

A New Set of Questions: ICT4D Research and Policy

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There is a growing interest within researchers to find ways for their work to be relevant to society. The possibility of influencing policy is one option to catalyse change in the use of information and communication technologies for development (ICT4D). This paper proposes a set of questions to aid the ICT4D community in exploring the complexity of the policy processes where their research could be of use. The final aim is to better inform all stakeholders by understanding the context where they participate in policymaking. The main argument is that influencing policy requires intent from the onset of a research project and not only ex post communication strategies. After all, not all research can or should influence policy. In the case of ICT4D, the review of the existing literature shows that policy has not been an explicit area of interest in the domain due to the notions of “policy” and “development” that prevail. The framework developed in this chapter is aimed at allowing the research community interested in policy impact to take into consideration aspects of the policymaking process and to not only communicate results wisely but also identify meaningful and timely research questions and their connection with policies and pinpoint appropriate methods.

1 From the Ivory Tower to the Wild Policy Arena

There is a growing interest within the research community on its link with the broader society and its actual relevance in the search for answer to complex issues. It thus has become important for researchers to demonstrate their impact on various arenas and through a myriad of means (i.e., quantitative or qualitative evaluations

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or rankings). The perspective of universities and other research institutions as ivory towers is challenged, and new visions of more active and engaged scholarship are being developed.

These concerns on the purpose and relevance of research motivate researchers to reconsider their role in a broader context of society and how they carry out their work. Although these reflections brought by this broader approach to research might be positive, a possible downturn is the appearances of “silver-bullet” solutions that arguably allow researchers to become more relevant with simple and concrete steps without significantly changing their work or their relation to society. These solutions to increasing the impact of research are common in the form of guidelines, tips, and step-by-steps that, arguably, correct the problem. This approach to increasing the relevance of research may oversimplify influence to the marketing of ideas, communication strategies, and other chores to make “my” research accepted. Without disregarding the relevance of work carried out to help researchers become better communicators and discussants, these solutions are likely to be only partially successful if a more complete analysis of the contexts and the research itself is not carried out along the way.

The concept of ICT4D in itself includes impact when it states “for development” in its name. This is why it is not surprising that there is a relevant discussion about the connection between the research carried out and its own impact on development. After all, as Díaz Andrade and Urquhart (2012) state, there is a belief in both ICT4D practitioners and researchers that ICTs can change lives for the better. Within a wider perspective of research’s impact on development, there is a subset of questions pertaining to the impact of the literature on policy. The logic behind this line of inquiry is that policies are one way in which the expected catalysing power of ICTs can be realised. As a result, there is a growing interest within the ICT4D community to inform policy, to find ways to measure, and to evaluate such impact.

International agencies clearly stated such objectives in their calls for research and their financing priorities. The “ICT4D Grants Programme” carried out by the Nairobi University clearly stated that the research dissemination will be aimed at reaching decision makers. DFID’s and IDRC’s joint “ICT for Development (ICT4D) Research and Capacity Development Programme” stated policy dialogue as one of its objectives. They summarised it by stating that they aimed at an “on-going, evidence-based dialogue among regulators, policy makers, researchers, civil society and the private sector; leads to well informed decision making on policy issues relevant to ICT4D”. Sinha et al. (2012), on a reflection on the SIRCA programme, also concurred that its objective was rigorous and relevant from the onset, with a strong focus of a transition from research to practice or policy.

This showcase of initiatives portrays a general sense of urgency to reach out to the policymaking communities to allow research to achieve its potential impact. Although this focus on promoting relevant knowledge is powerful, it can motivate two notions that may negatively affect the goal of linking research and policy: first, that all research can influence policy and second, that the dilemma lies solely on the communication and diffusion strategies carried out for research. This chapter and proposed framework challenge these two premises.

First, it challenges the premise that all of the ICT4D research can and should inform policy. As it will be discussed later on, ICT4D has traditionally been framed through questions that do not necessarily inform policymakers in a direct instrumental manner. This is not a negative trait of this research *per se*, since research might have a broader impact on society than just on policymakers such as informing practitioners and even on each individual's actions directly. Research is a complex task, and freedom should be given for researchers to take on questions that are relevant to a variety of audiences.

