grâce à un cadre général de l'innovation qui permette aux pays bénéficiaires de réaliser le potentiel d'apprentissage technologique des IED.

5. Les pays en développement devraient mutualiser leurs ressources technologiques pour résoudre leurs problèmes communs (principe 5)

Tous les pays du Sud sont plus ou moins confrontés aux mêmes problèmes de développement. Ils ont besoin des innovations et des plates-formes technologiques pour faciliter leur transition vers l'économie verte, s'attaquer aux problèmes que posent l'adaptation aux changements climatiques et l'atténuation de leurs effets, promouvoir l'utilisation des énergies durables et des technologies fondées sur les énergies renouvelables, ou encore pour améliorer la santé publique et la sécurité alimentaire. Des solutions communes pourraient être élaborées pour faire face à tous ces problèmes.

Dans ces domaines, rares sont les pays en développement dont les entreprises nationales ont les capacités requises pour participer à la création d'alliances technologiques classiques. Il faut donc créer de nouvelles alliances qui permettent de développer des technologies adaptées, cruciales pour le monde en développement. Les pays en développement pourraient aussi participer à un partage – jusqu'à présent trop peu systématique – des connaissances acquises dans certains secteurs importants. Or, on observe que la dépendance à l'égard des relations Nord-Sud perdure.

Non seulement l'expérience des pays en développement en matière de renforcement des capacités d'innovation est très utile pour combler la fracture technologique, mais aussi les technologies qu'ils mettent au point sont souvent plus facilement adaptables aux besoins d'autres pays en développement, y compris des PMA, vu la similarité de leurs situations, et donc plus appropriées.

V. DES MESURES PRÉCISES REQUISES EN FAVEUR DE LA MISE EN PLACE D'UN CADRE DE COLLABORATION

Les débats en cours sur la technologie et l'innovation dans le contexte international tournent souvent autour des modalités de mise en œuvre des engagements internationaux en matière de diffusion des technologies et de transfert de technologie[14]. Dans plusieurs de ces débats, comme celui portant sur le paragraphe 2 de l'article 66 de l'Accord sur les aspects des droits de propriété intellectuelle qui touchent au commerce (Accord sur les ADPIC), il faut encore parvenir à un consensus sur la définition et la mesure du transfert de technologie. Tandis que ces débats demeurent importants d'un point de vue général, le Rapport propose un certain nombre de mesures qui pourraient être appliquées aux niveaux national, régional et international pour mettre en œuvre les principes énoncés plus haut.

Ces mesures ne forment pas une liste exhaustive; elles visent à tracer un chemin. Elles ne devraient pas non plus être interprétées comme obligeant les pays en développement, en particulier les pays émergents, à prendre des engagements technologiques astreignants. Leur objectif est de faciliter la collaboration technologique Sud-Sud par la création d'institutions orientées vers le long terme dans tous les pays en développement, qu'ils soient fournisseurs ou bénéficiaires de connaissances technologiques diffusées dans le cadre d'initiatives de collaboration.

1. Resserrer les liens entre les politiques nationales d'innovation et les initiatives Sud-Sud

Les politiques nationales d'innovation pourraient être accompagnées par les mesures ci-après qui visent spécifiquement à encourager la collaboration Sud-Sud en matière de technologie et d'innovation.

a) Coordonner les politiques locales et régionales d'innovation avec les initiatives Sud-Sud

Dans les domaines de la technologie et de l'innovation, il n'existe souvent aucun lien entre les politiques nationales et les politiques régionales. De plus, certains pays en développement étant des sources d'apprentissage technologique importantes depuis peu, rares sont les instruments qui renvoient expressément à une collaboration Sud-Sud dans ce domaine. Cette lacune doit être comblée dans le travail d'élaboration des politiques, aux niveaux national et régional, pour rendre compte de la nouvelle réalité et reconnaître les pays en développement comme de véritables partenaires des activités de renforcement des capacités technologiques.

Dans ce contexte, les politiques nationales et régionales d'innovation doivent être révisées pour que certaines priorités essentielles soient intégrées dans les relations Sud-Sud. Un éventail de mesures pourrait être mis en œuvre pour promouvoir explicitement la collaboration technologique Sud-Sud, à savoir notamment mais pas exclusivement:

- Assortir les IED des pays en développement d'obligations claires concernant les technologies et les connaissances tacites;
- Apporter des fonds publics ou utiliser des fonds publics existants pour promouvoir la collaboration scientifique et technique entre pays en développement dans des secteurs prioritaires (au sein d'une région ou entre régions);

– Accorder des incitations et des dégrèvements d'impôt spéciaux aux entreprises nationales qui prennent part à des coentreprises ou concluent des accords de production conjointe centrés sur l'acquisition de technologies, avec des entreprises de pays en développement;

– Accorder des incitations, comme des dégrèvements d'impôt ou des assurances en matière de marchés publics, aux entreprises étrangères originaires de pays en développement, en particulier de pays émergents, qui créent des usines et transfèrent des connaissances aux entreprises locales;

– Créer des incubateurs de technologies pour soutenir la mise en œuvre de nouvelles technologies dans l'industrie locale, avec l'aide d'entreprises de pays en développement, en particulier de pays émergents.

b) Fournir des incitations pour la transition vers des activités à plus forte valeur ajoutée

Pour éviter autant que possible que les entreprises locales restent cantonnées aux niveaux inférieurs des réseaux mondiaux de production, sans espoir ou presque de progresser vers des activités à plus forte valeur ajoutée, des mesures spécifiques de soutien s'imposent. Dans le contexte du Rapport, les activités à plus forte valeur ajoutée sont étroitement associées – mais non identiques – à l'activité manufacturière, bien que ce secteur soit à l'évidence essentiel pour tirer la transformation structurelle. La recherche d'une plus forte valeur ajoutée devrait s'accompagner de la recherche de la valeur ajoutée sociale résultant d'activités d'innovation qui répondent aux besoins de la population locale, favorisent un développement équitable et partagé et contribuent à la réduction de la pauvreté. Les fonds d'innovation, aux niveaux tant national que sectoriel, pourraient contribuer à la transition vers des activités qui créent ce type de valeur ajoutée, notamment dans les pays riches en ressources naturelles.

c) Faire de l'apprentissage technologique un axe des politiques des pays émergents

Pour garantir l'intégration de l'apprentissage technologique dans les relations Sud-Sud, les pays émergents pourraient adopter des mesures qui favorisent les projets de collaboration autour de technologies et d'innovations mutuellement avantageuses. Ces mesures pourraient prendre les formes suivantes:

– Mesures d'encouragement pour la collaboration technologique à long terme avec d'autres pays en développement;

– Mesures d'incitation accordées aux entreprises nationales qui s'engagent dans des projets de partage technologique et de renforcement des connaissances tacites avec des entreprises d'autres pays en développement.

2. Adopter des politiques qui favorisent une orientation technologique à long terme

Le développement technologique des pays du Sud est un bien commun qui aura pour tous les pays en développement des effets de réseau positifs; ces pays doivent en tenir compte lorsqu'ils élaborent leurs stratégies. Dans leur vision et leurs stratégies à long terme, la collaboration technologique devrait être assortie de cibles claires et d'échéances précises.

a) Coordonner les activités de coopération scientifique et technique et les activités de collaboration technologique

Comme le Rapport le montre, bien que de nombreux pays en développement prennent des mesures actives pour renforcer leur assistance technique et scientifique, la coordination entre, d'une part, l'assistance technique et l'assistance au développement fournie par les organismes publics et, d'autre part, les projets de collaboration technologique entre entreprises et organisations du secteur privé est insuffisante. Pour remédier à cela, il faudrait que cette coordination s'inscrive dans le cadre d'une politique de collaboration technologique Sud-Sud claire, élaborée par les gouvernements. Les pays émergents, en particulier, doivent définir des objectifs stratégiques à long terme, comme il est suggéré dans la section précédente.

b) Offrir des incitations aux entreprises pour promouvoir la collaboration technologique et le transfert de technologie

Les pays émergents pourraient prendre des mesures d'incitation plus vigoureuses pour promouvoir la collaboration technologique et le transfert de technologie, par exemple:

– Dégrèvements d'impôt consentis aux entreprises de pays émergents participant à des coentreprises ou concluant des accords de production conjointe avec des entreprises de pays en développement, en particulier de PMA;

– Remise aux entreprises locales d'un label «entreprises pour le développement», qui peut rehausser l'image de marque de ces entreprises et les aider à développer leur clientèle dans les pays du Sud.

3. Rendre opérationnel le Pacte Sud-Sud pour l'innovation et la technologie

Pour aider les pays en développement à trouver une réponse commune qui serve le développement, le Rapport leur propose de mutualiser leurs ressources technologiques dans le cadre d'un Pacte Sud-Sud pour l'innovation et la technologie. Ce Pacte serait un mécanisme destiné à coordonner et à promouvoir l'action menée par les pays en développement face aux questions de la technologie. Il devrait fournir un soutien institutionnel à trois niveaux. Premièrement, il pourrait encourager l'apprentissage technologique au niveau des entreprises, apportant un complément essentiel aux programmes d'assistance technique et de coopération technologique Sud-Sud. Deuxièmement, il pourrait promouvoir le développement des entreprises et le financement d'activités d'innovation particulièrement importantes pour les pays en développement. Troisièmement, il pourrait servir de plate-forme pour l'échange d'expériences dans le domaine de l'innovation et la promotion de l'apprentissage dans le domaine des politiques (encadré 1).

Encadré 1: Caractéristiques institutionnelles du projet de *Pacte Sud-Sud pour l'innovation et la technologie*

Le Pacte Sud-Sud pour l'innovation et la technologie aurait pour objectif de renforcer l'apprentissage technologique et les capacités d'innovation dans tous les pays en développement, en fournissant un appui institutionnel à trois niveaux grâce à divers instruments. Cet appui pourrait prendre les formes suivantes:

i) Promouvoir l'apprentissage technologique au niveau de l'entreprise

De plus en plus, les pays en développement, en particulier les pays émergents, mettent au point des technologies nouvelles ou des technologies avancées. Ces initiatives sont souvent financées par l'investissement public. Trois instruments pourraient être particulièrement utiles pour faciliter l'accès à ces connaissances et leur développement dans les pays du Sud:

- Mutualisation des investissements publics en faveur de la R-D de base: ce mécanisme servirait les pays en développement qui cherchent à agir ensemble pour promouvoir le développement des capacités d'apprentissage nationales ainsi que la collaboration et les synergies entre acteurs des systèmes d'innovation. Il pourrait être mis en œuvre au niveau régional ou entre pays de régions différentes désireux de coopérer;
- Les centres de R-D Sud-Sud: des centres régionaux de R-D capables de créer ou de soutenir des unités de R-D au sein des entreprises ou de fournir des services de R-D payants pourraient constituer une excellente solution à court et à moyen terme face à certains des principaux problèmes rencontrés par les secteurs public et privé dans les pays en développement;

- Groupement de l'offre et de la demande Sud-Sud: l'un des grands obstacles à l'innovation technologique est l'insuffisance ou l'inexistence de la demande intérieure/régionale. C'est le cas, en particulier, dans des secteurs où l'innovation exige de gros investissements et présente des risques, comme celui de la santé, par exemple le secteur des technologies sanitaires. Ce mécanisme permettrait de remédier au problème en groupant la demande au niveau régional ou la demande de pays qui ont des besoins similaires.

ii) Promouvoir le développement des entreprises et le financement d'activités innovantes qui présentent un intérêt particulier pour les pays en développement considérés dans leur ensemble

Le Pacte Sud-Sud pour l'innovation et la technologie disposerait d'une deuxième série d'instruments spécialement conçus pour aplanir un certain nombre de difficultés rencontrées par les entreprises, notamment en matière de financement; ces instruments pourraient prendre les formes ci-après:

- Investissement de capital-risque au niveau régional: Du capital-risque pourrait être investi dans les entreprises naissantes des PMA qui s'annoncent prometteuses dans des secteurs clefs importants pour une région – secteur pharmaceutique, agro industrie et TIC. Dans le cadre des programmes de financement, les entreprises d'une région pourraient être invitées à concourir pour un prix;
- Co-investissement avec des investisseurs privés dans des entreprises innovantes: Un certain nombre de programmes pourraient être lancés au niveau régional pour encourager les entreprises locales à développer des technologies nouvelles et innovantes. L'acquisition de savoir-faire technologique pourrait être soutenue à travers des partenariats public-privé/privé-privé conclus entre plusieurs pays en développement;
- Financement pour les projets de collaboration entre entreprises du secteur privé et du secteur public: Cet instrument pourrait pallier l'absence de mesures d'incitation en faveur de l'établissement de relations de collaboration au niveau national/sectoriel dans les pays en développement.

iii) Servir de plate-forme pour l'échange d'expériences innovantes et la promotion de l'apprentissage dans le domaine des politiques

Les pays en développement pourraient tirer des avantages considérables d'un espace où ils échangeraient des informations sur leurs politiques respectives en matière de technologie et d'innovation et sur la manière de promouvoir le développement industriel, dans le cadre des règles du commerce international et des régimes de protection des droits de propriété intellectuelle. Ils pourraient y examiner les solutions et les flexibilités que les règles internationales en vigueur, généralement restrictives, continuent d'accorder.

Au Pacte pourraient s'ajouter des initiatives régionales directement axées sur le renforcement des capacités d'innovation dans la région.

Source: CNUCED.

Compte tenu de la similarité de l'expérience des pays en développement en matière d'innovation et de leurs atouts technologiques, le Rapport estime qu'ils sont des partenaires stratégiques naturels pour combler la fracture technologique. Pour mener cette tâche à bien, ils devront s'entendre sur la manière d'accéder aux ressources scientifiques et technologiques et aux capacités d'innovation existant dans les pays du Sud. Celles-ci seront cruciales pour intégrer les entreprises et les organisations de ces pays, en particulier des PMA, dans l'économie mondiale du savoir afin d'accélérer le développement. Dans cette démarche, il devra être entendu: a) que l'innovation est un processus multidirectionnel et fortement interactif qui intègre ou «organise en un tout cohérent» la science, la technologie et la production; et b) qu'il est nécessaire de repenser les politiques de telle manière qu'elles créent des cercles vertueux qui favoriseront la hausse de la productivité, le progrès technologique et la transformation structurelle à travers tout le monde en développement.

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Il reste de nombreuses questions en suspens concernant l'apprentissage technologique et les capacités d'innovation des pays en développement, y compris les questions liées au transfert de technologie, qui devront être abordées au niveau international. Les pays en développement peuvent montrer la voie en recherchant ensemble des réponses communes qui leur permettront d'accéder à l'autonomie technologique et, dans les années qui viennent, d'apporter des solutions constructives à ces questions.

NOTES

1 Acteurs et bénéficiaires du «miracle asiatique», la première génération de nouveaux pays industriels (NPI) à la suite de l'industrialisation du Japon était constituée de Hong-Kong, de la République de Corée, de la province chinoise de Taiwan et de Singapour, la deuxième génération de l'Indonésie, de la Malaisie et de la Thaïlande.

2 Voir l'encadré 3.2 du chapitre III. Quelques autres études, dont celle du Conseil économique et social de l'ONU (2008), donnent des chiffres plus élevés. Cela illustre la considérable diversité, en qualité et en quantité, des données provenant des quatre principaux pays du Sud donateurs d'aide – République bolivarienne du Venezuela, Chine, Inde et République de Corée. En outre, ce chiffre du total de l'aide au développement des pays du Sud est sans doute sous-évalué car plusieurs petits contributeurs bilatéraux et multilatéraux n'ont pas été retenus dans l'étude, faute de données et en raison de différences de définitions concernant la «coopération pour le développement».

3 Voir le tableau A.II.6 de l'annexe du Rapport.

4 Tableau A.II.11 de l'annexe.

5 Ces tendances sont illustrées dans la figure 2.8 du chapitre II, qui montre d'importants écarts pour les importations de machines et de matériel de transport entre PMA exportateurs de pétrole, PMA non exportateurs de pétrole et autres pays en développement.

6 Tableau 2.7 et figures 2.9 et 2.10 du chapitre II.

7 Tableau 2.7 du chapitre II.

8 Tableau 2.8 du chapitre II.

9 Tableau 2.9 du chapitre II.

10 Chap. III.

11 D'après les tendances des exportations de produits de base, les exportations des PMA qui, avant 2003, avaient pour principale destination les pays développés, se sont ensuite sensiblement recentrées sur les pays en développement (fig. 1.5, chap. I).

12 Le tableau 2.9 et le graphique 2.12 du chapitre II montrent que le secteur des services absorbe plus de 50 % du total des IED provenant de pays en développement.

13 Ces cas sont examinés au chapitre III du Rapport.

14 Voir encadré 4.8 du chapitre IV.

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INTERNET BROADBAND FOR AN INCLUSIVE DIGITAL SOCIETY




UNCTAD Current Studies on Science, Technology and Innovation. N°11

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List of Abbreviations

2G/3G/4G	second/third/fourth generation
A2K	access to knowledge
DSL	digital subscriber line
FTTH	fibre to the home
G3ict	Global Initiative for Inclusive ICTs
GDP	gross domestic product
ICT	information and communications technology
IPR	intellectual property right
ITU	International Telecommunication Union
LDC	least developed country
OECD	Organization for Economic Cooperation and Development
SME	small and medium-sized enterprise
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
VSAT	very small aperture terminal
WiMAX	Worldwide Interoperability for Microwave Access
WTO	World Trade Organization

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Contents

Introduction

Internet broadband is shorthand for a range of capabilities enabled by the convergence of computers, the Internet, smart devices, high-speed wireline and wireless networks, and a plethora of innovative applications and services that these technologies make available. Compared with narrowband technologies such as dial-up telephone connections, which deliver a maximum data rate of 56 kilobits per second (kbps), broadband Internet refers to high-speed public Internet access. Although the boundary between narrowband and broadband is blurry, the International Telecommunication Union (ITU) describes broadband as Internet connections with downstream speeds of 256 kbps or more (ITU, 2010).

The precipitous growth of broadband networks and services over the past decade has been sparked by a combination of continuing rapid technological developments across the information and communications technology (ICT) landscape and the commensurate spectacular rise of popular applications and services that are made possible by broadband connectivity. These changes have also been increasing the socioeconomic development impact of broadband ICTs on various spheres, ranging from education to health care, and political and economic inclusion. Today, broadband ICT policies are increasingly becoming an integral part of national development plans and poverty reduction strategies to fight poverty and facilitate economic and social development. Hence, access to broadband ICT networks, services, and applications represents an increasingly essential requirement for achieving socioeconomic development goals in the twenty-first century.

Despite the rapid advances in the sector and the spread of its use in certain parts of the world, a digital divide in broadband connectivity, both between and within countries, has been growing. Of the roughly 588 million fixed broadband Internet subscribers in the world (2011), 315 million live in member countries of the Organization for Economic Cooperation and Development (OECD), while only 1 million live in least developed countries (LDCs).[1] This has been noted in a variety of forums, including the Broadband Commission, the World Summit on the Information Society and the United Nations Educational, Scientific and Cultural Organization (UNESCO). Economic and Social Council resolution 2012/5 states that "there is a growing digital divide in the availability, affordability, quality of access and use of broadband between high-income countries and other regions, with least-developed countries and Africa as a continent lagging behind the rest of the world..."

All stakeholders have been called upon to maintain as a priority concern the bridging of the digital divide and to continue to focus on pro-poor ICT policies and applications, including access to broadband at the grass-roots level, with a view to narrowing the digital divide between and within countries. Innovative approaches that will encourage universal access to affordable broadband infrastructure in developing countries need to be devised. During its 2012 meeting, the Commission on Science and Technology for Development proposed to share and analyse policies and best practices intended to be comprehensive and inclusive, aimed at reducing the urban–rural gap in broadband access in developing countries and the digital divide throughout, especially in LDCs and landlocked developing countries.

The Commission also invited member States to use the multi-stakeholder approach in drawing up their national broadband plans and to develop a coherent policy and regulatory framework that promotes competition and investment in the ICT sector focused on achieving access to and affordability of broadband Internet.[2] Likewise, during the thirty-sixth session of the UNESCO General Conference, member States, in recognition of the importance of broadband Internet in development, passed resolutions with an emphasis on developing and fostering partnerships with the public and private sectors to narrow the digital divide and the gap between men and women, households, businesses and geographic areas at different socioeconomic

levels of the divide. The resolutions also took into account the needs of persons with disabilities and pointed out the importance of sharing and accessing open educational resources, promoting multilingualism and increasing developing countries' free access to open-source software and open standards (UNESCO, 2012).

The recent emphasis on broadband in ICT development arises from the emerging recognition that the nature and scope of interactive communications that can be accomplished by high-capacity data transmission and processing is fundamentally different from and exponentially more valuable than what was possible with older-generation voice and low-speed data connections.

For developed countries and affluent segments of the developing world, the advantages of broadband are well known. Apart from social networking, these include smart phones, tablets and an ever-growing cyberpresence. However, for most people in the world, they remain unknown or unavailable. The mobile telephone revolution has dramatically expanded access to basic voice telephone service across the world. Similarly, lower-speed Internet access (dial-up and second-generation (2G) mobile telephone technology) has made significant inroads among many lower- to middle-income populations. Nevertheless, the parallel explosive growth of the broadband universe has not yet sufficiently penetrated developing countries.

This study provides an overview of key issues relating to broadband ICTs in the context of international objectives for socioeconomic development. The discussion summarizes recent research, policy developments and practices associated with broadband ICTs around the world and offers a set of frameworks for considering and developing new public and private initiatives to promote broadband development.

The rest of this study is organized into four sections. Section 1 discusses the status and importance of broadband technology by examining the current broadband divide between developed and affluent segments of developing countries and the rest of developing countries, as the explosive growth of the broadband universe has not yet sufficiently penetrated the latter group of economies. The section also reviews various ICT indicators across countries and discusses the potential benefits of broadband in invigorating economic development in countries and in improving social sciences, such as education, health care, and social and cultural services, as well as in facilitating the political engagement of the masses.

Section 2 introduces the current state of the broadband ecosystem. It describes how several layers of transmission networks, access facilities and end-user services are interconnected in the broadband infrastructure and summarizes recent developments in broadband technologies, end-user devices, and software and applications. In addition, section 2 describes the change in service providers in the sector – from State-owned enterprises to private suppliers in a competitive market. So far, however, this shift has not increased the need for outside financing in the sector, but the highly diverse and costly broadband world will eventually require innovative financing sources. The section also touches upon the people component of the broadband ecosystem, which requires skilled personnel on the supply side and educated customers on the demand side.

Section 3 deals with key policy challenges and opportunities in the broadband sector. Many countries, particularly developing countries, are facing significant challenges on the expansion of its existing broadband infrastructure, such as high capital costs of investment, the lack of financial resources and hurdles relating to the spread of broadband services, for example lack of skilled personnel and digital content in local languages. Therefore, overcoming these issues requires an enabling and supportive public policy environment. The section provides an overview of key elements of a successful ICT policy and regulations under rapidly changing market conditions and technological advances. It also emphasizes the importance of coordinating various ICT strategies and plans and obtaining the active participation of all stakeholders in devising coherent ICT policies. The final section provides a summary of the main findings and policy suggestions of the study.

1. Status and Importance of Broadband

Inclusiveness in the context of broadband development is manifested at several levels. At the global level, the issue is one of promoting equitable broadband development and related opportunities in all countries. The broadband divide exists at yet another level within countries – between urban and rural regions – widely prevalent not only in developing countries, but in developed countries as well. A lack of infrastructure and the slow expansion of high-speed networks to upgrade legacy services are leaving many rural areas further behind the wealthier, more densely populated urban and peri-urban communities, often compounding the dearth of other resources available in those areas. For development initiatives, the absence of broadband access makes delivering much-needed assistance more difficult, as programmes with digital components and communication are increasingly becoming essential elements of national and international support practices.

This study addresses the imperative of inclusive broadband development at both these levels – globally and within countries. Efforts to promote access to broadband may result in the enhanced physical installation of broadband services, but do not necessarily translate into reliable and long-lasting broadband access, which is essential if the benefits of broadband are to accrue.

1.1. Status of broadband development

Measurement of the status of broadband-related deployments, usage and activities, and research into the benefits and impacts of broadband for developing countries are very much a new field. Many governments in developing countries still do not closely track indicators of broadband, as opposed to traditional telephony and mobile phone penetration. However, more reliable and detailed data are increasingly becoming available. Recently, for example, the Broadband Commission for Digital Development,[3] under the sponsorship of ITU and UNESCO, compiled some of the most complete and useful data on broadband and Internet penetration throughout the world.[4]

Available data suggest significant growth over the past decade in broadband penetration in general, and a rapid increase in mobile broadband in particular since 2007 (ITU and UNESCO, 2012). The combined aggregate penetration levels are now above 25 per cent of the world's population.

Nevertheless, the rapid, substantial growth in broadband has not translated into significant increases in Internet access in LDCs, where only 6 per cent of inhabitants had access as of 2011. This proportion is expected to more than double by 2015, but by then, the absolute gap with higher-income countries is likely to grow even larger (ITU and UNESCO, 2012).

In addition to the digital divide in broadband penetration rates, significant disparities in the quality of broadband connection between developed and developing countries also exist. While slow broadband Internet connection reduces the range of services that can be accessed by users, high connection and monthly subscription charges significantly hinder the use of broadband services by end users. In 2010, the average European Internet user enjoyed about 80 kbps of bandwidth, as opposed to 1 kbps in Africa and 11 kbps in Asia and the Pacific and the Arab States (ITU, 2011a). Nonetheless, conventional broadband ICT indicators do not fully capture the digital divide in broadband connection. Recent studies have been trying to address this problem by incorporating quality aspects into broadband statistics.

Likewise, a number of academic and international institutions such as ITU have begun to formulate methods for comparative analysis of the role of the Internet and the digital economy in macro- and micro-levels of economic and social outcomes. Among the many challenges of studying the economic impacts of access to broadband, two stand out:

(a) Reliable empirical data are hard to find, since broadband is relatively new and only some developing countries have been fully exposed to it;

(b) Where some experience with broadband and development can be documented, the impacts are very difficult to separate from those of other concurrent initiatives and investments.

1.2. Nature of the broadband divide

The broadband divide has been widening not only between developed and developing countries but also among developing countries (see table). Many people in some developing countries and LDCs still lack sufficient access to broadband applications and markets, and advances in ICTs. Fixed broadband Internet subscriptions per 100 people have increased sharply in OECD member States, from 2.9 per cent in 2001 to 17 per cent in 2006 to 25.3 per cent in 2011. Developing countries have shown diverse paths. For example, countries in Europe, Central Asia, East Asia and the Pacific[5] boasted virtually no broadband penetration in 2001, but by 2011, penetration had risen to around 9 per cent, surpassing the world average. Broadband penetration in Latin America and the Caribbean made large strides in 2011, but was still below the world average. The Middle East, North Africa, and sub-Saharan Africa have so far not matched global trends in broadband Internet, as their statistics remain well below the world average.

The gap between telephony and broadband, and even narrowband or low-speed data and true broadband Internet, is perhaps far more significant in terms of potential socioeconomic impacts than earlier technological leaps. The digital divide is increasingly becoming a knowledge divide. The scope of information and of technical and socioeconomic know-how of educational, scientific, health and political resources available to one segment of society is virtually infinite, while the remainder of the population remains excluded from the information society.

In many ways, the broadband divide represents a specific intensification of the existing digital divide. Countries and people that are excluded from broadband risk not having access to an entire range of applications and benefits provided by the Internet.

ITU has developed a number of studies and measures of ICT development. Its ICT Development Index seeks to provide a comprehensive comparison of countries' ICT access, use and skills, incorporating 11 distinct statistical indicators, while allowing the examination of relative strengths and weaknesses along separate metrics.[6] Under this methodology, the top-ranking countries as of the end of 2011 are the Republic of Korea, Sweden, Denmark and a few other OECD economies. Those at the bottom of the rankings are nearly all in Africa. Overall, there is a correlation between country-income levels (gross national income) and their ICT Development Index results, notwithstanding a few notable exceptions (figure 1).

Within countries, especially developing countries, disparities between rural and urban regions in terms of ICT and broadband development are even more pronounced. Figure 2 shows the correlation between the percentage of urban population distribution compared with that of

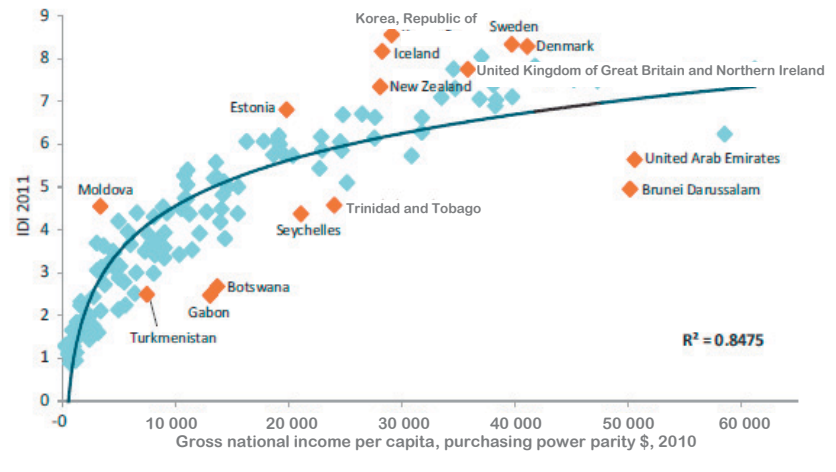
Table. Fixed broadband Internet subscribers by region and development status, per 100 people

	2001	2006	2011
Member countries, Organization for Economic Cooperation and Development	2.9	17.0	25.3
Europe and Central Asia*	0.0	2.6	9.2
East Asia and Pacific*	0.0	2.8	8.7
World	0.6	4.6	8.6
Latin America and the Caribbean	0.1	2.3	7.7
Middle East and North Africa	0.0	0.9	3.2
Sub-Saharan Africa	0.0	0.1	0.2
Least developed countries	0.0	0.0	0.1

* *World Bank definition; excludes high-income countries*

Source: World Bank World Development Indicators, accessed 25 September 2013.

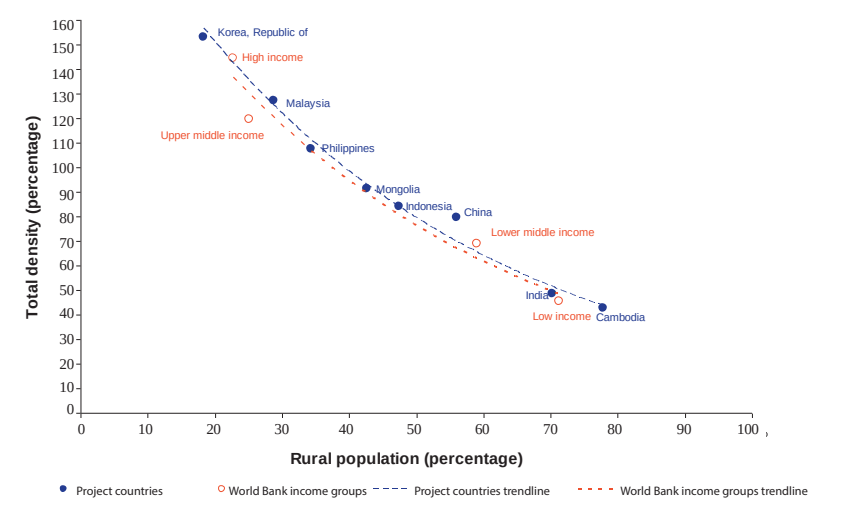
Figure 1. ICT Development Index and gross national income per capita, 2011



Source: Reproduced from ITU (2012a).

the rural population and the overall teledensity (fixed lines plus mobile telephones per 100 population), broken down by country income levels. This includes several Asian countries. In many parts of Africa and Asia, broadband connectivity is virtually non-existent outside main urban centres, and even basic (2G) mobile coverage is often limited.

Figure 2. Correlation between teledensity and percentage of the rural population



Source: Reproduced from UNCTAD(2013).

The advent of ICTs and Internet connectivity has been facilitating the sale or purchase of goods or services conducted over computer networks by methods specifically designed to receive or place orders, the so-called e-commerce. In 1999, an estimated 300 million users accessed the Internet, and approximately one fourth of them made purchases worth approximately $110 billion from electronic commerce sites (OECD, 2000). By 2013, this figure was expected to reach $1.25 trillion (World Trade Organization (WTO), 2013). There are numerous types of online commercial transactions conveniently labelled "business-to-business", "business-to-consumer", "business-to-government" and "mobile e-commerce". Business-to-business e-commerce, such as transactions between a manufacturer and a wholesaler, or between a wholesaler and a retailer, stood around $12.4 trillion – 90 per cent of global e-commerce at the end of 2012 (WTO, 2013). Such rapid sector growth has relied heavily on the spread of advanced telecommunications systems, particularly those that offer broadband and mobile broadband services at affordable prices for both consumers and producers.

Despite the surge in volume of e-commerce transactions, the digital divide in online trade has persisted. A sluggish diffusion of ICTs and Internet connectivity in certain developing countries has been marginalizing their businesses and consumers from rapidly growing global e-commerce markets. While North America, Asia and the Pacific, and Western Europe in 2012 captured 33.5 per cent, 30.5 per cent and 26.9 per cent of the world business-to-consumer e-commerce sales, respectively, the Middle East and Africa, and Latin America only accounted for 1.9 per cent and 3.4 per cent of the total, respectively. Among developing countries, only China managed to enter the top e-commerce sellers in the world. The United States of America is the largest e-commerce market, with a 31.5 per cent share and $343 billion sales in 2012, followed by Japan, the United Kingdom of Great Britain and Northern Ireland, and China (eMarketer, 2013). Eurostat (2012) firm-level data on European countries show significant variations in the share of companies making e-commerce sales, for example, from 4 per cent in Romania to 36 per cent in Norway. A similar variation can be observed in companies' e-commerce purchases as well: from 9 per cent in Romania to 71 per cent in Denmark. Likewise, there is an e-commerce divide among developing countries in company e-purchases; while more than half of Brazilian companies placed orders online in 2010, this figure falls below 5 per cent in 2009 in Egypt, Thailand and Azerbaijan (Fredriksson, 2013).

1.3. Impacts and benefits of broadband

Broadband offers significant benefits ranging from economic development to social inclusion when appropriate polices are applied. While empirical studies have identified substantial productivity and employment gains in enterprises, some country case studies have indicated significant improvements in access to education and health-care services even in LDCs when ICT and broadband policies were successfully incorporated into broader development strategies. Moreover, an increase in broadband penetration may generate positive externalities in sociocultural enrichment, as it can facilitate the participation of women and persons with disabilities in social and economic activities and access to arts, literature and indigenous cultures. It may also stimulate political participation and the spread of new ideas, both in developed and developing countries.

1.3.1. Economic development

The adoption of broadband at the company level has had positive effects on productivity and job creation (Katz, 2012). Most impacts to date have been realized through its adoption by larger, multinational firms, while the greatest potential for further growth remains for small and medium-sized enterprises (SMEs) to improve operating efficiency by better integrating broadband in production, sales, marketing and distribution processes (Nottebohm et al., 2012). The availability of reliable broadband infrastructure and services in rural areas in particular can build a strong foundation for businesses to locate and expand in these areas, helping reduce the pressures of excess urbanization.

Developing economies are also finding new opportunities in domestically produced software and online applications (UNCTAD, 2012a). Lower

labour costs and the efficiencies of storing and accessing data within domestically based servers can facilitate a cost-effective local software industry, while the benefits of customized solutions for domestic businesses and government can be extensive. Nevertheless, not all developing countries are reaping these benefits equally. The lack of skilled human resources, insufficient infrastructure, difficulties in accessing finance, as well as the absence of coherent and effective ICT and broadband policies, have been hindering the development of ICT-enabled services in many developing countries.

There is some research seeking to document a good evidence base of broadband's positive economic benefits. One widely cited World Bank study found that the average increase in gross domestic product (GDP) growth in developing countries was 1.38 per cent for each 10 per cent increase in broadband penetration (Qiang and Rossotto, 2009). These results have established an initial benchmark for broadband-related economic impact studies, as well as a strong incentive for governments to invest in broadband growth.

More recently, research and reports have sought to assess the link between broadband development and economic growth. An ITU-sponsored study in 2012 presented recent research on contributions of broadband to economic growth, productivity gains, employment and output, creation of consumer surplus and improvement of firm-level efficiencies (Katz, 2012). The study also included research findings indicating that the impacts and benefits of broadband increase after adoption reaches a critical mass of about 20 per cent of the population, a level that many developing countries have not yet come close to achieving (Koutroumpis, 2009). In terms of GDP effects, the ITU study suggests significantly lower positive effects than the aforementioned World Bank study, especially for developing countries. For example, in Brazil, the impact on GDP of a 1 per cent increase in broadband penetration can reach 0.008 per cent. For Latin America and the Caribbean as a whole, the average impact is 0.0158 per cent. Meanwhile, a study by the Inter-American Development Bank (Zaballos and Lopez-Rivas, 2012) found that a 10 per cent increase in broadband penetration in Latin America and the Caribbean corresponded with an average per capita GDP growth of 3.19 per cent. Despite the difference in these estimates, the positive economic effects of broadband penetration call for a more systematic assessment of the factors that link broadband to higher economic growth.

A World Bank and African Development Bank study estimates the direct contribution of ICTs on Africa's GDP at around 7 per cent (World Bank and African Development Bank, 2012). Nevertheless, mobile technologies, in particular mobile broadband applications, offer significant benefits to Africa's social and economic development if they can be provided at affordable prices. Africa is the birthplace of an ingenious financial instrument called mobile money which, as of 2012, has been deployed in 56 sub-Saharan African and 5 Middle Eastern and North African countries out of a global total of 124 (WTO, 2013). Mobile broadband ICTs can facilitate a surge in these mobile services across Africa.

In a similar vein, a study prepared by McKinsey & Company reports significant gains for developing countries. According to the study, bringing broadband penetration levels in emerging markets to Western European levels could add $300 billion–$420 billion in GDP and 10–14 million jobs . The effect is relatively more noteworthy for African and Latin American counties, which are estimated to gain in the range of 0.7–1.6 per cent and 0.8–1.4 per cent, respectively (Bukktereit et al., 2009). The same study also emphasized the special importance of mobile broadband in stimulating economic growth in countries that lack adequate fixed-line broadband infrastructures, such as sub-Saharan Africa and North Africa. The study also highlights the importance of supportive regulatory regimes, particularly in poor and rural areas.

These anecdotal evidences, however, do not establish a definitive causal link between economic growth and ICT development. Developed countries tend to have better ICT development levels and high broadband penetration rates, but this does not imply the same contribution of ICTs to developing countries with resource-based industries. Moreover, unless proper policies are introduced, there is also very little evidence supporting the view that ICT activities will encourage or affect pro-poor economic growth (Batchelor et al., 2005).

1.3.2. Broadband in education

In developing countries, the goal to employ broadband in the classroom, especially at secondary- and higher-education levels, is tied directly to long-term social objectives, particularly the vital need for a technology-literate population and workforce. The lack of workers skilled in computer- and Internet-related technologies inhibits overall ICT-sector growth and the upgrading of functions in all other business and government realms. A recent study of the Broadband Commission (ITU and UNESCO, 2013a) highlights the tremendous gains being made in the deployment of advanced technologies in education and the continuing disparities in ICT access between students in developed and developing countries.

Some of the innovations driving educational transformation include the use of digital textbooks, Internet-based research and learning tools, audio-video presentation materials, interactive teaching and learning software, open access digital libraries and courseware, virtual science laboratories and museums, and all manner of remote distance-learning and online degree programmes. Many countries have introduced such programmes. Advances in ICTs and the spread of broadband connectivity have encouraged many countries to begin exploring the possibility of provisioning tablet devices directly to students in lieu of textbooks. The Republic of Korea, Thailand and Turkey have recently announced large-scale programmes to gradually replace physical textbooks with digital textbooks, generally accessed from a tablet computer. Digital textbooks are not only easy to update but hold a potential for facilitating self-directed and customizable learning by offering rich content, and tools and resources that can be tailored to learners' abilities and interests. They are particularly useful for learners who are unable to attend regular school lessons for health and disability-related reasons, as well as for learners living in communities with a shortage of media-rich learning resources or school teachers. The initial findings concerning the Turkish case (box 1) have shown an increase in Internet penetration and literacy in the pilot areas.

1.3.3. Broadband in health care

Broadband networks can link doctors, clinics and treatment centres in rural areas to national medical resources, allowing access to remote consultations and diagnostics and tracking health conditions and epidemics much more effectively. The distribution of basic health information, such as pre-natal and maternal care, the prevention and

Box 1. Turkey: ICTs for education FATIH project

In Turkey, the Ministries of Education and Transportation teamed up with Türk Telekom and several local companies to provide technology in the classroom. The nationwide project, Movement to Increase Opportunities and Technology (FATİH), aims to equip 42,000 schools and 620,000 classes with the latest information technologies and reach some 17 million students and 1 million teachers and administrators. The project is estimated to cost $8 billion, with 55 per cent of the funding coming from universal service funds (ITU and UNESCO, 2013a).

The aim of the project is to provide ICT equipment to classes in order to achieve ICT-supported teaching by the end of 2013 and reach completion by 2015. The project is part of a broader set of goals set out in policy documents of the Government of Turkey (Strategy Document on the Information Society, the Development Report, the Strategy Plan of the Ministry of Education and the ICT Policy Report). The principal goals are to ensure that Turkey makes the transition to an information society and achieves e-transformation.7

The pilot projects were launched during the 2010–2011 academic year.[8] In the Kocaeli municipality of Turkey, where the project served as a model for subsequent deployments throughout the country, 81,000 personal computers were distributed to classmates. This helped students and their families develop ICT literacy, as they are allowed to bring their computers home. Statistics show that the programme has increased digital subscriber line (DSL) subscriptions in Kocaeli, which now has the highest home DSL subscription rate in Turkey. Further, the education technology department found that 82 per cent of students reported that their siblings used computers, 55 per cent stated that their fathers used them and 33 per cent, that their mothers used computers (ITU and UNESCO, 2013a).

Source: UNCTAD.

treatment of malaria and other common diseases, first-aid practices and many other topics, can directly improve the quality of life for previously isolated communities. ICTs also facilitate the integration of health-related data into national databases and networks, which allows for more effective and efficient management of all aspects of a nation's health-care services. A range of existing and planned innovative e-health applications and services marks the beginning of dramatic changes in global health-care delivery (ITU, 2012b). The Government of Rwanda has initiated several projects in health care by integrating ICT projects into its broader development plans. The projects aims to automate health-care information systems and improve access to health care in remote areas (box 2).

1.3.4. Social and cultural enrichment

Broadband offers important social and cultural benefits with effects that may be realized over a longer time horizon. In many cases, broadband complements other developmental objectives in countries, while also creating new prospects for social inclusion and empowerment. Key examples of how broadband can help achieve these goals are described below.