Furthermore, the aim of impacting policies that may affect the whole populations should not be taken lightly. There are dangers from expecting all research to inform policy and for that to be a rule for measuring success through short-term gains: being instrumental in bringing about immediate changes in policy. This measurement of success could push researchers to present their results as being much more conclusive than they are in attempt to attract policymakers. In research processes, there is a need for space for inconclusive results, and for further inquiry if necessary, and such characteristic must be acknowledged. Researchers might also lose interest on research that seems to be relevant in the long term and in the possibility of "enlightling" policy processes in the long term with new concepts and frameworks (Weiss 1977).

The second premise this paper challenges is that impact is not a matter of the research process but mainly a matter of the researchers' communication abilities and skills. Aligned with the previous premise, if all research can influence policy, the issue is not the research itself but the communication processes carried out afterwards. Until now, the issue on whether research reaches policymakers has been generally analysed *ex post*. This means that research is expected to be carried out within the usual academic parameters and, later, be communicated and packaged in ways in which it can ease "uptake" by policymakers. As a result of this *ex post* perspective, most of the debate on the impact of research on policy refers to the aspects of dissemination and policy engagement once the research has been carried out (Lewin and Patterson 2012). This perspective has led to a growing marketing-style communication model based on a linear model where researchers produce and policymakers consume knowledge (Correa and Mendizabal 2011).

This chapter is based on the conception that not all research should inform policy, but rather, a subset of research should inform policy, while others inform other researchers, practitioners, and technology users. Chib and Harris (2012) have developed a typology of research impact. This typology includes impact on the research community and impact on the wider society. Within this latter category, three possible impacts are identified: capacity development, socioeconomic benefits, and policy impact. This chapter acknowledges the existence of all these impacts but focuses on the last one.

Within the subset of research that is prepared to inform policy, the strategies to accomplish this goal should not start once the project is finished, but before it begins. The framework developed in this chapter is aimed at allowing the research community interested in policy impact to take into consideration aspects of the policymaking process and to not only communicate results but identify meaningful

and timely research questions and their connection with policies and pinpoint relevant methods.

The objective of such framework is twofold. First, it seeks to provide a new set of lenses to analyse the body of knowledge formulated in the ICT4D realm. The second objective of this framework is to assist researchers in framing research questions and projects that deliberately link empirical and theoretical research with policy dilemmas from the onset. Ultimately, the objective is not to bridge a “gap” between research and policy after the research has been carried out but to invite researchers to take into consideration policy and political dimensions before carrying out a given project. As O’Neil (2005) proposes, the first requirement for policy influence to occur is intent. Researchers should be interested in working on policy issues. Then again, once this intent is identified, how should researchers approach the challenge? The following critique and framework seek to shed light on that path.

The chapter first explores the existing frameworks to understand ICT4D research in order to have a wide perspective of the research available in the domain. Subsequently, the paper explores the notions of two concepts in the domain: development and policy. This analysis sheds light on why policy has not been a central aspect of the ICT4D domain. Finally, a framework is introduced which sets the scene to explore the policy context and its link with research carried out in the policy domain.

2 Existing Frameworks to Analyse ICT4D Research

ICT4D research has been under self-scrutiny since its inception. As a result, a variety of authors have focused on finding ways to conceptualise, find categories, and identify gaps in research. An overview of these existing categorisations and reviews reveals the underlying assumptions in ICT4D research.

Walsham and Sahay (2006) want to make sense of the landscape of literature on ICTs and development categories that could also guide a future research agenda. Their study concludes that this area of research has matured since 2000 when their survey began in terms of theories, methodologies, and results. In the survey, they are able to classify research into four major foci of inquiry. The first line of work centres on the contribution of ICTs to development. Within this category is the work related to the link between technologies and economic and social development in specific countries or domains. The second line seeks to understand cross-cultural working through the use of ICTs. Articles in this category pinpoint the challenges of collaborating internationally and transferring technologies. A third category of work focuses on local adaptation of technologies. How this adaptation takes place, the role of globalisation, and the challenges faced by those who act as brokers in these processes are some of the questions which articles in this category respond to. Finally, the fourth category of research focuses on particular groups which they describe as those “outside the margin of the digital divide” or those that have the least contact with technology.

Although some specific topics in these four categories might be of interest for specific policy processes, the categorisation and examples provided suggest that researchers do not include policy as a significant concern in their inquiry process. As the authors conclude, “topics and issues in developing countries are normally deeply intertwined with issues of power, politics, donor dependencies, institutional arrangements, and inequities of all sorts. These are precisely the type of issues where critical work can open up the ‘blackbox’ as an aid to deepen understanding, and a stimulus to appropriate action” (Walsham and Sahay 2006: p. 13).

Brown and Grant (2010) simplify Walsham and Sahay’s (2006) model by summarising it in two broad categories: ICT *for* development and ICT *in* developing countries. This categorisation and the survey of 184 articles in peer-reviewed journals conclude that there is an over-representation of research on the “ICT in developing countries” rather than the “ICT for development” category. The authors identify that there is a mismatch between the goals of research questions and the expected goal of impacting development. Is it correct to assess research that is focused on understating technology within developing countries contexts by whether they create or promote more development even if that is not the way it is framed, the authors ask (Brown and Grant 2010). They expose the mismatch between the research questions and the public perception of what ICT4D should achieve. Brown and Grant (2010) thus support Heeks’ (2002, 2007) perspective of a disconnection between ICT4D and development studies from a more theoretical perspective. These classifications, however, do not include a perspective of policy as a vehicle or development or a clear category of work linked to political research questions.

Another categorisation is Avgerou’s (2008) proposal that focuses on information systems’ innovation in developing countries. She analyses the discourses behind ICT innovations in developing countries. She identifies three discourses. The first one assumes that the issue is “catching up”, which acknowledges a country divide must be bridged by the adoption of existing technologies from the developed world. A second discourse assumes that the issue is constructing new technologies for the different contexts. This suggests a view that technologies must be embedded in societies. The third discourse is concerned with creating the possibilities for technologies to become significant catalysts for change in the lives of people. One could argue that the first two discourses are related to what Brown and Grant (2010) called “ICT in developing countries” and the third one is related to what they called “ICT for development research”. One conclusion that Avgerou (2008) arrives at is that, in this field of research, there is rarely any engagement with macro-political analysis, a required aspect of inquiry especially when discussing the transformative power of ICTs.

From the perspective of assessing ICT in development, Heeks (2009) constructs a model that links technologies with development through a chronological categorisation of issues: readiness, availability, uptake, and impact. He calls the first two foci—readiness and availability—ICT4D 1.0, the early agenda of infrastructure, digital divide, and supply of services. ICT4D 2.0 includes the other two categories: uptake and impact. He argues that this progression is necessary to reframe the

poor and, instead of situating them on the margin of technology, to put them in the centre. His vision implies that the progression of the ICT4D domain must move towards what has previously been called “ICT for development”, to be able to track and have strong evidence on the impact of ICT on development. In this vision of the work carried out in ICT4D, little is said on the policy and political aspects of the impact of technology on development. Policymakers are portrayed as receivers and implementers of externally created knowledge and options, where the focus of interventions is strengthening their capacities rather than approaching them as decision makers within a political context.

As a synthesis, the current reviews of research on the ICT4D domain show that its concern has shifted towards understanding, distilling, and interpreting the D in its name: development. This change has not included a systematic line of inquiry on policy or politics which are absent from the reflections of what ICT4D is and how it impacts development. Although there are some exceptions, they are rare and have not become a solid category in any of the reviews analysed. An exception, for example, comes from the field: Hilbert (2012) shares a conceptual though practical framework that intertwines the policy and technological and social aspects of what he calls the transition towards the knowledge society. As a conceptual model, it is a tool to understand changes, plan interventions, and research priorities and has been used by the United Nations Regional Commission for Latin America and the Caribbean (UN-ECLAC) on planning and studying policies at different levels of government in the region.