Gender equity. In many countries, advocates of ICT development have recognized an opportunity for these technologies to play a leading role in overcoming historical inequities between men and women in employment, social roles and political empowerment. Through community facilities and individual devices, access to broadband can create channels of communication, knowledge sharing and mutual support for women isolated from mainstream social and economic structures. ICT technologies support women's entrepreneurial activities and make it easier to provide equal education opportunities for girls, including access to broader sources of learning and support for women's health and child bearing. (World Bank, 2006; infoDev and Price Waterhouse Coopers, 2010)

Persons with disabilities. ICT providers can enable persons with disabilities to participate more fully in society with the help of customized software, computer and phone equipment. In 2008, the Department of Economic and Social Affairs established the Global Initiative for Inclusive ICTs, also known by its acronym G3ict,[9] which has developed a virtual toolkit on e-accessibility policy, with support from a variety of public and private partners.[10] This and other similar initiatives are helping governments and companies make

Box 2. Rwanda: ICT health-care initiatives

Rwanda was among the first African economies to make ICT an integral part of its development plans and poverty-reduction strategies to fight poverty and facilitate economic and social development. Rwanda sets precise, measurable targets for activities promoting the cross-sectoral use of ICT in its development plans (ITU, 2011b). In health services, the Government has launched several ICT initiatives such as the health insurance information system, the community health worker reporting and information system, and telemedicine. The Government initiated the health insurance information system project to improve the delivery of health services in Rwanda. The project will automate health insurance services that rely on paper-based authentication and claim processing. The new system, planned to be operational by the end of 2013, is expected to enable patient roaming, meaning that patients can receive treatment anywhere in the country and benefit from seamless health insurance claims processing and a unique patient identifier integrated with national identification documents (Rwanda Development Board, 2011).

The community health worker reporting and information system aims to improve reporting and information sharing by community health workers. This initiative will automate a paper-based reporting system containing maternal and child health statistics about patients.

Telemedicine is another project that aims at facilitating specialized health-care services in remote areas. The project will allow medical information to be transferred through audiovisual media and other technologies for purposes of diagnosing or treating patients. Telemedicine has been already in use in three teaching hospitals and two rural hospitals in Musanze and Kabgayi that are connected to King Faisal Hospital. The project should be expanded to include other health institutions across the country (Rwanda Development Board, 2011).

Source: UNCTAD.

rapid progress in empowering persons with disabilities to access education, jobs and other social amenities.

Arts and literature. Broadband plays a major role in distributing and enabling access to all forms of human artistic and cultural endeavours. It enables unlimited access to creative works in high-quality formats, including paintings, sculpture, architecture, music and books. New generations of artists are producing works using digital tools and the canvas of the Internet. millions of books are available for download, often free of charge. Programmes such as the Gates Foundation's Global Libraries initiative[11] are bringing yet more electronic resources and connectivity to remote populations.

Indigenous cultures. ICTs can also serve as a valuable resource to support and preserve the cultural heritage of indigenous peoples. In some respects, ICTs have often contributed to diminishing indigenous cultures by accelerating assimilation. More recently, however, movements have begun to embrace and highlight unique cultural features in many developing countries. Some of these efforts utilize broadband ICTs to connect disparate members of tribes and ethnic groups, share their stories and knowledge and strengthen dying languages or traditions. ICTs can also act as a preservation medium for arts, crafts, skills, mythologies and almost any other cultural memory. Through these efforts, numerous groups have been working not only to support indigenous peoples, but to expand awareness of their lives to others through educational initiatives (UNESCO, 2011).

1.3.5. Political engagement

Some the most significant and dramatic examples of the transformative potential of ICTs have been witnessed in recent years in the political arena. Expanding access to the ability to communicate ideas can contribute to increased political participation in developed and developing countries alike.

Information access. ICTs enable more knowledgeable and effective participation across the spectrum of political involvement. Bloggers have emerged as the front lines of investigative and activist political advocates in many countries, while traditional journalism has extended its reach by online reporting. Political parties and other organizations have much more resources to connect with and influence voters, contributors, as well as politicians and government agencies. The presence of so many outside information sources also helps reinforce pressure on government to provide greater openness and transparency, allow access to all manner of internal records and data, investigate and publicize questionable practices and inform citizens in a politically neutral manner. ICTs – especially the social media – have also played a pivotal role in activist movements, contributing to political reforms around the world.

E-government. An essential contribution of ICTs in the public sphere has emerged in the form of e-government programmes. Many governments have recognized that there are a variety of opportunities to employ broadband ICT-based services and applications to improve and expand public services, and to encourage citizens to enhance the quality of their lives. Delivery of government services, including ICT capacity-building and public-awareness programmes, can be a vital means to enhance the value of ICTs for citizens and governments alike. Public ICT networks and services for rural communities provide other benefits for citizens, such as access to local government websites, documents, licences and tax records.

E-government initiatives can provide momentum for promoting open governance, transparency and the increased participation of citizens in democratic governance. The Open Government Directive issued by the Obama Administration, the Malmö Ministerial Declaration and the Digital Agenda for Europe highlight citizen participation and transparency in government and politics. Moreover, many Member States of the European Union have passed relevant legislation or are in the process of doing so while simultaneously developing new practices in e-government (Capgemini et al., 2011). These initiatives can alleviate certain problems associated with poor government services such as low levels of citizen trust, corruption, poor performance, low accountability and abuse of power by public officials. By allowing the public to access the business of government – from legislative meeting minutes and budget proposals to map-

based information – e-government also offers a panacea for these problems.(Godfrey et al., 2013)

Political activism. Advanced ICTs have also played a pivotal role in activism and even revolutionary movements, contributing an essential component to popular uprisings and political reforms around the world. Despite the best efforts of some regimes to suppress dissent, information-age means of communication are next to impossible to inhibit. The combination of Facebook, Twitter, texting, YouTube and other video channels, bloggers, and international media sources has allowed activists to share strategies and gain sympathetic support in numerous societies, including repressive regimes and open democracies. In several cases, including the recent Arab Spring uprisings in the Middle East, ICTs may have tipped the scales in favour of full-scale revolutionary change.

Broadband-enabled ICTs pose challenges to users and governments alike. The role of these technologies in various areas of political engagement may be skewed by those who can access information and whose viewpoints or interests are represented or disseminated. Moreover, broadband allows the rapid spread of social media among social masses, which can also be used for misinformation and propaganda purposes because of the anonymity of its participants. Since there is often no moderator to verify the reliability of its content, social media may used to rapidly spread rumours and false information (Comnios, 2011). For instance, during the riots in the United Kingdom in 2011, social media were used to mobilize the masses for non-democratic and non-progressive actions (BBC, 2011a). Some social media users spread false news and information over social networks during the Syrian conflict (BBC, 2011b).

2. The Broadband Ecosystem

Access to broadband ICTs must be understood in the context of their evolution during the twenty-first century as a dominant medium of human interaction. Broadband implies not merely speed or capacity of network data transmission, but a wide array of capabilities, services and applications, as well as technology configurations and platforms, all of which depend upon high-capacity interconnectivity among their components. Thus, true access to broadband is measured by the usefulness of such access to end users – individuals, households, businesses and institutions – and the specific activities they are able to accomplish by utilizing broadband communications.

Therefore, it is important to recognize the features and components of what has been called the broadband ecosystem: the interrelated elements that must be in place at multiple levels for broadband services to deliver their potential. The following descriptions summarize the main components of this ecosystem, particularly in the context of a large number of developing countries where broadband is still far from widespread.

2.1. Infrastructure and services

Broadband ICT infrastructure consists of several layers of transmission networks, access facilities and end-user services – part of the integrated ecosystem – all of which can be deployed in a variety of configurations. The broadband-based services obtained by end users are delivered over this infrastructure and are provided by a diverse group of related and competing suppliers. Some principal elements of broadband infrastructure and services are described below.

Backbone networks. Broadband interconnection depends upon very high-capacity international and national backbone transmission networks that utilize fibre-optic cables for most high-capacity intercity routes and international connectivity. Ultimately, all broadband networks and services must be interconnected with the global Internet as well as national public and private data networks. The transmission capacity required on these networks will increase as more users are connected to broadband services, as will the costs of the national backbone network. A typical fibre-optic network buildout to rural regions, for example, can cost around $5,000–$8,000/km.

Expanding broadband access beyond urban centres is one of the main challenges of achieving universal broadband. This requires adding capacity to reach hub locations that are close to rural population centres. Such broadband hubs might include wireless transmission and/or fibre optics – and sometimes satellite connections – all of which can be expensive to construct and maintain. These factors place significant constraints on the willingness of commercial operators to extend backbone networks deep into rural regions, where revenues from local broadband services may be low and unreliable.

Local broadband access networks. Completing the broadband connection requires wireline or wireless links between the backbone network and end users. These are often referred to as "the last mile". Traditional wireline telephone networks are widely used to provide dedicated broadband connections to businesses, institutions and homes in many countries, including via asymmetric digital subscriber line – ADSL – connections, coaxial cable television systems and fibre to the home, or FTTH. The costs of building such wired local access connections to homes in towns and villages depend heavily upon the density of the location, such that higher expected demand can drive down unit costs dramatically, from over $1,000 to less than $100 per connection.

All of these platforms are widely deployed in developed markets and are finding new openings in developing countries, at least within relatively dense and higher-income urban areas. Established incumbent telecommunications operators, along with a variety of new competitors, are seeking to expand the market base for broadband services

by delivering combinations of options known as multiplay packages that include local and long-distance telephone calling, high-speed Internet access and television entertainment.

Wireless broadband. The most significant trend contributing to the worldwide spread of broadband has been the rapid and dramatic increase in the capacity and functions of wireless telecommunications services. The mobile revolution was driven by the availability of flexible, convenient and increasingly affordable voice telephony. As basic mobile service upgraded to 2G, 3G and 4G technologies, together with fixed wireless such as Worldwide Interoperability for Microwave Access – WiMAX – or Wi-Fi, broadband followed a similar trajectory. More and more users worldwide, especially in rural areas, are gaining wireless broadband connections. Similarly, the cost structure of wireless networks continues to evolve rapidly as new innovations and growing demand drive down the costs of infrastructure and services, including for rural and remote networks. Some estimates foresee mobile communications services reaching a price threshold as low as $1 per month for basic users. Even broadband prices are already decreasing to below $10 per month in some markets.

Retail broadband Internet services. In a broadband environment, infrastructure and retail end-user services that are delivered over broadband networks are not always the same. Services can be offered by multiple providers, including network operators as well as independent providers, such as Internet service providers, mobile virtual network operators, aggregators and resellers, and other third parties. The more diverse the service offerings, the more robust the broadband market and ecosystem. For many users in developing economies, especially rural regions, access to broadband is most likely to be available through public access Internet facilities that offer the use of computers, Internet, telephone and other ICT equipment and services. Typical models include government-sponsored telecentres, as well as private commercial cybercafes, along with ICT labs in schools, post offices, libraries and other public places. In some locations, public broadband access may be offered simply as a free wireless (Wi-Fi) signal, managed or funded by the local government.

Data storage and exchange points. For broadband, the massive amount of digital information and applications that must be stored and exchanged requires separate facilities and increasingly large investments. Companies and governments that deal in terabytes and petabytes of data require access to infinitely huge storage sites – data warehouses – along with ultra-high capacity transmission links and exceptionally reliable and secure power sources, physical premises and data protection protocols. The collective body of such facilities worldwide is referred to as the "cloud". However, there are great cost efficiencies to be gained from retaining locally produced and consumed data within the boundaries of individual markets, including both domestically produced content, and local pockets of major global applications (OECD et al., 2013). Such a strategy can be achieved by establishing designated Internet exchange points, which keep domestic data within the national network, as well as local data warehouses and domestic cloud arrangements.[12]

2.2. End-user devices

The advances involved with broadband require far more sophisticated equipment for end users than what was necessary to benefit from traditional telephone services. Like the underlying networks and transmission technology, the broadband revolution has been driven by an ongoing mass transformation in the market for end-user devices that connect to these networks. The separation between computers and phones is becoming entirely obsolete, and the range of consumer and business equipment that now qualifies as smart – that is to say, that can connect to the Internet and other devices and perform multiple interactive functions – continues to expand.

Smart phones and tablets have become the fastest growing elements of the hardware market. Personal computers and laptops remain vital, especially in the business world, but even these tend to merge with the mobile and tablet domain. Meanwhile, a host of other devices are signing up for the Internet of things, from smart televisions, game consoles and countless other consumer toys, to security devices, automobiles and nearly all links in the chain-of-business processes.

As the scope of hardware choices continues to expand rapidly, the cost of such equipment has been constantly declining, which creates increasingly flexible options for utilizing broadband services. In developing markets, most users favour smaller, more affordable mobile devices, while larger, more robust computers are more often found in offices, schools and access centres. Even with cost reductions, however, the price of such equipment still represents a significant challenge in the development of the local broadband market for developing countries. Rapidly changing standards and obsolescence compound the challenge, as customers are unlikely to be able to replace or upgrade devices very often.

2.3. Software, applications and content

The value and appeal of broadband services are fundamentally dependent on software platforms and operating systems, multimedia applications and the wealth of information content that is made available through broadband connectivity. For many users in developing countries, the nature of information that can be obtained with the Internet, e-government networks, mobile broadband applications and other sources may not yet be as comprehensive as for customers in more developed markets. Scope-of-information applications and available content continue to expand without limit, and in the context of the social networking revolution, users themselves are becoming the most significant source of such content. As developing countries become more connected to the global information society, their interests and needs will necessarily have to be more reflected in the knowledge bases that they can access and to which they can contribute.

Already, the rapid emergence of broadband networks and advanced consumer devices has yielded an explosion in new "killer apps": ICT applications that have become virtually ubiquitous. The most prevalent of these are in the realm of social media and constitute the interactive, user-driven phase of Internet development known as Web 2.0. Facebook, the single most widespread online application, was launched only recently – in 2004 – and in less than a decade has grown to over a billion users, half of whom primarily use mobile devices to access the service. Numerous other such services, from Twitter and Google+ to Chinese Qzone and Sina Weibo, reach hundreds of millions of users worldwide. Other types of social media allow limitless sharing of videos (YouTube), photos (Flickr), and ideas (weblogs). Virtually all of these infinitely popular Internet applications were created in the mid-to-late 2000s, concurrently with the spread of broadband communications.

The newest wave of applications operating through mobile phones has heavily augmented, and to a large extent, displaced, conventional online computer-oriented applications. These new applications can offer highly innovative features unique to mobile broadband, further reinforcing demand for wireless services and devices.

2.4. Intellectual property rights

Intellectual property rights (IPRs) aim to stimulate the creation of new ideas, designs and products by protecting the inventor against unfair competition and the unauthorized disclosure of trade secrets. The mounting importance of technology and creative works in the modern economy has been increasing the value of intellectual property assets relative to physical assets.[13] In e-commerce, for example, intellectual property plays a crucial role, as many products involved in e-commerce possess intellectual property such as music files and software; the system that facilitates e-commerce also uses IPR-protected assets such as Internet networks, software, chips, routers and switches.[14] A firm's capacity to absorb knowledge and apply it to innovation is mainly determined by the extensive and complementary relationship between firms and the knowledge system, which includes organizations such as universities, financial institutions, industrial infrastructure and entrepreneurial associations in which they are embedded (Gehl Sampath, 2007). In LDCs, however, certain features of their institutional framework in which learning and knowledge generation is embedded might limit the role of IPRs in inducing innovation. For example, in Bangladesh, an UNCTAD study (Gehl Sampath, 2007) found that 50 per cent of the agro-processing firms, 96 per cent of pharmaceutical

firms and 55 per cent of textile and ready-made garment manufacturers surveyed considered that technology transfer from external sources and the presence of IPRs in the local context did not play a role, either as a direct incentive for innovation or as an indirect incentive enabling knowledge spillovers. Therefore, coherent national policies that focus strategically on enabling innovation in the three sectors will play a key role in transforming the sectors into more competitive modes and enable local firms to deal with any potential harmful effects of intellectual property protection.

Intellectual property also poses challenges to developing countries that may wish to promote broadband e-infrastructure and participate in the knowledge economy. Due to scarce financial and human resources, many LDCs have also faced difficulties in increasing educational attainment and spreading literacy. The fact that developed countries are the main producers of knowledge goods and existing IPR regimes is a current and potential deterrent to learning in the developing regions (Patel, 2010). Moreover, today's international intellectual property laws are a significant barrier to reform, as multilateral and bilateral trade treaties are increasingly introducing protective measures and limiting the policy space of domestic policymakers (Shaver, 2010).

Initiatives have been launched to overcome these barriers to global knowledge goods. One such initiative, access to knowledge, is also known as A2K. It covers a host of policy issues, including patent and copyright policy, media openness, access to ICTs and government information, open-access scholarship, spectrum allocation, interoperability standards and the preservation of traditional knowledge.[15] The A2K campaign particularly recognizes the need for strengthening economic development in the South through educational resources, in particular curricular resources in primary, secondary and tertiary education. It aims to limit the barriers imposed on access to knowledge by current and forthcoming intellectual property policy and widen the horizons of access by positively licensing knowledge goods. The success of these initiatives also depends on ICTs, including broadband. These technologies make possible the widespread low-cost distribution of high-quality intellectual property. For example, the open-source movement initially took place in computer software but was later applied to intellectual property related to teaching and learning activities such as open-education resources, open courseware and open knowledge (Patel, 2010).

Innovative capacity within local firms is very low across all three sectors. The study finds that the presence of IPRs in the local context does not play a role, either as a direct incentive for innovation or as an indirect incentive enabling knowledge spillovers (through various technology transfer mechanisms such as licensing, imports of equipment and government–firm technology transfer). Within a country, IPRs tend to benefit transnational corporations operating in the local market, as local firms are not sufficiently specialized to protect their innovations under the current IPR regime.

2.5. Financial sector

The multiple facets of the broadband ecosystem require a considerable degree of financial investment and economic support. In the past, the build-up of telecommunications services was financed initially by public funds in most countries, as telephone operators were State-owned enterprises. The shift to private, competitive market structures and the rapid rise of the mobile industry did not dramatically expand the role of outside finance in the sector, as most large telecommunications operators have the means to self-finance their capital investments in this profitable and healthy market.

The new, highly diverse and costly components of the broadband world are creating a greater need for innovative financing sources and wider contributions to ICT-sector investment. It is thus important to recognize that financial institutions, funding mechanisms and a range of public and private actors play a vital role in the ecosystem. Expanded participation in the financial side of the ICT sector can be a healthy side benefit of broadband development. Diversification of investment sources, asset ownership, revenue streams and business relationships across a larger portion of a nation's economy can help strengthen economic ties in general and ensure greater

public and private commitment to the growth of the information society.

In most developing countries, the private financial and banking sector has been largely on the sidelines of ICT-industry investments. However, new financial instruments, such as domestic venture capital funds, could be established to allow private and institutional investors to participate in the medium- to long-term prospects of broadband development. Similarly, smaller entrepreneurs, start-up ventures and partnerships may be in a better position in the broadband market to contribute to, and benefit from, market growth, especially with incentives from public broadband policies.

In addition, the growth of broadband and mobile ICTs has helped to enable new initiatives within the financial sector. These technologies expand citizen access to banking, money transfer and a growing trend of mobile money services. By partnering with ICT companies, financial firms can have a stronger impact on sector development, and their own contribution to society can expand as well. For such expansion to continue, and in particular for robust e-commerce services to take hold in developing countries, the financial services industries will need to become even more deeply committed to integrating their industry with the ICT revolution.

2.6. Human skills and tacit know-how

Finally, beyond all the technical facilities, infrastructure, equipment, software, and other components, an equally critical element of the broadband ecosystem involves people in virtually every sphere of activity. This includes skilled personnel on the supply side, from business managers and employees, to public officials and users on the demand side. It is especially difficult for markets with a low supply of technical workers to enhance the labour force needed to expand highly technical services, especially in remote locations, where installation, maintenance, technical support and customer service will be especially important.

As many users are unfamiliar with computers, the Internet and other advanced ICTs, local broadband providers will need to reinforce their operations with significant customer assistance, training and outreach to encourage demand and ensure good market responses. All of this implies a far greater level of local human resource responsibility than is necessary for basic telephone services. Key personnel may be part of the staff of a local telecentre or telecommunications service provider, or engaged through schools, libraries and local government offices to help support community ICT development. They may also contribute actively to the creation and dissemination of local information content, in cooperation with rural users, community groups and businesses.

Human skills are also important for improving the supply capacity of enterprises, particularly SMEs, in developing countries. The lack of a workforce with sufficient training in ICT and mobile technology is hindering SMEs from diversifying or branching out into e-commerce (WTO, 2013). Without sufficient awareness in ICTs or a skilled workforce in the private sector, developing countries will not harvest the full benefits of accessing new ICTs and increasing broadband penetration.

Human capital improves innovation capacity of an economy as well. OECD data show wide disparities in innovation output between OECD regions. Human capital is the strongest determinant of the outcome, almost double the impact of research and development (OECD, 2010). Trade in capital goods, participation in global production networks and foreign direct investments can lead to technology spillovers to local firms, either directly through licensing and technology transfer or indirectly through tacit know-how passed on to local personnel (UNCTAD, 2012b). Nevertheless, in the absence of skilled personnel, a country's technology absorption capacity will be weak, and local innovation output will deline rapidly.

3. Key Policy Challenges and Opportunities for Broadband Development

The preceding sections highlight the wide scope of interrelated trends and interests that are part of the rapidly evolving broadband development landscape. While most governments, industry participants and international institutions recognize the importance of expanding and accelerating broadband and its benefits in developing economies, a range of complex challenges hinders such growth. Current challenges spread across the full spectrum of ecosystem components are as follows:

(a) High costs of capital investments in infrastructure;

(b) Lack of financial mechanisms and investor interest in marginal areas;

(c) Low revenue potential from low-income, low-demand users;

(d) High costs for broadband devices, compared with simple phones;

(e) Lack of awareness, skills and training in the use and value of broadband;

(f) Insufficient supporting infrastructure – electricity and roads – in many locations;

(g) Inadequate ICT training and knowledge among government officials;

(h) Lack of digital content in local languages and cultures;

(i) Harnessing the benefits of broadband infrastructure.