3 Notions of Development in ICT4D

As the ICT4D domain shifts towards understanding the impact of ICT on development, revising how development is understood will shed light on the apparent disconnection between current research and policy. It seems as though the glue that holds ICT4D together is the premise of a catalysing effect of ICT in development (Avgerou 2008), although within the field there are a variety of conceptions of what “ICTs” and “development” mean. This is a view that has been constructed over time. As Avgerou (2008) recalls, in a panel in 1997, the notion of information systems in developing countries was analysed with positions that ranged from the untapped market conception to the ethical imperative of such research. Since then, others such as Heeks (2009), Walsham (2013), and Avgerou (2010) have supported the view to focus more on development. Despite this assessment of a detachment from development outcomes, or the lack of an explicit definition of development in research projects, authors have notions of development in their work. These notions of what and how development is achieved may have affected the possibility of its applicability on policy contexts.

Heeks (2009) depicts three concepts through which development is understood in ICT4D literature: economic growth, sustainable livelihoods, and freedom. Within

the freedom perspective, Sen's capability approach has gain traction in the ICT4D community. In this approach, development is primarily achieved through the direct interaction of the individual with technology. Consequently, the relationship between the individual and the ICTs is prioritised over the broader context, which explains the lack of explicit reference to policies or politics in this framework.

Beyond the concept that is used to define development, there are underlying conceptions of development in ICT4D research. I would argue that the overarching characteristic of the research carried out so far is that it is developed from an external or foreign perspective. As Coward (2007) analyses, in the case of Asia, there is an over-representation of external researchers in the field. In addition to the number of researchers involved, the frameworks used are many a time also external. Furthermore, as Traxler (2012) reflects, ICT4D is described in terms of north and south. By analysing the challenges of a research project in Cambodia, he concludes that this dichotomy makes it difficult for researchers in the south to conceptualise their own experience. This external perspective has three main characteristics. Firstly, development is viewed as project-based interventions, and thus, research reflects on the concrete experiences of those specific cases. Secondly, development is understood from the modernity of western countries. Lastly, development is considered an apolitical endeavour.

The project-based view is observed through the research carried out as well as the domain's reviews. Such is the relevance of specific projects that Heeks and Molla (2009) carried out a compendium that covered an extensive variety of evaluations of ICT4D projects, with a variety of methodologies employed. The one characteristic of this review is the sense that they evaluate specific projects. Scholars have been particularly concerned with the failure of ICT4D interventions (Avgerou and Walsham 2000), and questions have been raised on whether academicians may be failing to provide adequate and relevant research to the practitioners. As a result, there has been a need for reflection on frameworks for successful ICT4D projects (Heeks 2009) that include aspects of governance, design, and sustainability. The inquiry on ICT projects has been strongly focused on identifying "what works". Without disregarding the validity of this question, a wider perspective on the contexts and causalities for failures and success could be identified. For instance, Chib et al. (2012) have proposed adding stakeholder perspective to the analysis of the project including practitioners, researchers, policymakers, and donors. This is indeed a more holistic perspective on project implementation.

In the case of ICT4D research in Africa, Thompson and Walsham (2010) find the same trend: "point" implementation of projects instead of strategic engagement with broader issues at the societal level. As a result of this project-based approach, the need for evidence of success from projects is specially aimed at the international development community and, within it, international aid agencies that financed many interventions (Heeks 2009). Although some countries in the developing world are still dependent on foreign aid, there is a growing understanding that the priorities of donors are not the same as policymakers and thus should not be treated as the same audience.

The second underlying characteristic is that development is usually aligned with a view of modernity and is the link to the global world (Díaz Andrade and Urquhart 2012). This means that, for the most part, ICT4D researchers and practitioners bring a view of development as the one of the western societies. In an analysis of the development discourse adopted by Internet scholars in India and China, Zhang and Chib (2014) identify that in India, the modernisation discourse is dominant and in China, it is steadily growing. In the case of India, the authors also note the relevance of a technocratic perspective and the focus on achieving goals such as economic growth, industry development, and governance. This external view of development does not acknowledge that development is a process both at the social and political spheres where interests, positions, and view must be confronted, discussed, and agreed upon (or not). In other words, development is understood as a goal or, in research jargon, as a dependent variable and not as a destination involving process, negotiation, and trade-offs. Nonetheless, this bias has led to the emergence of different approaches. As Flor (2012) has identified, a more critical theory tradition is also present in ICT4D studies, probably as a response to this existing modernity bias. Accordingly, participatory and action research methods have gained relevance.

Lastly, development is seen as apolitical, and in this context, ICTs are tools that bypass politics reaching the community or individual directly through project interventions. Others have arguably conceived ICTs impact for development mainly through a market system (Avgerou 2003). At the end of the day, this view, aligned with the applications of Sen's capability approach, yields an understanding of development primarily as a personal or grass-roots process that can be achieved in spite of the broader political context. Circumventing the discussion of politics, however, hides the power struggles and the unequal distribution of benefits of the introduction of ICTs in developing countries. Furthermore, a lack of understanding on the politics of ICTs gives the ICT4D community little knowledge of the incentives behind the success, failures, and scalability of projects being implemented. Politics is also a high component of what the context is. Although various authors suggest that context should be taken into consideration both in the implementation and the research of ICT4D projects, these are seen superficially at the most.

The underlying notions of development in the ICT4D research domain might be a reason why there is an apparent disconnection between the work carried out in the research domain and policy processes.

4 Policy in ICT4D Research

While, as debated in the previous two sections, the discussion of what development is within the research field has gained momentum, the discussion on policies has lost traction. As portrayed by Heeks (2009) in the evolution of the research domain from ICT4D 1.0 to ICT4D 2.0, the broad issues of policy were considered in the former.

Topics such as infrastructure or service supply were studied when the research field was starting. Heeks (2009) further criticises the research carried out in these topics as one of a “menu” that established rules and regulations that policymakers could choose from, with little regard for appropriateness or implementation.

Another set of possible questions are those related to the political economy of ICT promotion and adoption. The evolution of the research in the ICT4D toward a search for impact on development and the self-inquiry on development has overshadowed the relevance of ICT policies which are a strong way to actually realise the catalysing effect of ICTs. The predominant view of policy from the ICT4D research perspective has been narrowed to those specific aspects of availability, supply, and other basic requirements for further progress to be made in the specific projects that ICT4D practitioners and researchers implement. Cecchini and Scott (2003), for instance, after examining different cases of ICT initiatives, reflect on the necessary prerequisites for such initiatives to work, including macro-policies to achieve low-cost connectivity. Few of such studies have been identified. Furthermore, the vision of policy in developed countries only as the requirement for successful interventions to be successful further strengthens the perspective that the research domain has been biased toward the implementation of projects rather than policies.

This narrow view, however, contradicts what developed countries carried out and that now other countries are implementing. ICT policies go beyond the availability of the technology and link technology to a bigger picture of changing society to the ideal of the information society or knowledge economy (Hall and Löfgren 2004). Policies are not only statements of what will be done but a narrative of values, perceptions, principles, and aims. In the case of ICT policy, it is not only about availability of technologies, but mostly aspirational statements of how these technologies will allow societies to transform. This means that while most research see ICTs as progressive, policies state disruptive visions of ICTs (Avgerou 2008).

Although policy is mostly absent in the ICT4D research domain, there are individual researchers that have focused on understanding ICT policy, with a focus on developing countries. Kendall, Kendall, and Kan (Kendall et al. 2006), for instance, have analysed discourses in ICT policy debate within online communities. Duncan-Howell and Lee (2008) take a particular case of ICT for education policy and pinpoint the urgency that policymakers in the developing country have, due to a sense of catching up. As a result, the authors conclude that policy processes many times entail finding models from other countries that have succeeded and transferring them to the country in dispute. This, however, may lead to inefficient or even negative policies.