3.1. Information and communications technology policy and regulation

Laws, regulations and government oversight need to adapt to the rapidly changing dynamics of the broadband market. Policy regimes that were established to address more traditional communications and information industry conditions may prove inadequate to support the transition to an integrated broadband setting. Some key concerns are summarized below.

Converging regulation. Most countries have a separate telecommunications regulatory agency responsible for licensing, economic regulation and frequency management relative to a defined group of legacy telecommunications operators. However, other broadband and ICT-related activities may be regulated under separate broadcasting authorities, cable television and satellite rules, media and information content authorities, business and corporate regulations, and a variety of other regimes. Some countries have begun considering converged media or ICT regulators to address the overlap of these issues, while others have emphasized light regulation, focused mainly on fair competitive practices. Regardless of the approach, the implications of all multifaceted regulatory practices need to be understood and accounted for.

Facilitating market entry. Virtually all countries that have achieved high levels of broadband access have emphasized competitive, coherent, market-oriented policies as a foundation for ICT market growth and innovation. Market-based technology-neutral policies help ensure that investors and customers keep up with rapidly changing technologies and applications, while vigorous competition ensures that cost savings are passed on to users. Even in rural areas, there is an increasing array of solutions that can deliver commercially viable broadband services to many locations and user groups, given the flexibility to deploy cost-effective technology and targeted service options. Effective rural broadband development policies thus tend to facilitate market entry and competition in the delivery of network infrastructure and services at all levels.

This is accomplished, for example, by issuing multiple licences and using a relatively open regime that allows new competitors to establish service and build networks wherever they perceive a market opportunity. Such licensing policies also involve a robust and strategic allocation of the frequency spectrum among different operators

and platforms, including 3G mobile, WiMAX, very small aperture terminal, commonly known by its acronym VSAT, and other broadband wireless options. In some cases, leaving new spectrum available on an unlicensed basis, as typically applies to Wi-Fi technologies, can help accelerate deployments with minimal barriers.

For rural markets in particular, open-market entry policies can also help promote targeted local investment in these areas by new investors where established national operators might have less interest or incentives. In the context of broadband services, this is a relatively new model, particularly for developing countries, although the precedent of smaller, rural telephone companies has been followed in a number of countries. With declining costs of broadband wireless access and innovative new microcell architectures, this concept of independent local communications operators is gaining interest as an option in a number of countries.

Ensuring competitive access. Effective broadband market development depends upon fair and equal opportunities for all competitors. This requires that those investing in new telecommunications networks and services be able to interconnect with existing networks on equitable terms. More broadly, the efficient provision of network access can be facilitated by measures to encourage shared use of common passive infrastructure, such as cell towers, telephone poles, underground conduit and dark fibre.

Many countries have adopted forms of local open-access obligations, including local loop unbundling, which require owners of last-mile networks to allow the interconnection of such competing service providers to their access facilities. Non-discriminatory, cost-based access obligations for sharing backbone networks and passive infrastructure, such as towers and telephone poles, are also frequently adopted as part of a pro-competitive regime.

The regulator must ensure that pricing or cost-sharing arrangements between network operators are fair and equitable. In the case of rural communications infrastructure, this is especially important, as the costs to build into rural areas can be high, and interconnection to the national backbone should be as affordable as possible to encourage rural investments.

3.2. National broadband strategies and plans

Many countries have recently embarked upon the creation of a comprehensive framework for promoting broadband development. These initiatives may appear as a national broadband strategy or plan, and sometimes as a national ICT strategy or plan, although the latter may address a wider set of issues. Such a strategy or plan differs from a broadband, telecommunications or ICT policy in that it goes beyond policy foundations to identify specific tasks, activities, targets, responsibilities and time frames to achieve tangible results. For example, stimulation strategies can be oriented to ensure coordinated broadband demand so that consumers adopt the technology and benefit from broadband access. The World Bank infoDev programme has produced the *Broadband Strategies Handbook*, (Kelly and Rossotto, 2012) and the online Broadband Strategies Toolkit,[16] which provide in-depth discussions and recommendations on the development of such strategies.

Governments of developing countries across different regions are putting in place such ICT policies and national broadband plans. For example, Rwanda's vision is to transform the country into a knowledge-based country by 2020. To achieve this, improvements were put forward in the business and regulatory environment, as well as in the ICT infrastructure. A 2,500 km fibre-optic backbone connects 30 districts of the country and 9 major border points. A metropolitan network covers 3 districts of the capital, Kigali, and government offices. Several ICT initiatives, in areas such as health, financial services, e-government and agriculture, have already had a significant impact on Rwandans. E-health solutions have led to a vast improvement in both quality and access to health care. E-procurement has increased government efficiency in Rwanda by stimulating good governance and promoting accountability and transparency.

Effective broadband and ICT development policies are based on a strategic policy framework involving multiple agencies, which is actively endorsed at the highest level of government. Policy leadership may be asserted by the relevant ministry of communications or of ICT, by the national telecommunications regulatory

authority, or by a specialized ICT agency through close coordination with and participation of other offices. Key participating agencies generally include ministries of education, health, local affairs, culture, and more, as well as State and local governments. There may be a national coordinating committee to develop policy goals and allocate implementation responsibilities. In addition, some countries have developed broadband stakeholders groups, consisting of private sector operators and suppliers, user groups, academic and research institutions, and non-governmental organizations, among others.

A coordinated national broadband policy framework incorporates a comprehensive vision of broadband as a critical contributor to national socioeconomic development, as well as a range of specific goals and action items, such as the following:

(a) Objectives for broadband expansion, including numerical targets for penetration within defined time periods, to create incentives and momentum for growth;

(b) Implementation strategy for key components of the policy, including priority activities such as infrastructure funding, licensing and government networks;

(c) Stakeholder roles and allocation of responsibilities, for both public agencies and private sector operators;

(d) Funding sources, mechanisms and amounts to be channelled to specific activities;

(e) Public relations strategy to engage citizens in contributing to the planning and implementation process, and to promote awareness and demand for broadband.

3.3. Other incentives for harnessing broadband for inclusive development.

Governments need to ensure that the broadband network infrastructure does indeed lead to economic development and social inclusion. To overcome the challenges they face in developing inclusive broadband ICTs, governments should work in collaboration with ICT-sector stakeholders, development advocates, and citizen and community groups in pursuing a host of policy and strategy initiatives aimed at spreading the benefits of broadband as widely and equitably as possible.

Expanding beyond the market. Even where market-based development is fully encouraged, practical conditions may limit the willingness of private firms to invest in broadband, especially in certain rural areas where likely returns will not cover costs. These conditions may arise from a combination of high costs to deploy infrastructure, as well as low incomes and sparse populations that may not be likely to generate sufficient revenue. Broadband services, equipment and software may not be affordable to many rural users, further suppressing demand, even where there may be interest in obtaining these services.

Many governments, together with the private sector and other stakeholders, have developed a range of policies to help expand broadband beyond these near-term market boundaries. Direct or indirect financial interventions to promote such expansion or universal access are common components of nearly all broadband development policies. They include a variety of forms of public–private partnerships, in which government funding helps underwrite some of the costs or risks of private investment to the benefit of both, as well as the use of universal service funds to stimulate supply and demand in unserved and underserved locations. For example, the Australian Government used over $200 million from its Universal Service Obligation and Fund and spent over $1 billion via its Connect Australia programme to extend broadband fixed and mobile networks to rural areas. Similar funds have been established and programmes initiated in the Republic of Korea, Malaysia and Chile (box 3).

Choice of broadband technology may also affect costs of connecting subscribers in remote areas. Satellite technology plays a key role in overcoming inaccessibility and lack of terrestrial infrastructure. Although the total cost of satellite broadband connectivity per subscriber is high, the marginal costs of connecting an additional subscriber are relatively low. Given that nearly almost half of the world's population lives in hard-to-reach rural regions, satellite technology can facilitate access to broadband services in those areas (ITU and UNESCO, 2013b).

Box 3. Promoting Internet access in rural areas: Country cases

In Australia, the national administration and regulatory authority have sponsored an extensive series of programmes to support rural broadband access, including the Universal Service Obligation and Fund, which has generated over $200 million, the Connect Australia programme, which has allocated over $1 billion for extending broadband fixed and mobile networks to rural areas, and a new national broadband network initiative to create a new national wholesale fibre backbone.

The Korean broadband success story has also been aided by strategic public investments and partnerships. The Informatization Promotion Fund was used to finance projects, with contributions from the Government (39 per cent) and the private sector, through spectrum-licensing fees, operators levees and earnings from Fund loans. The Fund was jointly managed and administered by the then Ministry of Information and Communication and Institute of Information Technology Advancement. A $900 million project, Korea Information Infrastructure, invested in the national high-speed public backbone, the development of ICT applications, and the promotion of research and development and information technology pilot projects. Private sector carriers, both Korea Telecom (now KT Corporation) and others, were contracted by the Broadband Planning Division of the aforementioned Ministry of Information and Communication, with Government funds leveraging private investment (World Bank, 2009).

In Malaysia, the Government established a national broadband initiative to promote the expansion of broadband services throughout the country and achieve 50 per cent household penetration of fixed or mobile broadband by 2010. Some $4.2 billion were allocated from the Universal Service Provision Fund to finance ICT access for hundreds of rural schools, libraries and clinics. Public access community broadband centres and other telecentre projects have also become a successful component of the Malaysian strategy. Over 220 community broadband centres provide broadband access, ICT training, and online business or website development. The Government has also allocated $305 million from the Fund to provide free personal computers to qualified students and households, and discounted broadband subscription prices of $6 per month for rural subscribers.[17]

Chile was a pioneer in promoting rural telecommunications access through its Telecommunications Development Fund, which used open, competitive tenders and achieved rapid expansion of rural networks and establishment of infocentros (information centres). In 2008, the Chilean Government announced a new programme to provide mobile broadband in underserved rural areas by using a hybrid method that established minimum service conditions for broadband access and a ceiling on prices. The Government offered subsidies amounting to more than $100 million through a reverse auction to develop about 1,500 municipalities in rural areas. As a result of the programme, broadband coverage is expected to increase to 90 per cent of Chile's population (World Bank, 2012).

Source: UNCTAD.

Policy support for greater access. Market incentives are often insufficient to ensure the availability of goods and services to those that need it most but do not have the ability to pay. Express governmental support to promote access to broadband to the poor, particularly in rural areas, is required. This can take the form of additional financial incentives for greater penetration into rural areas, direct governmental provision of broadband infrastructure to rural areas and network access partnerships that facilitate broadband access to the poor at lower rates, among others.

Promoting relevant ICT content. Policies that promote the development of relevant ICT content, especially with a focus on the interests of less advantaged users, can help reinforce broadband demand. They can also contribute to the creation of ICT-based businesses and jobs, including software companies, business process outsourcing and online services. Such policies encourage the growth of domestic content that is of value to diverse groups of citizens and communities, while emphasizing awareness, training and economic opportunity.

Support for programmes focusing on local content and application development can be provided through various government initiatives that include partnerships with educational institutions, private corporations, non-governmental organizations, other public funding programmes and activities within local communities. ICT content in developing countries that addresses the interests of non-traditional users, from farmers and rural residents to indigenous peoples, and reflects local community values and social conditions can include the following components:

(a) Content that is available in local languages and addresses indigenous cultures and traditions;

(b) Applications focusing on ICT use in agricultural, fishing, forestry, tourism and other country-specific economic sectors;

(c) Customized social networking services and programmes that encourage user-generated local content;

(d) Mobile applications adapted to the devices and capacity levels of typical local users;

(e) Applications and services aimed at specific disadvantaged or special groups, such as women, the elderly, disabled persons and non-literate users;

(f) Business management and support software for local SMEs;

(g) Entertainment content, including music and television programming, reflective of national values and interests.

Promoting use of ICTs and broadband technologies in local production. The high cost of relevant software, applications and hardware, such as computers, servers and parts, can be unaffordable for enterprises, particularly SMEs in developing countries. High tariffs or inconsistent tariff regimes can lead to high prices of ICT products (WTO, 2013) and may discourage SMEs to take up e-commerce and thus hinder their development and expansion into new markets.

Broadband also allows enterprises to connect internally as well as with other national and international producers. A firm can participate in global value chains when it has access to well-developed ICT infrastructure involving broadband networks that provide integrated and uninterrupted information flow across companies and countries (OECD, 2013).

Local government roles and responsibilities. Local and regional policies and rules can be at least as influential as national standards on broadband growth opportunities. Local government can bring valuable perspectives to ICT planning and implementation, whereas their opposition or exclusion can often lead to unforeseen impediments. Some key roles and functions played by local governments in the process of promoting rural ICT development include issuing permits and fees for infrastructure rights of way, local taxes, providing e-government services and facilities, direct participation in community access projects and contributions to local ICT educational and awareness campaigns.

Bridging the gender gap in broadband divide. Policymakers need to address another problem: gender digital divide. Inclusive broadband ICT policies should consider the accessibility, affordability and digital literacy of discriminated groups in society. Therefore, policies need to promote content catering to the interests and needs of women, including content focusing on education, health, jobs, economic empowerment, and family and community life. Moreover, policies should encourage women and girls to embrace technology for their own empowerment, study and choose careers in this sector and engage passionately in the future of broadband (ITU and UNESCO, 2012).

Promoting open educational resources. Open educational resources also hold significant potential to accelerate free access to knowledge and facilitate the adaptation of content to local needs and languages (ITU and UNESCO, 2013a). Therefore, online educational materials, applications and services can be provided with local content and in local languages free of charge by governments and public organizations. Collaboration between developed and developing countries, as well as among the latter, would facilitate closing the broadband ICT divide. Individual institutions also play an important role in this initiative. In 2001, the Massachusetts Institute of Technology announced the release of nearly all its courses on the Internet for free access. In April 2012, the World Bank launched the Open Knowledge Repository, an online collection of World Bank publications released under Creative Commons licensing, which includes more than 9,200 research works.[18] The content of the open resource materials is crucial in maximizing its benefits. Another open educational resource, launched by the Delft University of Technology in the Netherlands, is particularly important for developing countries, as it offers courses on clean water technology for developing countries and updated information on water treatment processes from various regions.[19]

4. Conclusions

This study discussed recent trends in broadband ICTs and the nature of the broadband divide, a significant obstacle to the development of inclusive digital societies. It also described policy practices in some developed and developing countries. Major advances in broadband technologies and improved connectivity are not only facilitating the spread of new and existing popular applications and services but also reshaping the social and economic spheres across the globe.

Many studies document the contribution of broadband penetration and deployment to economic and social development. There is evidence that economic gains occur at the macrolevel in terms of GDP growth stemming from broadband expansion, while benefits can also accrue at the microlevel in terms of productivity gains, employment and firm efficiencies. The literature suggests that broadband ICTs offer socioeconomic gains to economies in the areas of e-commerce, education, health care, culture and political inclusion.

However, the precipitous growth of the sector and rise in broadband Internet penetration in various parts of the world has not helped to bridge the Internet divide. On the contrary, the benefits of broadband applications and markets, as well as advances in ICTs, have been unevenly shared among countries, thereby in many ways intensifying existing inequalities. In particular, many people living in LDCs still do not have sufficient access to these technologies and services. A broadband divide also exists between urban and rural areas, and between higher- and lower-income populations, even in developed countries. The broadband divide has been hindering private sector online commercial activities in many developing countries. While North America, Asia-Pacific and Western European countries together account for more than 90 per cent of e-commerce sales from producer to consumer, Middle Eastern, African and Latin American companies combined constitute only about 5 per cent of the total.

Several factors explain these gaps. Some of the main barriers to broadband ICT development are the high prices of the Internet, the lack of an enabling policy environment, elevated infrastructure costs, low revenue potential and low digital literacy rates. Moreover, intellectual property also poses challenges to developing countries that seek advances in broadband e-infrastructure and wish to participate in the knowledge economy. Certain features of their institutional framework in LDCs, in which learning and knowledge generation is embedded, might limit the role of IPRs in inducing innovation.

Empirical studies have found broadband technology to have positive effects on productivity and job creation. Although most impacts have been realized through its adoption by larger, multinational firms, SMEs also hold great potential for improving operating efficiency by better integration of broadband in production, sales, marketing and distribution processes. Moreover, some country case studies have reported significant advances in various areas such as access to education, online health services, and social, cultural and political inclusion. Improvements in ICTs and broadband technologies have been transforming the conventional education system by facilitating the spread of digital textbooks, Internet-based research, interactive teaching, open access to digital libraries and so forth. In health care, these new technologies are linking patients, doctors, hospitals and treatment centres – even in remote areas – to national health-care systems. Furthermore, broadband technologies promote social inclusion and the empowerment of women and persons with disabilities, facilitate the spread of local artistic works and indigenous cultures and contribute to increased political participation in developed and developing countries alike.

To close the broadband divide and maximize the benefits of ICT and broadband technologies, governments need to devise comprehensive strategy frameworks for national broadband development that include tangible shared objectives. Such frameworks should be

established, planned and implemented using a multi-stakeholder approach. Coherent and holistic national policies and plans with clear targets and strong government commitment, clear regulatory frameworks and coordinated demand strategies can help governments maximize the benefits of broadband access. Providing an enabling regulatory and policy environment focusing on open markets and fair competition is crucial to ensure the benefits of broadband ICTs as well.

Literacy, including traditional and digital literacy, plays a decisive role in the penetration and use of broadband access. Therefore, investment in education, with a focus on ICT-oriented curricula, is also critical to benefit from broadband development.

In addition, local content development can strengthen knowledge in communities and can be used as a platform to reach new markets. In this regard, the development of an appropriate model of broadband infrastructure is essential to realizing the benefits of ICTs. The surge in mobile money deployments in Africa has shown that when the right technologies and products are introduced at affordable prices, they can lead to significant benefits in LDCs. Thus, new mobile technologies, in particular mobile broadband applications, offer significant social and economic development gains if they can be provided at reasonable prices. Nonetheless, financing is still a major obstacle in countries, and new business models are required to capitalize on available opportunities.

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5 Regional groupings are based on World Bank definitions. Country groups marked by * exclude high-income countries according to the World Bank definition but not necessarily developed countries according to the United Nations definition.
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IGF INITIATIVES

National, Regional and Youth IGFs - NRIs

WHO ARE THE NRIs?

NRIs is an acronym that stands for National, Sub-Regional, Regional and Youth IGF initiatives. These are the Internet Governance Forums organized on a national basis in different countries, or on a regional or sub-regional level, depending on the size of the geographic area, where the main criteria for identifying region is geography, but also in some cases mutual language and culture.

A shared objective for all NRIs is adhering to the core values of the IGF, and contributing to Internet Governance related matters, nationally, regionally, and globally. Youth IGFs are specifically organized Forums that discuss the issues pertaining to the Internet arena from the youth point of view. All NRIs are required to support the main IGF criteria and principles in order to be listed on the IGF website.

There are national IGFs in 71 countries, 17 sub-regional and regional IGFs and 9 Youth IGFs, organized on national or regional levels. 10 NRIs are in-formation.

NRIs ANNUAL MEETINGS in 2017

(January to August)

January

- Trinidad and Tobago IGF

March

- Afghanistan IGF

April

- Russia IGF
- Central Africa IGF
- Panama IGF
- Finland IGF

May

- Belarus IGF
- Croatia IGF
- Sri Lanka IGF
- Pacific IGF
- Senegal IGF
- SEEDIG
- Swiss IGF

June

- EuroDIG
- Peru IGF
- Kenya Youth IGF
- Barbados IGF
- Central Asia IGF
- Cameroon IGF

July

- Kenya IGF
- Nigeria IGF
- Benin IGF
- IGF-USA
- APrIGF
- Guatemala IGF
- West Africa IGF

August

- Youth LACIGF
- LACIGF
- Nepal IGF
- Caribbean IGF
- Costa Rica IGF

WHERE ARE THE NRIs LOCATED?

The NRIs are located all around the world.

Currently, the NRIs network includes 95 IGF initiatives that are officially recognized by the IGF Secretariat, with the new initiatives constantly emerging.

MY COUNTRY DOES NOT HAVE AN NRI: HOW CAN I ORGANIZE AN IGF INITIATIVES?

To organize the IGF initiative, the first step would be to contact the IGF Secretariat. The Secretariat will further assist in explaining how to get started, with details for the main criteria and procedures that need to be followed, also providing concrete examples from the more experienced NRIs and advice on how to improve and speed up the organizing process.

It is important to gather the group of interested individuals that are coming from at least three different stakeholder groups, for the process to be initiated.

WHAT DO THE NRIs DO?

The NRIs gather their community to undertake consultation and develop an annual event that addresses key issues of concern locally, or regionally.

Using a bottom up consultation process that strives to include Governments, civil society, private sector and technical community, all involved stakeholder groups work together on an equal footing.

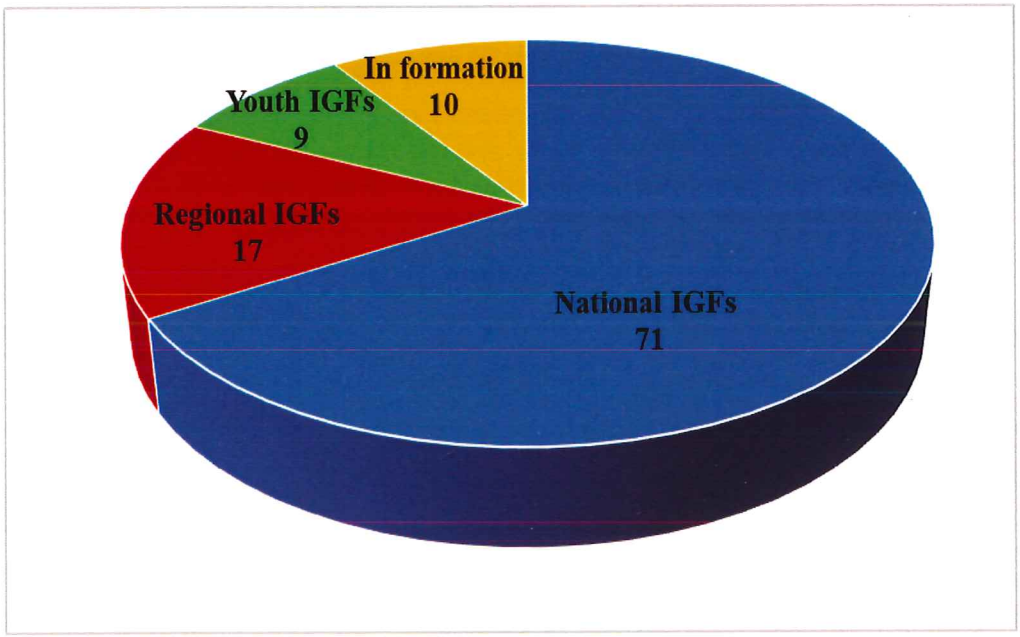
Taking into account all received inputs from their respective communities, the NRIs develop comprehensive agendas that reflect the needs of the community, and logistics for organizing the major annual event, where mentioned different stakeholder groups will gather and discuss the issues of highest priority to them.

Some recommend messages or outputs for potential solutions and next steps toward the improvements on Internet governance related fields should be developed.

HOW ARE THE NRIs ORGANIZED?

The NRIs are independent in their organization. However, they have agreed and are expected to respect the main IGF principles and working modalities. Therefore, the NRIs are open, inclusive and non-commercial, with a multistakeholder participation during the whole organizational process of the annual meetings, as well as during the meeting itself, and with a bottom-up decision making process.

IGF 2017 RECORD OF THE NRIs



All parties agree and accept to act on an equal footing, which is a unique but important aspect of the IGF. NRIs are bottom up, multistakeholder, open, inclusive and non-commercial.

NRIs ORGANIZING COMMITEES AND COORDINATORS

Internally, the most crucial organizational segment of the IGF initiatives is the existence of the Organizing Committee, where the most basic requirement is to have representatives from at least three different stakeholder groups, with intention of evolving toward the inclusion of all stakeholder groups.

In addition to the coordination of the NRI, there is also an identified contact person who takes on the role to commit to acting as a liaison between the initiative, wider community, IGF Secretariat and the NRIs network.

NRIs need to create a website, maintain a working email address, and provide support to social media accounts for conducting effective outreach toward the NRI's respective communities, but also toward the wider IGF community. The Coordinator also accepts responsibility for ensuring that the NRI meets the basic requirements to be listed on the IGF website, and coordinates the submission of the required report for the NRI. The Coordinator also accepts the responsibility of participating in the NRI network's working calls, which are also open to everyone.

NRIs ANNUAL MEETINGS in 2017

(September to December)

September

- Malawi IGF
- Georgia IGF
- Uruguay IGF
- UK IGF
- Namibia IGF
- Portugal IGF

October

- Armenia IGF
- Colombia IGF
- Dominican Rep. IGF
- Netherlands Youth IGF
- Ukraine IGF
- Netherlands IGF
- Austria IGF
- Tunisia IGF
- Slovenia IGF
- Panama IGF
- Rwanda IGF
- Indonesia IGF

November

- Brazil IGF
- German Youth IGF
- German IGF
- Uruguay Youth IGF
- Mauritius IGF
- Argentina IGF
- Bolivia IGF
- Italy IGF
- Poland IGF
- Ecuador IGF
- Youth IGF of Turkey
- Chad IGF
- FYR Macedonia IGF
- Spain IGF
- South Africa IGF
- Paraguay IGF

December

- North Africa IGF
- Yourh Africa IGF
- Africa IGF
- Zimbabwe IGF
- Bosnia&Herzegovina IGF
- Uganda IGF
- DR Congo IGF

ARE THERE OTHER WAYS TO BE ENGAGED WITH THE NRIs, EXCEPT TO ORGANIZE ONE?

Absolutely. On the global level, the NRIs are conducting regular (bi)monthly virtual meetings for the purposes of coordinating their joint work activates. The NRIs are also organizing their face-to-face gatherings at any of the bigger Internet governance related meetings.

Every year, the NRIs organize dedicated focus sessions at the IGF annual meeting, with discussing substantive issues from different world perspectives. They are regular contributors to the IGF intersessional work. To keep yourself updated with the most up to date NRIs work activities, subscribe to the NRIs mailing list, where all relevant information are shared.

WHAT ARE THE 'IN-FORMATIONS' NRIs?

Several countries are working toward launching their first IGF. As some of the criteria are met soon after the process is initiated, while some others require more time.

The IGF Secretariat classified these types of the initiatives as the 'in-formation' ones, to show that the recognition process is under development, but not yet finalized.

MEET THE NRIs @ IGF 2017

- LEARN MORE ABOUT THE NRIs AND ENGAGE -

- **Visit the NRIs Booth at the IGF Village**
- **Attend the NRIs Main Session**

There is a main session organized by all NRIs, under the name: **NRIs Perspectives: Rights in the digital world.**
It is scheduled to be on 20 December from 11:00 to 16:00 p.m. at the Room XVII. Please note that between 13:00 pm and 15:00 pm there will be a break. You can use this time to engage with different NRIs onsite.

- **Attend the NRIs Collaborative Sessions**

Many NRIs have partnered and organized eight collaborative sessions on the topics of access, cybersecurity, digital currency, Internet for sustainable development, IPv6, fake news, data, and IDNs. Check the schedule for the 'NRIs Collaborative Sessions' and join these unique sessions.

- **Attend the NRIs working session**

All NRIs will meet with the IGF Secretariat, MAG Chair and UNDESA to review mutual collaboration modalities. Join us on Thursday, at 12:30 a.m., Room XXV.

- **Attend the Youth IGF Initiatives Work Meeting**

If you are interested to learn more about the ways how Youth can engage at the IGF, join the work meeting between the IGF Youth initiatives and IGF Secretariat on Thursday, at 8:30 a.m., Room XXIV.

NRIs mailing list contact: igfregionals@intgovforum.org

LT-23122017-IGF-2017-Comment terrasser les «fake news»

Réuni cette semaine au Palais des Nations à Genève, le 12e Forum de l'ONU sur la gouvernance de l'Internet s'est penché sur les remèdes à ce poison qu'est pour la démocratie la désinformation pratiquée à l'échelle industrielle

Donald Trump en a fait sa marque de fabrique pour discréditer les médias qui publient des nouvelles qui ne lui plaisent pas: les fake news. Sa porte-parole Kellyanne Conway avait même trouvé une nouvelle phraséologie pour les qualifier: les faits alternatifs. Le phénomène est loin d'être nouveau. Il a plus d'un siècle. Dans un document pour le Conseil de l'Europe, la chercheuse Claire Wardle montre les sérieux dangers qu'il représente pour la démocratie.
Cette dernière juge le vocable fake news inadapté parce qu'il ne prend pas en compte «le phénomène complexe de la pollution informationnelle». Elle préfère parler de mésinformation et de désinformation, l'une étant simplement fausse et l'autre étant fausse et visant à nuire.

En pratiquant la désinformation sur Twitter, Facebook ou même des chaînes de télévision câblées, ses promoteurs ont un objectif: créer la confusion, saper l'autorité des institutions et introduire un relativisme qui pousse chacun à mettre tout sur un même plan. Le président américain, porté à la Maison-Blanche en partie grâce à Twitter et Facebook, est un maître dans l'usage de ce poison démocratique. Mais il n'est pas le seul. Quand la Russie diffuse de fausses nouvelles sur le président français Emmanuel Macron ou la démocrate américaine Hillary Clinton, elle cherche elle aussi à provoquer le désordre général qui ouvre la porte à une remise à l'ordre autoritaire.

Le problème est clairement politique. Nos valeurs démocratiques sont attaquées

Mariya Gabriel, commissaire européenne à l'Economie et à la société numériques

C'est sur cette toile de fond que, cette semaine, le 12e Forum sur la gouvernance de l'Internet, qui a réuni 2000 experts du Web au Palais des Nations à Genève, a consacré plusieurs sessions aux fausses nouvelles et énoncé des pistes pour les contrer. Dans une étude menée dans dix-huit pays en septembre dernier, BBC World Service a établi que 79% des personnes interrogées estimaient être préoccupées par la difficulté de distinguer les fausses des vraies nouvelles sur Internet.

«Il est évident qu'au vu de l'impact de la numérisation, il importe de reconquérir la confiance des utilisateurs, explique la Bulgare Mariya Gabriel, commissaire européenne à l'Economie et à la société numériques. La propagande à travers les fausses nouvelles reflète un malaise manifeste au sein de la société. Le problème est clairement politique. Nos valeurs démocratiques sont attaquées.»

Un immense défi

Malavika Jayaram, directrice du Digital Asia Hub, ne cache pas que le défi est immense: «Il faut se rendre à l'évidence. Pour l'heure, nous avons une technologie 4.0 et, pour combattre les fake news, un pouvoir politique 2.0.» Dans ce contexte de désordre informationnel, le directeur de l'Union européenne de radio-télévision (UER), Noel Curran, voit le service public comme un rempart: «Selon une étude réalisée dans 33 pays, 80% des sondés ont confiance dans le service public. En comparaison, les réseaux sociaux bénéficient d'une confiance de 21% et celle-ci continue de baisser.» Pour Noel Curran, le service public doit injecter de l'argent dans des secteurs où d'autres ne le font pas, comme le journalisme d'investigation de qualité. «87% des membres de l'UER investissent au total 18 milliards de francs par année. C'est une contribution unique à la société européenne.»

Combattre la désinformation par une régulation plus stricte est une piste que l'UE suit, mais ce n'est toutefois pas suffisant. Dunja Mijatovic, experte internationale de la liberté des médias auprès d'Access Now, met en garde contre une régulation excessive. «Nous sommes en train de surréagir. Je ne vois pas pourquoi on devrait

aujourd'hui confier à une organisation, à un gouvernement la tâche de nous dire ce qui est juste et ce qui ne l'est pas. Je ne veux pas qu'on filtre mon esprit à ma place.»

Il est possible de transformer en arme de propagande tout programme télévisé, même ceux destinés aux enfants

Dunja Mijatovic, experte internationale de la liberté des médias auprès d'Access Now

Dunja Mijatovic relève que les unités de vérification des faits (fact-checking) sont peut-être utiles, mais qu'elles exonèrent les autres acteurs de leurs responsabilités. A ses yeux, il est beaucoup plus urgent que les Etats investissent dès la maternelle dans la formation des enfants pour que le public soit mieux à même d'appréhender l'ère digitale. Cofondateur du site StopFake.org et directeur de l'école de journalisme Mohyla à Kiev, en Ukraine, Yehven Fedchenko abonde dans le même sens: «Il est possible de transformer en arme de propagande tout programme télévisé, même ceux destinés aux enfants.»

Professeure à l'Université américaine du Caire, Rasha Abdulla a une approche plus circonspecte: «Les fake news sont l'excuse parfaite (côté gouvernemental) pour étouffer toute voix dissidente.» Elle relève qu'il y a une semaine, le célèbre journaliste Wael Abbas, qui a documenté pendant des années les violations des droits de l'homme en Egypte, a vu son compte Twitter fermé.

L'importance du narratif

Pour contrer la désinformation, ajoute Claire Wardle, il ne suffit pas d'injecter des tonnes d'informations factuelles dans le système. «Ce ne serait pas vraiment comprendre les éléments émotionnels et rituels de la communication.» De fait, les fake news s'accompagnent souvent d'un puissant narratif qu'il est difficile d'infléchir. Quand la rumeur laisse entendre que Barack Obama est musulman, la meilleure manière de démentir l'information n'est pas de dire qu'il ne l'est pas, mais de raconter une histoire montrant le même Obama dans une église chrétienne avec sa famille.

Il est essentiel qu'il y ait une transparence totale sur les algorithmes et les données personnelles utilisées par les plateformes digitales et sur qui est derrière l'information fournie

Paolo Cesarini, chef d'unité à la Direction générale de la concurrence de la Commission européenne

Chef d'unité à la Direction générale de la concurrence de la Commission européenne, Paolo Cesarini avance ses solutions: «Pour que le citoyen soit capable de discerner le vrai du faux, il est essentiel qu'il y ait une transparence totale sur les algorithmes et les données personnelles utilisées par les plateformes digitales et sur qui est derrière l'information fournie.»

Le Conseil de l'Europe a lui-même établi toutes une série de recommandations. Les Etats doivent exiger des plateformes digitales qu'elles mentionnent la provenance des publicités et réguler les réseaux sociaux afin qu'ils ne puissent pas gagner de l'argent en diffusant des fake news. Les médias eux-mêmes sont appelés à éviter d'être manipulés par ceux qui veulent amplifier un phénomène de désinformation.

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Internet **La géopolitique de la bataille des données**

Gouvernance **Richard Hill: «Genève peut réguler le cyberespace**

Portrait **Melissa Fleming, le besoin de raconter l'exil de Syrie**

The Metamorphosis of MOOCs

By Fiona Hollands **Dec 20, 2017**

Soratja Na Wanjan / Shutterstock

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At a recent meeting of educational technology policy advisors, a well-informed university CIO casually declared that MOOCs were history. It's true they stopped making headlines a while ago, but they have hardly abated. They may, however, need a change of name, just as we rename mature caterpillars "butterflies" or "moths."

Increasingly, MOOCs are being packaged into series of courses with a non-degree credential being offered to those who successfully complete the series. Some people wonder whether these credentials could serve as an alternative to a degree. Others hope that they may provide a pathway to a degree. Most likely, these new options will emerge as a low-cost alternative to employer-provided training.

Given the speed at which today's employees flit from job to job, many employers may be questioning the value of investing in extensive professional development. Perhaps it is employers who should be the most supportive of the latest MOOC developments.

Examples of these online course series, which are open to enrollment by any applicant, include Coursera Specializations which appeared in early 2014, and the MicroMasters, first offered in Supply Chain Management by MITx in 2015 via the edX online platform. Some series now culminate in a capstone project or proctored examination. All charge fees for participants who wish to earn the non-degree credential. To date, over 500 Specializations have been developed by a wide array of academic institutions and corporations, and 24 universities are offering a total of 41 MicroMasters. Udacity's Nanodegrees, edX XSeries, and edX Professional Certificates are additional examples of these open, online course series joining the growing ranks of alternative credentials.

Unlike the huge numbers enrolling in stand-alone, free MOOCs, participation in the course series is more muted. At a recent conference, Wharton Online reported that it had seen 1.1-million enrollments in its MOOCs since April 2015. Among these, 113,000 learners paid for a certificate verifying completion of a MOOC, and over 2,000 completed a Specialization. MIT's Supply Chain Management MicroMasters attracted over 180,000 learners, of who 1,100 completed all five courses in the series, and 622 passed the final exam. These 622 are now eligible to apply the MicroMasters courses for credit towards a full Masters' degree at one of several universities.

These alternative, non-degree credentials are vastly less costly than traditional degrees. A Specialization consisting of four 3-to-8 week courses may cost a few hundred dollars, and a MicroMasters covering up to half the content of a regular Masters' degree could cost in the order of a thousand dollars. Key questions are whether they will be valued by employers and bring the participants career, financial, educational or other benefits that outweigh the direct costs and opportunity costs of participation.

A 2015 study of the benefits accruing to learners who engage in stand-alone MOOCs indicated that, among those who completed the courses and responded to an online survey, 72 percent reported career benefits and 61 percent reported educational benefits. One might expect that courses offered as a series with a culminating credential could be even more beneficial than individual MOOCs.

Looking For Answers

To test this hypothesis, I partnered with a couple of universities in the U.S. to develop a series of surveys to embed in their MicroMasters programs and in a Coursera Specialization.

So far this year, we have collected 476 responses to a voluntary survey in three MicroMasters programs and one Specialization. Questions address the learner's education, earnings and career status as he or she begins the first course in the series. The survey also investigates the direct costs and opportunity costs incurred by the learners. For example: Who is paying for the courses? Are participants sacrificing paid work time to complete coursework? Are their employers allowing them to study during paid work time? A second survey will ask for similar information once the credential is earned. Finally, a follow-up survey will be sent around 12 months after

the learner has completed the credential in order to assess changes in education, earnings, and career status since completing the credential.

With only a small number of programs surveyed so far, we cannot claim to be representing all participants in these open, online course series, but here are the early findings. Just like stand-alone MOOCs, most learners—over 80 percent—already had a Bachelors or higher degree. Eight percent had no degree at all and were not enrolled in any formal educational program. It will be worth watching these people particularly closely over the next year or two, if they don't drop out, to see whether earning an alternative credential can help them get on track to a full degree, a job or higher earnings. More than half the participants were employed full-time and an additional 15 percent owned businesses.

In terms of direct costs to the learners, approximately half were paying the course fees themselves. The remainder were mostly taking the free version of the courses or receiving financial aid from edX or Coursera. But employers were paying full fees for 6 percent of participants, and contributing to a few more. In fact, 4 percent of the Specialization participants had been asked to engage in the program by their employers. While this appears to be a positive development with respect to the sustainability of these programs, opportunity costs of time are still high for the learners because only a tiny percentage of participants indicated that their employer was paying them for the time spent on the courses. Given that almost half of participants were looking to improve their performance in their current job, it might be reasonable to expect more employers to subsidize this relatively low-cost professional development.

In addition to improving current job performance, other common goals for program participation included learning something new in a particular field, networking with other professionals, preparing to apply for a different job, planning to start a business, preparing to apply for a degree program or improving English-language skills in a professional field. Surprisingly few were aiming for pay raises or promotions in their current jobs.

At the outset of these course series, learners typically had fairly high expectations regarding the educational and career benefits of participating in the program, particularly in the case of MicroMasters. During 2018, we plan to build up the sample size for this study to include a wider selection of universities and program topics to see whether these findings generalize more broadly. And we'll start to collect the end-of-program surveys to see whether learner expectations have become reality.

Reaching employers directly to ask how much they value these alternative credentials is harder than reaching the learners: there is no captive audience of employers to survey online.

According to the MicroMasters website, the programs are "Recognized by Industry Leaders." Twenty-one company logos appear under this heading including those of IBM, General Electric, Walmart and Volvo. General Electric recently announced that it will interview any Massachusetts resident who completes the MITxMicroMasters program in Supply Chain Management.

To assess whether we have a butterfly or a moth in the making, we need a more systematic way to find out how much these alternative credentials will count when employers make hiring, compensation and promotion decisions. Perhaps someone could call each of the 21 industry leader's HR units and ask what "recognition" means in practice.

Fiona Hollands is the associate director and senior researcher at the Center for Benefit-Cost Studies of Education at Teachers College, Columbia University. She is the author of the recent book: MOOCs in Higher Education: Institutional Goals and Paths Forward.

Internet of Things for Smart City: Green and Sustainability (WS42)

Wednesday, December 20 • 16:40 - 18:10
Internet of Things for Smart City: Green and Sustainability (WS42)

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Proposer's Name: Mr. MINGLEI SHE
Proposer's Organization: China Association for Science and Technology
Co-Proposer's Name: Ms. Xu ZHAO
Co-Proposer's Organization: China Academy of Information and Communications Technology (CAICT)
Co-Organizers:
Prof.Mr Xiaofeng TAO,Civil Society,Beijing University of Posts and Telecommunications (BUPT)
Ms. Xu ZHAO,Civil Society,China Academy of Information and Communications Technology (CAICT)

Session Format: Panel - 90 Min

Proposer:
Country: China
Stakeholder Group: Civil Society

Co-Proposer:
Country: China
Stakeholder Group: Technical Community

Speaker: Xiaofeng Tao
Speaker: Cai Chen
Speaker: Otieno Omondi
Speaker: Abdelkarim Benabdallah
Speaker: Mikhail Komarov

Content of the Session:
The smart city is the future of urbanization; A city whose foundation is information technology especially integrating IoT is known as smart city. The innovative technologies (IoT, big data, cloud computing, AI etc.) developed over the last five years start to draw a picture of what smart cities will look like within the next decade. Smart City is about smart technology, but it is also about smart governance, smart people and smart economy. This session will bring a full view of how to improve quality of life, foster economic growth, and deliver on eco- sustainability initiatives utilizing IoT for smart cities. It will present smart city framework, development tools and policies in different filed, such as smart transportation, smart Energy and water management, smart environment, smart health care etc. Besides, considerations for regulation & management for smart cities will be displayed through some best practices, and those practices in different perspectives from different nations, department and stakeholders and the challenges of future smart cities would be addressed and discussed.

Relevance of the Session:
The purpose of this workshop is to highlight how the IoT is playing a key role in supporting local and global communities to achieve smart management and operation, and provide a series of policy options to utilize the Internet of things to realize the goal of sustainable development (SDGs). The session will be directly related to the theme of IGF2017: “Shape Your Digital Future”, which promotes a strong emphasis on creating technical solutions smart management and sustainable form of governance. Smart city gives us a better glimpse of embracing new technologies and innovations for shaping a digital future, also raises a point about what regulations and governance methods suit for the newly created. Smart cities use IoT devices to collect and analyze data, connect everything in city. The cities then use this data to improve infrastructure, public utilities,

services, and more. The power of IoT connectivity allowing city governments, businesses, and citizens to interact in new ways that make cities more efficient, safer, cleaner, and more livable.

This discussion will bring together participants from both the established IG technical and academic and those in working in the evolving IoT space to consider the interaction of the existing structures of Internet governance and technical and administrative, which adapt to the requirements of the IoT, including openness, transparency, security and continuity of Internet service and multistakeholder cooperation for smart city.