Through the use of different approaches and theoretical frameworks, researchers have examined particular country cases such as Egypt (Stahl 2008), Pakistan (Baqir et al. 2009), India (Dabla 2004), and Bangladesh (Hasan 2012). These cases explore the difficulties of the actual implementation of policies and the gaps between policy objectives and outcomes and the constraining factors or the positive spillovers encountered.

What this area of inquiry has in common is that the relationship between ICT and policy is seen to be sectoral. This means that in the cases described above, the focus area of study is the particular ICT policies. Hafkin (2002) identifies 21 policy issues ranging from networking architecture, technological choices, tariffs, regulations, services, and e-government. As a result, these policies are considered a specialised area of interest. Developing countries might be repeating the issue that Hall and Löfgren (2004) observe in Sweden: the dominance of experts in the field has made it hard for other nonexperts to get interested and to participate in such policies.

Understanding the policy process and the discourses behind policies is relevant for researchers and practitioners who want to influence policy. Without identifying the context in which decisions are being made, the actors involved, and the interests at stake, there is very little opportunity for these topics to change. These questions of how policymaking is actually carried out, however, are not as relevant for policymakers themselves who are actively engaged in the process and know of their workings tacitly. Furthermore, research on how ICTs are incorporated in other thematic policies has not been encountered. Although some insight might be available from those particular disciplines, efforts from the ICT4D perspective to understand the role of ICT4D in other sectoral policies are not explicit. Malapile and Keengwe's (2014) research is an example of such analysis for the education policy debate.

5 Challenges for Researchers

Why is it so challenging to change these aspects of the ICT4D realm? It is likely that the researchers face challenges to fit their research in the context of policy debates. As De' (2012) has analysed, the types of research questions carried out in the ICT4D field often face complex scenarios where both theories and methods might require adaptation. He urges researchers to acknowledge the difficulty to work in messy environments. Things get even more complex when a research is trying to frame research questions and projects within a wider political scenario to inform policy changes. Young and Mendizabal (2009) recall some of the main challenges to becoming, what they call, policy entrepreneurs—those that can navigate and alter their policy context. These challenges include: understanding policy changes and its different dimensions, identifying the decisive aspects of the context that require attention, and recognising the factors that cause policy to change or new ones to be adopted. These challenges are likely to be tackled both by practice and involvement in policy processes as well as addressing policy and political questions that can shed light on the process of influencing policy.

6 Outlining ICT4D Research for Policy

In this section, I will present a framework for researchers to reflect on how to better approach the challenge of informing policies. I argue for more research which considers politics and policies that is strategic in supporting policymakers. The need for this has already been clearly stated (Avgerou 2008; Walsham 2013; Thompson 2008).

This objective is not something that can be solely achieved through communication strategies but through a change in how research projects are planned and implemented. This does not mean that research should lose its independence from the political powers but that it understands the policy scenario, challenges, and possibilities. As Vialle (1981: p. 315) reminded us, the “purpose of a research project depends on the very real game of interests, on the needs and desires of individuals and groups who play a part in research or gain some benefit from it. From this perspective, the assumed ‘neutrality of scientific research’ is a myth or, to say the least, an ideal that is difficult to reach”.

For researchers who aim at changing or creating new policies, this framework suggests a set of questions that could assist them navigate these policy contexts. As suggested by Chib and Harris (2012), policy influence requires researchers to focus not only on academically interesting questions but policy-relevant questions. Along these lines, I propose for research aimed at influencing policy be framed in an integral way. Firstly, it is essential to understand the relationship between ICTs and policies. Researchers in ICT4D should understand the political context in which they are planning to interact. Secondly, researchers are encouraged to explore beyond the ICT policy realm and also consider sectoral policies in which ICTs can be catalysts of change. Thirdly, researchers should consider not only the academic rationale of their research project but how it can link with policy requirements. This entails consideration of research questions that could better fit the requirement to inform policy.