Tag 1: Internet of Things
Tag 2: Internet & ICTs for the Sustainable Development Goals
Tag 3: Multistakeholder Cooperation

Interventions:
Professor Xiaofeng TAO will make an opening speech introducing the agenda of the workshop. After that he will give a presentation on the overview of the IoT development worldwide, technologies currently available or being released into the market, strategic IoT solutions for smarter cities, and how to create successful international collaboration among multi-stakeholders.
Doctor Cai CHEN will talk about 'Policy and Regulation' on innovative forms of smart city, especially focus on rapid deployment of new IoT devices and applications in smart cities. Examples of Chinese best practice in building green and sustainable infrastructure and the services in the future of smart cities will also be discussed.
Karim Benabdallah will talk about the application of information and communication technologies in smart city projects. How can the IoTs-based technologies improve and reshape our future city in an environment-friendly manner.
Daniel Omondi is going to give his apprehension of the smart city in nature and present on how private sectors can actively participate in the smart city initiatives. How developing countries can learn from the experiences from the developed countries in the process of urbanization.
Dr. Mikhail Komarov will discuss IoT and behavior change with the use of IoT and energy-saving solutions. how default settings in smart devices change our behavior

Diversity:
Proposers, Co-organizers and Speakers have been chosen to ensure Geographic, gender, and stakeholder group diversity. Each speaker will bring a unique perspective and experience to the ways in which IoT can realize a better digital future and green and sustainable life. For **gender diversity**, there are 1 female co-organizer, Ms. Xu ZHAO, who has proposed the session jointly and coordinated the content with the experts. 2 female speaker, Ms. AiHua Wang and Ms.Helani Galpaya, who are senior experts in the research and planning division of IoT and smart city. For **geographic diversity**, there are 2 from Africa, 3 from Asia Pacific, 1 from Europe; the moderator is from Asia Pacific as well. For **stakeholder diversity**, there are 2 from technical community,4 from civil society, 1 from ICANN GAC(government). Here, Ms. Aihua Wang comes from technical community, but she is involved in the IoT and smart city research and planning for enterprises and private sectors for many years.

Onsite Moderator: Prof.Mr Xiaofeng TAO
Online Moderator: Prof.Mr Xiang Zhou
Rapporteur: Mr Minglei SHE

Online Participation:
Online participation will be led by a facilitated dialogue. Online attendee will get involved in the workshop during the whole session and have separate queue and microphone which rotate equally with the mics in the room and is entitled to raise questions after each presentation of the speaker and engage during the panel discussion.

Discussion facilitation:
The moderator will open the session by welcoming all the participants, introducing the topic about to be discussed and the speakers onsite and online. (10 minutes)
Speakers make their presentation respectively.After each presentation, the moderator probably make comments and engage the audiences and online participants in a quick Q&A session.(40 minutes)
Then the moderator will engage the panelists in a lively conversation to get their perspectives on topic related questions.(20 minutes).
The moderator will elicit what panelists find most insightful from the discussion and build on them by asking

questions to create active flow of conversation with both panelists and experts in the audience.（10 minutes）
The last ten minutes, the moderator will warp up the discussion by summarizing the consensus of the facilitated dialogue and pointing out the challenges we are confronting.(10 minutes)

Conducted a Workshop in IGF before?: Yes
Link to Report: http://www.intgovforum.org/multilingual/index.php?q=filedepot_download/4098/230

Additional Speakers:

1.Helani Galpaya,

Helani Galpaya is CEO of LIRNEasia, a pro-poor, pro-market think tank working across the emerging Asia Pacific on ICT policy and regulatory issues. She assumed the CEO role in Jan 2013. Prior to that, she was LIRNEasia's Chief Operating Officer.

She researches, does consulting work and engages in public discourse on issues related to net neutrality, policy and regulatory barriers in Internet access, e-Government, broadband quality of service, and how knowledge and information disseminated via ICTs can improve inclusiveness SMMEs (small, medium and micro enterprises) in agriculture and micro-work markets. She is currently conducting research on digital labor in Sri Lanka, India and Indonesia, looking at online platforms that enable freelancing and micro-work. She is also carrying out nationally representative surveys of Internet use by households and individuals in India, Pakistan, Bangladesh, Indonesia, Myanmar and Nepal. In Myanmar, she's continuing ongoing with a new initiative to examine how experiences and perceptions of harassment, surveillance and privacy impact how people of Myanmar experience the Internet.

Prior to LIRNEasia, she worked on at the ICT Agency of Sri Lanka implementing e-Government projects under the World Bank's e-Sri Lanka initiative. She was a management consultant at Booz&Co.(now Strategy&) in New York and has also worked at Citibank and Merrill Lynch in the USA. She has an MS in Technology & Policy from the Massachusetts Institute of Technology, Cambridge, USA and a BA in Computer Science from Mount Holyoke College, Massachusetts, USA.

SpecialtyICTs, Digital Trade, and Development

helani@lirneasia.net

2.Aihua Wang

Ms. Aihua WANG, the Chief Engineer of Planning & Design Research Institute of CAICT. She has been participating in Telecommunication and Internet Research for over than 20 years and undertaken a considerable amount of projects from national ministries and local governments. Those projects relate to Telecommunication and Internet Network Planning, National Economy

A Net of Rights: Human Rights Impact Assessments for the Future of the Internet (WS69) http://sched.co/CTt7

Thursday, December 21 • 12:20 - 13:20
A Net of Rights: Human Rights Impact Assessments for the Future of the Internet (WS69)
http://sched.co/CTt7

Proposer's Name: Ms. Mehwish Ansari
Proposer's Organization: ARTICLE 19
Co-Proposer's Name: Ms. Corinne Cath
Co-Proposer's Organization: ARTICLE 19
Co-Organizers:
Ms.,Mehwish,ANSARI,Civil Society,ARTICLE 19
Ms.,Corinne,CATH,Civil Society,ARTICLE 19

Session Format: Panel - 60 Min

Proposer:
Country: United States
Stakeholder Group: Civil Society

Co-Proposer:
Country: United Kingdom
Stakeholder Group: Civil Society

Speaker: David Kaye
Speaker: Cathrine Bloch Veiberg
Speaker: Maarten Simon

Content of the Session:
A range of cornerstone Internet governance documents, including the outcome document of the WSIS+10 Review, the NETmundial Multistakeholder Statement, and the latest reports of UN Special Rapporteur (UNSR) on freedom of expression David Kaye, conclude that the infrastructure of the Internet must be managed such that it enables the exercise of human rights. In recent years, proponents including the UNSR have responded by calling for human rights impact assessments (HRIAs) of the technical work done by the actors responsible for setting Internet standards and managing crucial Internet resources. Various technical actors, including the Internet Corporation for Assigned Names and Numbers (ICANN), the Internet Engineering Task Force (IETF), and several large Internet registries, are already considering or even implementing HRIAs. They believe that the future of the net fundamentally includes human rights.

And yet, the debate over the impact of the Internet on human rights continues to primarily take place at the political, regulatory, and commercial levels, seemingly ignoring the responsibilities of the technical community and sidelining a robust discussion of HRIAs. This workshop aims to redress this dynamic.

The international human rights legal framework remains a strong tool to protect Internet users, facilitating robust considerations for ensuring freedom of expression, freedom of association, privacy, and other human rights online. However, there arises a clear issue: within the international legal framework, there are no binding obligations for non-state actors. There is therefore a critical accountability gap in ensuring human rights within the policies and activities of technical actors. The 2011 UN Guiding Principles on Business and Human Rights (UNGPs) present an opportunity to bridge this gap. However, there remains the need to adopt effective methodologies that will operationalize these Principles to identify, prevent, mitigate, and account for any adverse impacts of actors' policies or practices—specifically, there remains the need to adopt HRIAs.

This session will explore the need for HRIAs and cover the benefits and challenges various technical actors encounter when developing and implementing HRIA models. We will also explore future avenues for technical

actors interested in conducting these assessments and how civil society can get involved to facilitate more widespread adoption and implementation. More specifically, we will discuss the following issues: Why are technical actors turning to HRIAs? How can technical actors address certain roadblocks that they may expect to face when implementing HRIA models? Why do HRIAs and the UNGPs matter for the future of the Internet? Expert panelists will foster discussion on how the impact of Internet governance on human rights can be understood and balanced, so that that technical actors can maintain the stability of the Internet's technical architecture while also enabling human rights.

Relevance of the Session:
The protection of the right to freedom of expression, access to information, and freedom of assembly on the Internet are crucial to the future of the digital civic space. The majority of the Internet's central infrastructure—as well as the applications running over it—are developed, operated, and maintained by private actors within the Internet governance community. The policies and protocols that define how Internet users interact with this infrastructure are determined within Internet governance bodies themselves, including ICANN and the IETF. Thus, these technical Internet governance actors are key facilitators of the exercise of human rights online; however, most of them have not yet fully engaged with the human rights implications of their actions and decisions.

This workshop is important to include in the IGF program because it speaks to the very heart of the Internet. Without the technical community, there would be no open, interoperable Internet. But as technical actors are increasingly considered to be its gatekeepers, governments have increasingly enlisted and even compelled these intermediaries to filter or block individuals' access to content online. At the same time, these actors may independently engage in practices that censor or otherwise subvert the rights of Internet users, without transparency, clear guidelines to which users can refer, or appropriate mechanisms for appeal. Incidents of Internet shutdowns and network disruptions are on the rise; Freedom House concludes that Internet censorship has increased for the sixth consecutive year worldwide. If technical actors do not meaningfully take on the responsibility to respect human rights, the trend towards a more restricted Internet will continue. The future of the Internet as a digital civic space for discourse, economic development, and social change is at stake.

HRIAs provide a clear path forward for technical actors to resist these threats to our digital future. However, as of yet there is limited uptake of HRIAs. This panel will get to the root of this reality and present a discussion with the aim of developing clear goals for ensuring that HRIAs gain wider acceptance among the very actors that develop, operate, and manage the infrastructure of the Internet.

Tag 1: Critical Internet Resources
Tag 2: Human Rights Online
Tag 3: Internet Governance

Interventions:
Each speaker will be given approximately 10 minutes for opening remarks, in which they will present a concrete case study of how human rights impact assessments are viewed or undertaken in their organization. These case studies will be the basis for a moderated panel discussion between the various experts, that will bring out their perspectives.

After the initial panel discussion, the floor will be opened for a Q&A with the audience. Remote participants will be given the opportunity to ask questions through online forums such as WebX and Twitter. We will promote a dedicated hashtag (#HRIAGF) so that the panelists, audience members, and online participants can discuss the issues raised in real time.

To ensure the sustainability of this discussion, the various statements and interventions of the panelists and the audience will be collected and condensed into a short paper that will outline the main challenges and benefits and present actionable policy recommendations for other organizations interested in undertaking HRIAs.

Diversity:
The dais will have a 50/50 gender divide including the moderator, who will be a woman. The panel members each represent a different stakeholder type (i.e. civil society, technical community, private sector, international organization), and so will represent differing policy perspectives. Of the panelists, one-third will be 30 years old or younger. Mehwish, the organizer of this panel, is a first-time IGF organizer.

Onsite Moderator: Mehwish Ansari
Online Moderator: Deborah Brown
Rapporteur: Paulina Gutiérrez

Online Participation:
We intend to utilize the IGF's WebX system and Twitter to include remote participants in the Q&A portion of the discussion. The remote participants will be afforded equal and proportional representation in the discussion. The remote moderator will facilitate the Q&A with the moderator. We would like a screen in the room to display the video questions, remote comments, and tweets.

Discussion facilitation:
We intend to make this an inclusive conversation, both among the panelists and between the panelists and the audience online and offline. This will be done by presenting various case studies that provide concrete hooks to anchor the conversation and ensure that the audience can relate to the ongoing challenges and benefits of conducting human rights impact assessments. We will also specifically ask the audience to share their experiences with HRIAs to bring a wider diversity of views into the conversation. Online participation will be facilitated as mentioned above.

Conducted a Workshop in IGF before?: Yes
Link to Report: https://dig.watch/sessions/lightning-session-internet-infrastructure-global-technical-standards-and-sdgs

Additional Speakers:

Alissa Cooper

Agenda:

Length of session: 60 minutes

- **Introductions.** The moderator will open the session by presenting the nexus of topics for discussion: what human rights impact assessments (HRIAs) are, their potential as a tool to develop human rights considerations among infrastructure providers and technical communities, and the role that civil society can play in this field. The moderator will then introduce the panelists. (5 minutes)
- **Case studies.** The moderator will direct discussion among panelists to explore two specific applications of HRIAs, based on two different types of actors: Internet infrastructure providers and Internet technical communities. (20 minutes)

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Session Organizers
MA

Mehwish Ansari

Thursday December 21, 2017 12:20 - 13:20
Room XXVI - E *United Nations Office at Geneva (UNOG)*
Critical Internet Resources

‘Local content: an opportunity for underserved regions’ (WS238) and IGF Best Practice Forum on Local Content (Shared meeting)

Thursday, December 21 • 11:50 - 13:20
‘Local content: an opportunity for underserved regions’ (WS238) and IGF Best Practice Forum on Local Content (Shared meeting)

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NOTE : the organisers of the WS 238 'Local cotent: an opportunity for underserved regions' and the 2017 IGF Best Practice Forum on Local Content, which were scheduled in parallel decided to share a timeslot and meeting room. This will allow both sessions on local contnent to share their audiences and feed directly into each other's discussion.
[WS238 was originally scheduled in room XXVII, on Thur 21 Dec, 11:50-13:20]

Below is the original description of both sessions.

***** WS238 Local Content: an opportunity for underserved regions'**
Proposer's Name: Mr. Abdelaziz HILALI

Proposer's Organization: Mediterranean Federation of Internet Associations (FMAI)
Co-Proposer's Name: Ms. Roula Mikhael
Co-Proposer's Organization: Maharat Foundation
Co-Organizers:

Prof Abdelaziz Hilali, Civil Society, Mediterranean Federation of Internet Associations (FMAI)
Ms. Roula Mikhael, Civil Society, Maharat Foundation
Mr. Khalid Ibrahim, Civil Society, Gulf Centre for Human Rights

Session Format: Round Table - 90 Min

Proposer:
Country: Morocco
Stakeholder Group: Civil Society

Co-Proposer:
Country: Lebanon
Stakeholder Group: Civil Society

Speaker: Roula Mikhael

Speaker: Aziz Hilali

Speaker: Layal Bahnam

Speaker: Khalid Ibrahim

Speaker: Marie Noemie Marques

Speaker: Glenn McKnight

Content of the Session:

The Internet has become a critical enabler of social and economic change, advancing a sustainable information society for all.

However, citizens of developing countries such as the Arab World do not produce digital content in local language that is compatible with grassroots needs of local communities, whereas the content that is most important to people is in their own language and relevant to where they live and work.

This workshop will highlight the main factors impeding the creation of local content in the region from a free flow of information perspective and economic and social development.

The main factors are related to:

- The access to internet and the level of internet infrastructure development
- The access to education mainly digital and information literacy
- The local content in local language as a mean of effective existence on the net and a tool for development
- Open access to content including content production, use, reuse and redistribution
- The content availability and the existence of legal restrictions on content affecting providers as well as content creators

One of the possible recommendations of the Workshop would be the adoption of further policies and initiatives to encourage local content creators to develop content tailored for the needs of local communities as well as to create an enabling learning environment in order to improve basic and digital literacy, critical thinking ability, and media and information skills targeting especially youth and women.Agenda:
Introduction of the speakers and the topic by the Moderator – 10 min
Round of short presentations by the 5 speakers – TOTAL – 25 min
Open Debate - All participants attending the Roundtable – 50 min
Wrap up by the Moderator - 5 min

Agenda:

· Introduction of the speakers and the topic by the Moderator – 10 min

· Round of short presentations by the 6 speakers – TOTAL – 30 min

· Open Debate - All participants attending (in person or remotely) the Roundtable – 45 min

. Wrap up - 5 min

Relevance of the Session:
This session will explore the issue of Local content development by local people in local language which is one of the main important ways to make the underserved regions benefit from the technology. How can you shape your digital future if you don't contribute in the digital content production, use, reuse and redistribution, and if your grassroots don't use it for their daily life (basic and digital literacy, critical thinking ability, media and information skills).

Tag 1: Digital Rights
Tag 2: Content
Tag 3: Digital Economy

Interventions:
After the introduction of the topic and the speakers by the moderator, each of the 6 speakers will have 5 minutes to address briefly an aspect of the roundtable topic. Then an open discussion will be launched where every participant (in person or online) will have the same rights to speak and express him/her self. The speakers contribute in this open discussion and give insights and feedback when necessary.

Diversity:
The 6 speakers are from Africa, Asia Pacific, Europe and North America. They are gender balanced (3 men and 3 women), from Civil Society, Private Sector, Academia, and media.

Onsite Moderator: Mohamed Tijani BEN JEMAA
Online Moderator: Hussein Elsherif
Rapporteur: Karim Abdulrady

Online Participation:
Remote participation will be an essential channel of participation in our workshop. Our online moderator will be also in charge of following the tweets. We will use the IGF remote participation platform.
For a successful remote participation, the announcement of the workshop will be spread widely, not only among the IGF participants, but also all the other networks highlighting the easy remote participation.
The Remote contributions will be taken alternatively with the in person contributions, and if the remote queue is longer than the one in the room, we will take more remote participants than from the room.

Discussion facilitation:
Speakers will have very short slots (5 minutes) to introduce the various aspects of the topic. This is to free more time for the audience (in the room and online). All attendees have the same rights and are treated equally.
Remote participants also will speak when they want, and they will be given the priority in the extreme cases

Conducted a Workshop in IGF before?: No
Link to Report:

Agenda:

· Introduction of the speakers and the topic by the Moderator – 10 min

· Round of short presentations by the 6 speakers – TOTAL – 30 min

· Open Debate - All participants attending (in person or remotely) the Roundtable – 45 min

. Wrap up - 5 min

***** BEST PRACTICE FORUM ON LOCAL CONTENT *****

The 2017 Best Practice Forum on Local Content is an intersessional activity, leading into the 12th annual IGF meeting.

The availability of locally relevant content is an important driver for the development of the Internet, globally, and in rural or developing areas in particular. The creation of local content is one of the elements that contributes to making the Internet relevant and attracting new users.

In preparation of this session, the BPF collected examples of projects and initiatives stimulating the creation of relevant local content for the local Internet user, and identified factors that helped or hindered these project to achieve success. (NOTE: it is still possible to submit examples at https://goo.gl/forms/swORcnYZBhKerDlE3).

The current draft BPF output document is available at https://www.intgovforum.org/multilingual/content/best-practice-forums-7 .

Community input received via the online review platform and during the meeting will be used to further enrich the document, and the final BPF Cybersecurity output will be publish after the IGF meeting as part of the tangible results of the IGF's 2017 intersessional activities.

The Distributed Denial of Democracy: Threats to Democratic Processes Online (WS154)

Thursday, December 21 • 10:40 - 11:40

The Distributed Denial of Democracy: Threats to Democratic Processes Online (WS154)

Proposer's Name: Ms. Morgan Frost
Proposer's Organization: Center for International Private Enterprise (CIPE)
Co-Proposer's Name: Ms. Sarah Moulton
Co-Proposer's Organization: National Democratic Institute (NDI)
Co-Organizers:
Mr.,Daniel,O'MALEY,Civil Society,Center for International Media Assistance (CIMA)
Ms.,Sarah,MOULTON,Civil Society,National Democratic Institute (NDI)
Ms.,Maiko,NAKAGAKI,Civil Society,Center for International Private Enterprise (CIPE)

Session Format: Panel - 60 Min

Proposer:
Country: United States
Stakeholder Group: Civil Society

Co-Proposer:
Country: United States
Stakeholder Group: Civil Society

Speaker: Hanane Boujemi
Speaker: Martha Roldos
Speaker: Chris Doten
Speaker: Jehan Ara
Speaker: Mishi Choudhary
Speaker: Matt Chessen

Content of the Session:
This panel will open with brief introductions from each participant highlighting the view from their sector of the threats to democracy caused by the weaponization of information and manipulations of access on the internet. This will include discussions of technical censorship and throttling by ISPs, the legal implications of surveillance and cyber laws, and the challenges posed by digital disinformation, fake news, and online trolling. Panelists will then discuss the solutions: how can stakeholders shape a better internet to invigorate 21st century democracies with inclusive participation, including how to apply the IRPC's 10 Internet Rights and Principles for global and local advocacy. Panel comments will be held to a maximum of 30 minutes to permit participation from the in-person and online audiences as well as dialogue among panel members.

Relevance of the Session:
During the heady days of the Arab Spring the globalization of the internet seemed to be ushering in a new age of democracy and openness, but instead radical shifts caused by these new communications channels have created the most hostile environment to political institutions and long-standing democracies in decades. The shift of political discourse to online platforms has empowered anti-democratic actors who have created innovative new techniques that turn the attributes of the internet against open institutions, harnessing hyper-partisanship, filter bubbles, and age-old human biases, accelerated with content stolen by hackers or outright fake news, to erode trust and increase hatred and xenophobia. At the same time, authoritarian regimes in control of the structures of the internet are increasingly censoring, throttling, surveilling or otherwise manipulating the internet to silence dissent, promote violence, and perpetuate inequalities. Given these challenges, it is up to the defenders of an open internet to consider how to shape the modern agora into a place for vibrant, open, constructive and democratic dialogue. Ensuring that the future of the internet empowers universal human rights and democratic values will require cooperation from government policymakers, civil society leaders, the technology sector, and multilateral fora like the IGF.

Tag 1: Multistakeholder Cooperation

Tag 2: Human Rights Online
Tag 3: Freedom of Expression Online

Interventions:
We are pleased to have a cross-section of remarkable individuals whose varied experiences will bring important perspectives on the disruptions the internet has brought to democracies around the world. A Department of State technologist will bring an American governmental point of view, while civil society and private sector leaders from the Global South experienced in advocacy, cyber law and political organizing will describe the ways that internet manipulation and digital disinformation are impacting their democracies and ways in which they've addressed these challenges. A representative of HIVOS will discuss the response of the donor community, and a leader of the technology community in India will be able to discuss the impacts of policy choices and the response of the corporate sector. Each speaker will share their views on threats or opportunities that the internet has brought to democracy and their personal perspectives in how the future of the internet ought to be shaped.

Diversity:
Modeling the diversity of IGF, this will be a truly global panel with different stakeholder groups, a range of ages, varied viewpoints, and an even split of gender. Many of the participants are from developing countries, and only one has spoken at or organized a panel for IGF in the past. We intend to use the online discussion capabilities to focus on voices from a range of perspectives as well.

Onsite Moderator: Mr.,Daniel,O'MALEY,Civil Society,Center for International Media Assistance (CIMA)
Online Moderator: Ms.,Maiko,NAKAGAKI,Civil Society,Center for International Private Enterprise (CIPE)
Rapporteur: Ms.,Morgan,FROST,Civil Society,Center for International Private Enterprise (CIPE)

Online Participation:
The livestream for this event will be promoted in advance through the social networks of the participating organizations, and NDI will host an in-person event replaying the content for the DC open internet community. For those connected at the time, our online moderator, Maiko Nakagaki, will share questions from these participants up to the panel in real time to build a global discussion. In addition, the panel will also be advertised and promoted throughout the newly formed Community of Open Internet Advocates facilitated by CIPE, CIMA, and NDI. This community includes representatives from Pakistan, Nigeria, Slovakia, Sri Lanka, India, Mexico, Tunisia, Jordan, Kenya, Indonesia, Thailand, Myanmar, Cote D'Ivoire, Venezuela, and Hungary.

Discussion facilitation:
Moderated by Daniel O'Maley, each distinguished speaker will have the opportunity to share their perspectives on the challenges posed by internet-delivered "distributed denial of democracy" attacks and how to shape the future of the internet to protect vibrant democracies. In order to have a compelling discussion among stakeholders, Mr. O'Maley will permit brief statements and inter-panel dialogue held to 30 minutes, after which the floor will belong to questions from the audience within IGF and through online participation.

Conducted a Workshop in IGF before?: No
Link to Report:

Background Paper

Agenda:

1. Brief Introduction to the Discussion - *5 minutes*

2. Introduction of Panelists - *5 minutes*

3. Discussion among Panelists on Threats to Democratic Processes Online - *30 minutes*

4. Questions (In person and through online participation) - *15 minutes*

5. Wrap Up - *5 minutes*

Thursday December 21, 2017 10:40 - 11:40
Room XXVII - E *United Nations Office at Geneva (UNOG)*
Multistakeholder Cooperation & Governance

A Democratic Framework to Interpret Open Internet Principles:

Putting Open Internet Principles to Work for Democracy

Overview

An open internet – where all citizens can freely express themselves, share and debate ideas, and conduct commerce – is an essential part of a modern, vibrant democracy. Ensuring that the internet remains both open and accessible is necessary to strengthen democratic engagement, enable equal participation in the market economy, and promote social accountability.

The increasing shift of political and social discourse to online platforms has led to a corresponding rise by anti-democratic actors in the use of the internet as a tool that can silence dissent, promote violence, and perpetuate prevailing inequalities, including regarding access and use. The new and rapidly evolving nature of the internet means many citizens are unaware or misinformed of how their fundamental rights such as to speech, assembly, and association apply in a digital world.

The Internet Rights and Principles Dynamic Coalition (IRPC) of the Internet Governance Forum has developed a solid, sensible set of norms and standards for an open internet to counter such actions. Adherence to a universally applied set of standards and norms for a free and open internet that reflects a commitment to inclusion, participation, and accountability is a vital component of modern democracy. To create a framework for internet openness for democracy advocates to fight for more democratic societies based on the IRPC principles, CIPE, NDI, and CIMA are developing *A Democratic Guide to Applying the Internet Rights and Principles.*

As democratic citizens and reformers navigate changing political environments, we hope this guide will help activists working for democracy in an internet age and connect them in global peer networks to exchange best practices. These guides serve as an advocacy tool that organizations can utilize in pushing governments, the private sector, and civil society to adhere to universal human rights through open internet principles and standards.

The Community

The Center for International Private Enterprise (CIPE), the National Democratic Institute (NDI), and the Center for International Media Assistance (CIMA) are starting a joint initiative to apply internet norms and principles essential to democratic governance. Success requires the diverse voices of a wide range of local and multinational organizations, including political and human rights groups, citizen activists, media representatives, civil society organizations, and members of the private sector.

The Principles

The principles embodied in the IRPC are thoughtful and thorough but they are relatively high level, making their direct application in local contexts challenging. With relentless erosion of internet openness around the world, we wanted to find ways to make these norms and standards more applicable to everyday activists fighting for a more open, democratic society in a digital age. As such, we are working to build a framework for the application of these norms, translating them into action-oriented political language for civil society, the media, and the business community.

The bullets under each IRPC principle are our first effort to capture at some of the ways these internet norms are critical to and can be operationalized in the context of a democratic society. This could include impacts on political parties, governments, elections, the media and citizen journalism, and the business community.

(Black=From IRPC Green=Democratic Framework)

1. Universality and Equality

All humans are born free and equal in dignity and rights, which must be respected, protected and fulfilled in the online environment.

What does this mean in practice?

- The Internet provides citizens around the world with greater freedom of expression, opportunities for civil society, business, media, and political participation.
- The equality of all citizens is a fundamental principle of democracy, this right of citizens extends to the internet space and must be respected and protected.

2. Rights and Social Justice

The Internet is a space for the promotion, protection and fulfillment of human rights and the advancement of social justice. Everyone has the duty to respect the human rights of all others in the online environment.

- The Internet provides a space for individuals to exercise their democratic rights and advocate for the rights of others.
- In order for all citizens to exercise their democratic rights online, everyone must respect this space.
- The ability of individuals and groups to advocate for issues and concerns is impossible without unfettered access to the internet.

3. Accessibility

Everyone has an equal right to access and use a secure and open Internet

- There is a responsibility to identify and address existing inequalities in access, particularly among marginalized populations.
- Language minorities are often locked out of a major-language internet.
- Full engagement from people with disabilities requires the internet to be coded for accessibility
- Women often face the impact of a closed internet in a different way than men, and gender inequalities can prevent physical access to internet-connected devices
- Online participation that doesn't look like the population - particularly when the internet serves as a conduit for official information - reduces the legitimacy of a democracy.

4. Expression and Association

Everyone has the right to seek, receive, and impart information freely on the Internet without censorship or other interference. Everyone also has the right to associate freely through and on the Internet for social, political, cultural or other purposes.

- Using multiple actors or channels to deny citizens access to, or interrupt, legitimate political discourse undermines democratic culture and practice. Examples of disruptions to democratic dialogue include:
    - Flooding comment spaces
    - Using AI and "bots" for automated attacks
    - Paying groups like the "50-cent army" to troll and harass online
- People have the right to debate any subject online without government interference or illegal surveillance.
- Shutting down or throttling access to the Internet, or parts of the Internet, for whole populations or segments of the public, should not be permitted on any grounds, including

public order or national security grounds. This means that the internet should not be shut down/throttled/censored during elections or other political events (e.g. protests).
- Internet intermediaries must be transparent about any traffic or information management practices they employ, and relevant information on such practices should be made available in a form that is accessible to all stakeholders.
- Governments should not request ISPs, websites, or social media administrators remove content without legal justification. There should be heightened scrutiny for the removal of content that involves political expression.
- Technical Internet standards should not be developed or employed in such a way as to facilitate the censoring of content or speech by either an individual or a platform.

5. Privacy and Data Protection

Everyone has the right to privacy online. This includes freedom from surveillance, the right to use encryption, and the right to online anonymity. Everyone also has the right to data protection, including control over personal data collection, retention, processing, disposal and disclosure.

- Privacy and data protection shall also include protection against hacking, data interception, and identify theft
- Publically published data sets should adhere to legal standards and guidelines for protections of personally identifiable information and copywritten material.
- Internet intermediaries should ensure adoption of policies and practices that protect against illegal requests for personal data by state or non-state entities
- Businesses that collect personal data from consumers should ensure confidentiality and privacy of those data.
- Individuals have the right to be protected from the illegal release of personally identifiable information (aka “doxing”)

6. Life, Liberty and Security

The rights to life, liberty, and security must be respected, protected and fulfilled online. These rights must not be infringed upon, or used to infringe other rights, in the online environment.

- In order for Individual and social integrity
- Doxing
- Distributed Denial Of Democracy
- Trolling
- Gender-based harassment

7. Diversity

Cultural and linguistic diversity on the Internet must be promoted, and technical and policy innovation should be encouraged to facilitate plurality of expression.

- Internet standards should be created so that they promote linguistic diversity online. Language should not be a barrier to using the Internet.
- Official government information (legislations, policies, etc) published online should be in all of the country's working languages.

8. Network Equality

Everyone shall have universal and open access to the Internet's content, free from discriminatory prioritisation, filtering or traffic control on commercial, political or other grounds.

- To promote competitiveness and innovation, net neutrality should be respected. Access to all content, regardless of the source/service provider or destination, should enable users to have freedom of choice
- No sites should be prioritized over others in terms of speed

9. Standards and Regulation

The Internet's architecture, communication systems, and document and data formats shall be based on open standards that ensure complete interoperability, inclusion and equal opportunity for all.

- Common standards/formats with no access to barriers ensure users, content hosts, and service providers to freely exchange information. Free flow of data across borders and traffic should be guaranteed without undue retention. Data fragmentation and localization should also be discouraged.
- Government produced information published online should available in open and structured formats that allow citizens to analyze and reuse the information. This also facilitates the ability of intermediaries to disseminate the information to citizens with limited or no internet access.
- Standards should not be used as a way to censor content or to surveil.

10. Governance

Human rights and social justice must form the legal and normative foundations upon which the Internet operates and is governed. This shall happen in a transparent and multilateral manner, based on principles of openness, inclusive participation and accountability.

- Stakeholders must sufficiently represent a diverse cross-sector of actors, including governments, civil society groups, private sector, think tanks, academia, and media.
- Governance of the internet must be gender inclusive.

IEEE Global Initiative for Ethical Considerations of AS

The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems (AI/AS) was launched in April of 2016 to move beyond both the paranoia and the uncritical admiration regarding autonomous and intelligent technologies and to show that aligning technology with ethical values will help advance innovation with these new tools while diminishing fear in the process.

The goal of The IEEE Global Initiative is to incorporate ethical aspects of human wellbeing that may not automatically be considered in the current design and manufacture of AIS technologies and to reframe the notion of success so human progress can include the intentional prioritization of individual, community, and societal ethical values.

The Mission of The IEEE Global Initiative is to ensure every technologist is educated, trained, and empowered to prioritize ethical considerations in the design and development of autonomous and intelligent systems.

The General Principles Committee has articulated high-level ethical concerns applying to all types of AI/AS that:

- Embody the highest ideals of human rights.
- Prioritize the maximum benefit to humanity and the natural environment.
- Mitigate risks and negative impacts as AI/AS evolve as socio-technical systems.

It is the Committee's intention that the Principles, Issues, and Candidate Recommendations they have identified will eventually serve to underpin and scaffold future norms and standards within a new framework of ethical governance for AI/AS design.

Sample Issues:

- How can we ensure that AI/AS do not infringe human rights? (Framing the Principle of Human Rights)
- How can we assure that AI/AS are accountable? (Framing the Principle of Responsibility)
- How can we ensure that AI/AS are transparent? (Framing the Principle of Transparency)
- How can we extend the benefits and minimize the risks of AI/AS technology being misused? (Framing the Principle of Education and Awareness)

A key ethical dilemma regarding personal information is *data asymmetry*. To address this asymmetry the Personal Data and Individual Access Control Committee of the Initiative has elucidated issues and candidate recommendations demonstrating the fundamental need for people to *define*, *access*, and *manage* their personal data as curators of their unique identity.

The Committee recognizes there are no perfect solutions, and that any digital tool can be hacked. Nonetheless they recommend the enablement of a data environment where people control their sense of self and have provided examples of tools and evolved practices that could eradicate data asymmetry for a positive future.

Sample Issues:

- How can an individual define and organize his/her personal data in the algorithmic era?
- What is the definition and scope of personally identifiable information?
- What is the definition of control regarding personal data?
- How can we redefine data access to honor the individual?

The IEEE Global Initiative has two primary outputs – the creation and iteration of a body of work known as *Ethically Aligned Design: A Vision for Prioritizing Human Wellbeing with Artificial Intelligence and Autonomous Systems*; and the identification and recommendation of ideas for Standards Projects focused on prioritizing ethical considerations in AI/AS.

Version 1 of *Ethically Aligned Design* (EAD) was released in December of 2016 as a Creative Commons document so any organization could utilize it as an immediate and pragmatic resource. Launched as a Request for Input (RFI) to solicit response from the general public in a globally consensus-building manner, the document received over two hundred pages of feedback at the time of the RFI's deadline.

Version one of EAD was created by over 100 Global AI/Ethics experts, in a bottom up, globally open and transparent process, featuring eight sections focused on key areas like Law, Personal Data, Autonomous Weapons, and Methodologies for Ethical Design. It contains over eighty key Issues and Candidate Recommendations and is designed as the "go-to" resource to help technologists and policy makers prioritize ethical considerations in AI/AS.

Ethically Aligned Design, Version 2 is set to launch in late 2017 and will feature five new sections in addition to updated iterations of the original eight sections. The IEEE Global Initiative has now increased from 100 AI/Ethics experts to more than 250 individuals including new members from China, Japan, South Korea, India, and Brazil and will contain over 120 key Issues and Candidate Recommendations.

Along with creating and evolving *Ethically Aligned Design*, members of The IEEE Global Initiative are encouraged to recommend Standardization Projects to IEEE-SA based on their work. Below are titles and descriptions for each of these approved Standardization Projects.

- **IEEE P7000:** Model Process for Addressing Ethical Concerns During System Design outlines an approach for identifying and analyzing potential ethical issues in a system or software program from the onset of the effort. The values-based system design methods addresses ethical considerations at each stage of development to help avoid negative unintended consequences while increasing innovation.

- **IEEE P7001:** Transparency of Autonomous Systems provides a Standard for developing autonomous technologies that can assess their own actions and help users understand why a technology makes certain decisions in different situations. The project also offers ways to provide transparency and accountability for a system to help guide and improve it, such as incorporating an event data recorder in a self-driving car or accessing data from a device's sensors.

- **IEEE P7002:** Data Privacy Process specifies how to manage privacy issues for systems or software that collect personal data. It will do so by defining requirements that cover corporate data collection policies and quality assurance. It also includes a use case and data model for organizations developing applications involving personal information. The standard will help designers by providing ways to identify and measure privacy controls in their systems utilizing privacy impact assessments.

- **IEEE P7003:** Algorithmic Bias Considerations provides developers of algorithms for autonomous or intelligent systems with protocols to avoid negative bias in their code. Bias could include the use of subjective or incorrect interpretations of data like mistaking correlation with causation. The project offers specific steps to take for eliminating issues of negative bias in the creation of algorithms. The standard will also include benchmarking procedures and criteria for selecting validation data sets, establishing and communicating the application boundaries for which the algorithm has been designed, and guarding against unintended consequences.

- **IEEE P7004:** Standard on Child and Student Data Governance provides processes and certifications for transparency and accountability for educational institutions that handle data meant to ensure the safety of students. The standard defines how to access, collect, share, and remove data related to children and students in any educational or institutional setting where their information will be access, stored, or shared.

- **IEEE P7005:** Standard on Employer Data Governance provides guidelines and certifications on storing, protecting, and using employee data in an ethical and transparent way. The project recommends tools and services that help employees make informed decisions when their personal information. The standard will help provide clarity and recommendations both for how employees can share their information in a safe and trusted environment as well as how employers can align with employees in this process while still utilizing information needed for regular work flows.

- **IEEE P7006:** Standard on Personal Data AI Agent Working Group addresses concerns raised about machines making decisions without human input. This standard hopes to educate government and industry on why it's best to put mechanisms into place to enable the design of systems that will mitigate the ethical concerns when AI systems can organize and share personal information on their own. Designed as a tool to allow any individual to essentially create their own personal "terms and conditions" for their data, the AI Agent will provide a technological tool for individuals to manage and control their identity in the digital and virtual world.

- **IEEE P7007:** Ontological Standard for Ethically driven Robotics and Automation Systems establishes a set of ontologies with different abstraction levels that contain concepts, definitions and axioms that are necessary to establish ethically driven methodologies for the design of Robots and Automation Systems.

Data and Trade: Identifying win-win solutions for future digital commerce (OF73)

http://sched.co/CTrm **Wednesday**, December 20 • 09:00 - 10:00

Tweet Share

With the increased adoption of digital technologies around the world, digital data has become a vital component of international trade. The surge of digital flows has been huge over the last 15 years, accounting for larger impact on GDP growth than traditional trade in goods according to McKinsey Global Institute. Moreover, data flows affect all segments of modern economy ranging from traditional industries to the start-ups.

Discussion on the relationship between data policies and trade policies are emerging in the international fora. Recent submissions by WTO Members on e-commerce and services trade contain reflections on this increasingly important linkage and encourage more discussion on this topic.

This open forum will review developments and policies in the field of data and trade. In particular, it will discuss how data policies can have an impact on international trade as well as what could be done to support small and medium enterprises to be effective actors in the data-driven economic landscape. The open forum will also discuss win-win solutions for data flows and how to make trade-offs whenever they have to be made between trade and related areas such as data protection and cybersecurity.

The open forum will facilitate inclusive and informed discussion. In addition to international organisations, the open forum will facilitate inputs from governments, civil society and the business sector.

Tag 1: Digital Trade
Tag 2: Data Flows
Tag 3: Internet and trade communities
Name(s) of Speaker(s):
• *ITC*
• *UNCTAD*
• *Permanent Mission of Netherlands*
• *Permanent Mission of Chile*
• *WEF*
• *Marion Jansen, Chief Economist, ITC (moderator)*
Name of Online Moderator: *Roxana Radu*
Background Paper:
Past IGF Participation: No
Report Link:
Name: *Ms. Jimena Ayelen Sotelo*
Organizational Affiliation: *International Trade Centre*

IGF DYNAMIC COALITION ON TRADE AND THE INTERNET

RESOLUTION ON TRANSPARENCY

ADOPTED AT THE 2017 INTERNET GOVERNANCE FORUM ON DECEMBER 19, 2017

PREAMBLE

Access to the free and open Internet has the potential to create benefits in all aspects of our daily life. The Internet is a tool to combat inequality, accelerate development and it enables individuals to exercise their human rights online and offline.

If international trade agreements support a free and open Internet, which is just, fair, and development oriented and furthers the interoperability of Internet information services, that could assist member countries to harness the potential of the Internet to promote social and economic development for all.

Like all other aspects of the international management of the Internet, the development of trade rules that affect the online and digital environment must also be transparent and democratic, ensuring the meaningful and accountable participation of all stakeholders, including governments, the private sector, civil society, the technical community, the academic community, and end users.

In order to restore public support for the international trade agreements of the 21st century, policy-makers should bring trade agreements into closer alignment with the Internet community's norms of open, inclusive multistakeholder participation, by adopting new practices for the active dissemination of information and the promotion of broad public consultation.

PRINCIPLES

Transparency

Governments have a responsibility to inform their citizens of how they regulate and to receive public comments on such regulations. Hence, trade negotiators should proactively and regularly disseminate information about that negotiation, including draft proposals and consolidated texts, to all affected stakeholders in order to enable them to be fully informed and to meaningfully participate in the negotiation process.

Consultation

Governments conducting trade negotiations have a responsibility to take affirmative measures to ensure that representatives of all interested parties, including organizations and experts representing Internet users and consumers, have the opportunity for meaningful involvement, access and collaboration with government during the development of textual proposals.

RECOMMENDATIONS

- Countries should **publish their own textual proposals** on rules in ongoing international trade negotiations at the same time as these proposals are presented to their negotiating partners.
- Countries engaged in trade negotiations should agree to **publish consolidated texts** after each round of ongoing negotiations.

- **Trade ministries should act transparently** by publishing records of their meetings with stakeholders, and should be overseen by an independent transparency officer, subject to statutory confidentiality and non-disclosure standards.

- **Domestic consultations on textual proposals** should be opened up to the public through on-the-record notice and comment, and public hearing processes at relevant points during the development of textual proposals.

- Countries should **make trade advisory bodies more balanced** by taking proactive steps to include more diverse legitimate stakeholders such as representatives of Internet users, and organisations working in the areas of human rights, development, media, and consumer issues.

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LT-17122017-Richard Hill: «Genève peut réguler le cyberespace

Richard Hill est optimiste concernant les Geneva Digital Talks. Pour cet activiste et administrateur de l'Internet Society en Suisse, le bout du Léman a la capacité d'abriter un centre mondial d'enquêtes contre les attaques informatiques

Consultant, informaticien et vice-président des relations externes du chapitre suisse de l'autorité morale et technique la plus influente du réseau internet, Richard Hill a officié au sein de l'Union internationale des télécommunications (UIT) jusqu'en 2013. Il dénonce depuis l'hégémonie américaine sur la Toile. Entretien, en amont de l'Internet Governance Forum (IGF), une plateforme de discussions créée en 2006 aux Nations unies, ouverte aux gouvernements, au secteur privé, ainsi qu'à la société civile. Cette réunion, qui se tient à Genève en ce début de semaine, doit servir de caisse de résonance aux Geneva Digital Talks (GDT), une initiative visant à faire du bout du Léman un centre mondial de la gouvernance du Web.

Lire aussi: La géopolitique de la bataille des données

Le Temps: A quoi sert l'Internet Governance Forum?

Richard Hill: Son objectif est d'échanger, de parler des problèmes du Web comme le spam, le «phishing» et autres formes de piraterie, mais sans aboutir à un résultat contraignant. Cette tribune a été conçue pour éviter de discuter dans des arènes décisionnelles telle que l'UIT. Sa genèse est liée au blocage des instances gouvernementales.

– Peut-on dire la même chose des Geneva Digital Talks?

– Non. Cette démarche vise à lancer une dynamique d'avenir, en se greffant à l'IGF qui réunit chaque année plus de 2000 acteurs, pour s'en servir comme d'un tremplin.

– C'est-à-dire?

– Outre les défis liés à la fracture numérique, la valeur des données personnelles qui circulent et leur protection, il s'agit de cadrer le cyberespace. Des normes internationales de sécurité minimum existent déjà pour les prises électriques, la pharma, les avions ou les voitures, mais pas encore concernant la Toile. Comme beaucoup de logiciels et d'objets connectés que l'on achète aujourd'hui ne sont pas vraiment fiables, les services de renseignement du monde entier en profitent pour répertorier, dans la plus grande discrétion, les brèches du réseau et les vulnérabilités présentes sur les marchés.

Sous couvert de lutte antiterroriste, ils exposent le monde à de graves risques. Car ces failles classées secret d'Etat finissent par fuiter, provoquant des attaques informatiques comme WannaCry en mai dernier.

– Que propose le bout du Léman?

– La vision fondamentale est de reconnaître l'importance supérieure de préserver une infrastructure mondiale devenue critique. Plutôt que de le garder pour eux, les gouvernements doivent informer les fabricants du moment où une vulnérabilité est identifiée, pour que ces derniers y remédient sans délai. Une initiative dans ce sens, basée à Genève, pourrait être lancée par des acteurs de la société civile. Un autre enjeu consiste à mettre en place une entité indépendante, éventuellement au bout du Léman, capable d'enquêter sur les attaques informatiques, pour déterminer de manière neutre qui en est le responsable.

– Quelles sont les chances de réussite?

– Contrairement à la signature d'une Convention de Genève numérique – pour protéger les internautes, mais en temps de paix –, l'idée de créer une organisation non gouvernementale ou faîtière d'experts en cybersécurité

n’est que moyennement controversée. Elle pourrait à terme voir le jour, comme le projet d’accord entre les grands acteurs industriels que sont Google, Appel, Facebook et autres Amazon, pour respecter certaines pratiques. Le projet de texte juridique sur le numérique en est au stade de la division des cellules-souches. Il faudra du temps pour que ce fœtus se développe. Mais les chances sont bonnes de ne pas se retrouver avec un bébé mort-né.

– Pourquoi Microsoft a-t-il lancé cette initiative?

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Information on Dynamic Coalitions (DCs) and Requirements for Coordinators

The IGF is a global multistakeholder platform that facilitates the discussion of public policy issues pertaining to the Internet

Menu

The concept for Dynamic Coalitions first emerged at the IGF's inaugural meeting in Athens, with a number of coalitions establishing themselves at that time. The coalitions are informal, issue-specific groups comprising members from various stakeholder communities.

Dynamic Coalitions welcome collaboration with anyone interested in contributing to their discussions.

Information on Dynamic Coalitions (DCs) and Requirements for Coordinators

*To establish a Dynamic Coalition, interested individuals are advised to first hold a meeting and express the need for creating their coalition. They are **required to produce a written statement** which should outline:

1. The need for the dynamic coalition
2. An action plan
3. A mailing list
4. The contact person(s)
5. A list of representatives from at least three stakeholder groups

It is also recommended that the support of different stakeholder groups in creating the coalition is illustrated. Whilst not compulsory, setting up a webpage or a blog is highly recommended.

If you are planning to create a dynamic coalition, please contact the IGF Secretariat at emazzucchi@unog.ch. The Secretariat will carefully review the request to form a coalition and will inform you of the result.

*Once established, **coalitions must follow three basic principles** of inclusiveness and transparency for carrying out their work: **open membership, open mailing lists, and open archives.** They must also ensure their **statements and outputs reflect minority or dissenting viewpoints.** DCs should follow further guidelines laid out in the **Dynamic Coalition Coordination Group ToR**, which is applicable to all DCs.

*DCs should adhere to **guidelines for managing their individual mailing lists,** in particular as regards conduct on the mailing list, as specified **here.** These guidelines were conceieved by DCs themselves in their coordination meetings and through joint discussion on the DCs mailing lsit.

*Coalitions will also be asked to submit a yearly report or thematic paper to the Secretariat as an update of their activities. **Such a report is required to be considered eligible for an individual meeting slot at annual IGFs and to be listed as an active coalition.**

*Coordinators are strongly encouraged to keep up-to-date on the DC community's activities, including joint, cross-DC activities, by subscribing to and participating in the **DC mailing list** and consulting the **DC Coordination page.**

*A **briefing document** shared with the IGF's Multistakeholder Advisory Group (MAG) in May 2017 provides a useful overview of the individual and joint work of DCs during the 2017 cycle.

The Dynamic Coalition Coordination Group (DCCG)

Each DC is invited to volunteer one or two of its members to join the DCCG and its regular monthly meetings. DCCG meetings are open and all DC members are invited to attend.

To be a part of coordination activities, please subscribe to the DC mailing list. All news about upcoming meetings and coordination work will be available on the list, including details on how to participate in the meetings, as well as on the dedicated DC Coordination page.

The DCCG is guided by **Terms of Reference, available here.**

List of Active Dynamic Coalitions

- **Dynamic Coalition on Accessibility and Disability**
- **Dynamic Coalition on Accountability**
- **Dynamic Coalition on Blockchain Technologies**
- **Dynamic Coalition on Child Online Safety**
- **Dynamic Coalition on Community Connectivity**
- **Dynamic Coalition on Core Internet Values**
- **Dynamic Coalition on Freedom of Expression and Freedom of the Media on the Internet**
- **Dynamic Coalition on Gender and Internet Governance**
- **Dynamic Coalition on Innovative Approaches to Connecting the Unconnected**
- **Dynamic Coalition on Internet Rights and Principles**
- **Dynamic Coalition on Network Neutrality**
- **Dynamic Coalition on Platform Responsibility**
- **Dynamic Coalition on Public Access in Libraries**
- **Dynamic Coalition on Publicness**
- **Dynamic Coalition on the Internet of Things**
- **Dynamic Coalition on Trade**
- **Youth Coalition on Internet Governance**

Inactive Dynamic Coalitions

Secretariat of the Internet Governance Forum (IGF)

Villa La Bocage

Palais des Nations,
CH-1211 Geneva 10

Switzerland +41 (0) 229 173 678

17-LT-18122017-La géopolitique de la bataille des données

Alors que s'ouvre ce lundi à Genève le 12e Internet Governance Forum, la guerre autour du contrôle du data fait rage. Si la Chine et la Russie estiment que la régulation du web relève de la responsabilité des gouvernements, les membres de l'OCDE et la Silicon Valley estiment que les sociétés technologiques et la société civile doivent faire partie du processus d'encadrement du cyberespace

«Façonner le futur numérique.» A l'heure où s'ouvre ce lundi la 12e édition de l'Internet Governance Forum au Palais des Nations à Genève, le cyberespace est le théâtre d'une féroce bataille géopolitique: celle des données. «Le data, c'est le pétrole de la nouvelle économie», relève Jovan Kurbalija. Pour le directeur de la DiploFoundation et responsable de la Geneva Internet Platform, «le statut qu'on attribuera aux données déterminera le futur de nos sociétés.»

Les deux côtés de l'échiquier

A une extrémité de l'échiquier, il y a les GAFA, les grandes sociétés d'Internet que sont Google, Amazon ou Facebook. Pour elles, «c'est un peu la conquête du Far West, une captation sans fin des données», déplore Solange Ghernaouti, professeure à l'Université de Lausanne et directrice du Swiss Cybersecurity Advisory and Research Group. Si ces géants de la Silicon Valley sont désormais dans le collimateur du politique pour avoir poussé leurs prérogatives trop loin, nombre de pays de l'OCDE estiment que le processus visant à encadrer Internet ne pourra se faire sans elles. C'est sans doute la raison pour laquelle le président de Microsoft, Brad Smith, a pris les devants en appelant à la création d'une Convention de Genève numérique dans laquelle son entreprise aurait son mot à dire.

De l'autre côté de l'échiquier, il y a les pays dont les gouvernements considèrent qu'il est de leur seule responsabilité de cadrer Internet, notamment à travers un traité international classique. C'est le cas du Groupe des 77, une coalition de pays en développement ainsi que de la Chine et de la Russie. La Chine, dont la société civile est faible, insiste sur sa souveraineté quand il est question du cyberespace.

«Un véritable séisme»

Dans cette bataille géopolitique, l'Union européenne pourrait être le grand trublion. Bruxelles vient d'édicter un règlement général sur la protection des données (RGPD), qui entrera en vigueur le 25 mai 2018. «Un véritable séisme, explique le directeur de la DiploFoundation. Les sociétés internet devront demander l'accord des citoyens pour utiliser les données les concernant. Les implications sont considérables. Car en cas de non-respect, les amendes seront très salées: 4% du chiffre d'affaires.» Le RGPD n'est pas pris à la légère par les géants de la Silicon Valley, qui sont déjà en train de louer d'énormes espaces de bureaux dans la capitale européenne.

Une guerre de titans

Dans cette guerre de titans, deux acteurs vont se profiler au cours des cinq prochaines années: Bruxelles, au vu de sa puissance politique et économique, et Genève, pour son soft power. Selon Jovan Kurbalija, la ville du bout du Léman n'est pas une économie de niche comme la Silicon Valley. C'est un écosystème qui permet de traiter des datas sous tous leurs aspects, que ce soit à l'OMC pour les questions économiques, au CICR pour la protection de données ultrasensibles – qui peut être une question de vie ou de mort dans certains conflits –, au Conseil des droits de l'homme pour la protection de la sphère privée ou à l'Union internationale des télécommunications pour les infrastructures techniques. «De telles organisations internationales devront toutefois aussi se conformer à la RGPD», précise le directeur de la DiploFoundation. Conseiller d'Etat genevois, Pierre Maudet abonde dans le même sens. Genève a un rôle à jouer grâce aux soft laws, aux normes qui permettront d'instaurer une confiance numérique.

La position de la Suisse

Entre les deux extrêmes, des pays comme l'Inde, la Suisse et le Brésil essaient de trouver un espace pour un accord éventuel. Avec sa stratégie «Suisse numérique», la Confédération s'adapte. Vice-directeur de l'Office fédéral de la communication, Thomas Schneider le relève: «Nous cherchons à trouver une nouvelle politique de données qui permette au secteur privé de développer des applications et des services innovants et respecte en même temps le droit individuel de maintenir un contrôle sur ses propres données. Nous voulons rester compétitifs sans lâcher du lest sur les droits fondamentaux propres à une démocratie.» Il nuance toutefois: «Il ne suffit pas de collecter des données, il faut aussi savoir qu'en faire.»

Une chance de progrès social

La professeure Solange Ghernaouti le reconnaît: la Chine a compris la nécessité de garder sa souveraineté sur ses données. Les sinologues les plus critiques craignent toutefois que l'accumulation considérable de données sur les citoyens ne renforce le pouvoir autoritaire de Pékin. Pour Solange Ghernaouti, le débat actuel sur les données devrait être une chance de transformer le progrès économique en progrès social, mais elle met en garde: «Le politique ne doit pas être à la solde de l'économie.»

Continuez votre lecture

Révolution numérique **A Genève, 2000 experts débattent de l'urgence d'instaurer une gouvernance de l'Internet**

Gouvernance **Richard Hill: «Genève peut réguler le cyberespace**

Richard Hill: «Genève peut réguler le cyberespace

Richard Hill est optimiste concernant les Geneva Digital Talks. Pour cet activiste et administrateur de l'Internet Society en Suisse, le bout du Léman a la capacité d'abriter un centre mondial d'enquêtes contre les attaques informatiques

Consultant, informaticien et vice-président des relations externes du chapitre suisse de l'autorité morale et technique la plus influente du réseau internet, Richard Hill a officié au sein de l'Union internationale des télécommunications (UIT) jusqu'en 2013. Il dénonce depuis l'hégémonie américaine sur la Toile. Entretien, en amont de l'Internet Governance Forum (IGF), une plateforme de discussions créée en 2006 aux Nations unies, ouverte aux gouvernements, au secteur privé, ainsi qu'à la société civile. Cette réunion, qui se tient à Genève en ce début de semaine, doit servir de caisse de résonance aux Geneva Digital Talks (GDT), une initiative visant à faire du bout du Léman un centre mondial de la gouvernance du Web.

Lire aussi: La géopolitique de la bataille des données

Le Temps: A quoi sert l'Internet Governance Forum?

Richard Hill: Son objectif est d'échanger, de parler des problèmes du Web comme le spam, le «phishing» et autres formes de piraterie, mais sans aboutir à un résultat contraignant. Cette tribune a été conçue pour éviter de discuter dans des arènes décisionnelles telle que l'UIT. Sa genèse est liée au blocage des instances gouvernementales.

– Peut-on dire la même chose des Geneva Digital Talks?

– Non. Cette démarche vise à lancer une dynamique d'avenir, en se greffant à l'IGF qui réunit chaque année plus de 2000 acteurs, pour s'en servir comme d'un tremplin.

– C'est-à-dire?

– Outre les défis liés à la fracture numérique, la valeur des données personnelles qui circulent et leur protection, il s'agit de cadrer le cyberespace. Des normes internationales de sécurité minimum existent déjà pour les prises électriques, la pharma, les avions ou les voitures, mais pas encore concernant la Toile. Comme beaucoup de logiciels et d'objets connectés que l'on achète aujourd'hui ne sont pas vraiment fiables, les services de renseignement du monde entier en profitent pour répertorier, dans la plus grande discrétion, les brèches du réseau et les vulnérabilités présentes sur les marchés.

Sous couvert de lutte antiterroriste, ils exposent le monde à de graves risques. Car ces failles classées secret d'Etat finissent par fuiter, provoquant des attaques informatiques comme WannaCry en mai dernier.

– Que propose le bout du Léman?

– La vision fondamentale est de reconnaître l'importance supérieure de préserver une infrastructure mondiale devenue critique. Plutôt que de le garder pour eux, les gouvernements doivent informer les fabricants du moment où une vulnérabilité est identifiée, pour que ces derniers y remédient sans délai. Une initiative dans ce sens, basée à Genève, pourrait être lancée par des acteurs de la société civile. Un autre enjeu consiste à mettre en place une entité indépendante, éventuellement au bout du Léman, capable d'enquêter sur les attaques informatiques, pour déterminer de manière neutre qui en est le responsable.

– Quelles sont les chances de réussite?

– Contrairement à la signature d'une Convention de Genève numérique – pour protéger les internautes, mais en temps de paix –, l'idée de créer une organisation non gouvernementale ou faîtière d'experts en cybersécurité n'est que moyennement controversée. Elle pourrait à terme voir le jour, comme le projet d'accord entre les grands acteurs industriels que sont Google, Appel, Facebook et autres Amazon, pour respecter certaines pratiques. Le projet de texte juridique sur le numérique en est au stade de la division des cellules-souches. Il faudra du temps pour que ce fœtus se développe. Mais les chances sont bonnes de ne pas se retrouver avec un bébé mort-né.

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18-LT-18122017-Comment préparer son héritage numérique?

Compte en ligne, bitcoin, Facebook, cloud. Sans les données adéquates, les héritiers rencontrent souvent de coûteux problèmes pour accéder aux comptes du défunt

Le décès de Jean B., à 47 ans, a surpris tout le monde. Il laisse à sa partenaire Nina D. et à son frère Robert B. non seulement une propriété par étages, un ménage et un peu d'argent de poche, mais aussi un compte titres de sa banque en ligne, d'innombrables adresses de courrier électronique, réseaux sociaux et plateformes d'e-commerce. Jean a préparé aussi bien son héritage physique que sa succession numérique.

Lire aussi: Comment régler sa succession pour éviter les conflits entre héritiers

Son testament manuscrit a précisé quelle est la part qui revenait à quelle personne de son entourage et a désigné son frère pour gérer sa succession sur Internet. Sur un registre séparé, il a consciencieusement écrit en détail l'ensemble de ses adresses e-mail, ses noms d'utilisateur et ses mots de passe.

Il est relativement aisé pour Robert d'accéder aux comptes, de les solder et de se désabonner des abonnements de son frère. Il n'y a guère que le compte bancaire internet auquel, pour des raisons juridiques, il n'a pas accès. Les comptes bancaires et le coffre-fort, physique ou virtuel, sont automatiquement fermés dès l'instant du décès. Les paiements courants sont les seuls à pouvoir encore être réalisés. La résiliation et le partage du compte ne sont possibles qu'en présence du certificat d'hérédité.

Banques en ligne, PayPal et bitcoin

Jean B. est malheureusement l'exception qui confirme la règle. Plus de 90% des utilisateurs d'Internet ne prennent pas garde aux gestes à entreprendre pour se préparer à leur succession sur la Toile, comme le confirme l'association BitKom. Que se passe-t-il lorsque les codes d'accès ne sont pas disponibles? Les comptes en ligne des banques suisses fonctionnent comme les comptes classiques. La présentation du certificat d'héritier permet de solder le compte et de partager les titres et le cash entre les héritiers. PayPal transmet les avoirs également sur présentation du certificat d'héritier. Les données d'accès ne sont toutefois pas transmises et le compte est ensuite supprimé.

Lire également: La réforme des successions nécessite une adaptation du droit fiscal

Pour le bitcoin et d'autres cryptomonnaies, l'accès est plus compliqué. Ces «monnaies virtuelles» ne se trouvent pas sur un compte bancaire mais dans un portefeuille virtuel *(wallet)*. Si l'on n'a pas la clé privée du défunt, rien n'est possible. Pour mettre la main sur cette «cryptofortune», la solution consiste à partir à la recherche d'indications concrètes de ce *wallet* en se penchant sur les relevés bancaires et les documents du fisc. Sans succès, les cryptomonnaies resteront inaccessibles durant plusieurs années et finiront tôt ou tard par revenir à l'Etat comme d'autres comptes en déshérence dont le détenteur n'a pas pu être identifié.

Livres, musique, films en ligne

Les collections de livres, musique et films en ligne peuvent être de grande valeur. Les titres de films et de musique qui ont été acquis ne font partie de la masse successorale que si le défunt les a téléchargés sur son disque dur ou un autre support de données. S'ils sont uniquement dans le cloud (eBook Reader, iTunes), l'utilisateur ne dispose que d'une licence d'utilisation et elle devient caduque avec le décès. Les héritiers ne peuvent pas se faire transmettre les fichiers. Dans la réalité, il est possible de s'en sortir si l'utilisateur décédé reste inscrit sur ce type de plateformes. En général, le compte n'est fermé que sur proposition des héritiers.

Lire aussi: Comment prévoir sa succession en tant que concubin

Les services de diffusion (streaming) comme Netflix, Amazon ou Spotify ainsi que Microsoft Office fonctionnent normalement selon un mode de prélèvement électronique avec des frais de paiement mensuels ou annuels. Une résiliation extraordinaire est toutefois possible en cas de décès. Mais il faut prendre garde. Celui qui oublie d'aviser les responsables doit savoir que les abonnements se prolongent automatiquement.

Dropbox, Xing et LinkedIn

Le service de stockage et de partage Dropbox s'éteint automatiquement après douze mois d'inactivité. L'utilisateur est informé à l'avance par courrier électronique. S'il faut accélérer la procédure, les héritiers ont besoin d'une décision judiciaire exigeant son arrêt. Or la demande doit être envoyée aux Etats-Unis.

Xing et LinkedIn mettent le compte d'un défunt sur «inactif» dès que l'information leur parvient. Il n'y a pas besoin de preuve particulière. Le compte est supprimé dès qu'une confusion ou une fausse déclaration ne peuvent être exclues.

Swisscom, Sunrise, Salt, Cablecom et GMX donnent accès au compte du défunt dès la présentation du certificat de décès avec l'accord de tous les héritiers. Les prestataires se réservent le droit de résilier un compte après une longue phase d'inactivité (en général six mois).

Médias sociaux: photos, posts, vidéos

Les messages laissés sur les réseaux sociaux ont une valeur plus émotionnelle que financière. Les utilisateurs de Facebook peuvent définir, dans les paramètres de sécurité, un exécuteur testamentaire susceptible de publier une notice nécrologique. Les parents peuvent placer le compte sur une «liste spéciale» ou le supprimer. Les fichiers ne peuvent plus être téléchargés parce que Facebook, Instagram, Snapchat, Flickr retirent le droit d'auteur (conditions générales). L'accès au compte d'un défunt n'est pas seulement interdit par les conditions générales mais il est même punissable.

Il n'est pas sûr que de telles conditions soient autorisées. Mais comme le lieu de juridiction est aux Etats-Unis, le coût d'un procès serait donc très coûteux. Cependant, même le droit suisse ne laisse que peu de chances aux héritiers. En effet, la protection de la personnalité prend fin avec le décès du propriétaire du compte.

Flou juridique

Pour Twitter, le compte est désactivé sur demande des héritiers et supprimé après 30 jours. Sur demande, Twitter livre les archives complètes des messages aux héritiers.

Google (Alphabet) est ouvert: il offre un «gérant d'inactivité» pour ses services comme Gmail, YouTube, Google Drive ou Picasa. Grâce à ce service, il est possible de définir de son vivant ce qui doit se passer en cas de longue inactivité: arrêt automatique ou autorisation à une personne de confiance de télécharger les données. Sans cette autorisation, il faut passer par un tribunal américain pour accéder aux données.

Dans l'ensemble, il faut savoir que la situation juridique n'est pas claire à l'égard des réseaux sociaux et qu'elle dépend souvent du bon vouloir du prestataire.

(Traduction Emmanuel Garessus)

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