These considerations will place an additional burden on researchers, but it would allow a better link between their work and the policy debates they wish to participate in. Taking into consideration these aspects of policy will enable researchers to produce knowledge that is better suited to enter the policy debates. This, however, is not a silver-bullet solution. Policymaking is a complex endeavour, where ideas are not only validated through peer reviews but by public debates and consensus of a variety of stakeholders with different interests and positions. Research will become only one source of innovation and policymaking in a more complex scenario.

6.1 *Politics and Policies*

Politics and policy are intertwined, and it is unlikely policy choices can be understood without the politics surrounding them. Therefore, it is relevant to carry out research that can help us better understand the arenas where the decisions

regarding ICTs and policies are being carried out, the power struggles behind them, and the opportunities available for policy change. The goal of exploring this topic is to examine policy processes critically to identify and maximise the spaces where research can be influential. A research approach that tackles the politics and the policy aspects is the combination of two dimensions: policy cycle and political context (Ordóñez et al. 2012). While the policy cycle takes on a more rational approach, the political context considers the emotions, interest, and values of the variety of actors involved. Combining these two dimensions of change tackles what Hall (1989) has described as the three factors for policy adoption: policy viability, administrative viability, and political viability.

The policy cycle is a model that depicts policymaking as an ongoing process of stages that keep evolving. It has been criticised for poorly depicting the complex nature of policymaking as overly rational. However, it can be employed as a framework that spells out different stages of policy and, if considered as a flexible framework, portray basic concepts of policymaking: various decision makers and high degree of competition among policy advocates or advisers (Howard 2005). The concept of the policy cycle allows researchers to reflect on how research can be used to set the agenda, define a problem, or facilitate implementation. It is likely that the different stages of the policy cycle require different approaches to research and communication.

It is equally important to understand the locus of the debate since not all policies are decided upon in the same scenario. Grindle (2007), for instance, has made a distinction between reforms that occur in the “political arena” and those that occur in the “bureaucratic arena”. In the first, political interests are primordial and changes can be slow but more long lasting; in the second one, “bureaucratic arena” changes are carried out de facto with a focus on implementation and technical viability but with no lasting impact due to changes in staff or reversal due to lack of political support. The extent to which research can be used differs according to the locus of the policy debate as well, and while research might have less relevance in highly political debates, it could be better received by the implementers of policies.

In this sense, understanding where and how ICT innovations and adoptions are being carried out within governments and the champions and coalitions that are enabling these changes would be interesting lines of work. It would also shed light on the distinctions between the actors involved on their take on technology and what they see their role to be. Furthermore, the locus of the policy debate for ICT-related policies can be taken for granted, or can be strategically determined by the actors involved, considering the strengths and limitations of each.

Finally, it is relevant to understand the policy space (Radin 2013) for ICT-related policies. Policies, by definition, are carried out in a world of constraints where implementing one could leave other options out. As discussed by Heeks (2009), a variety of ICT initiatives have proven to be unsuccessful. Combining this unfavourable fact with constraints due to budget allocation issues results in probably little political space for ICT policies. Policy space, however, is not static and can be created when actors work together, frame issues creatively, and are able to pose the

subject at hand not only as another issue in a world of constrained budgets but as part of the solution to such issues.

While the discussion on the policy cycle and locus might be more clearly stated, the discussion of the context for policies tends to seem elusive. As Avgerou (2010) has mentioned in the case of ICTs, oversimplifying context as a different “local culture” adds little value on understanding the interactions of people and technology in the developing world. With regard to policy context, it may involve understanding the interaction between policy and research, political systems, electoral processes, structure of governments, and so on.

For the purpose of simplifying our understanding regarding the politics of implementing ICT4D initiatives and the role research can play in the process, I would argue for focusing on understanding the rational and value-driven aspect of policy problems. Hoppe (2010), for instance, looks into two dimensions of a policy problem: on the one hand, the level of certainty regarding relevant knowledge for the policy process and, on the other hand, the level of consensus on relevant norms and values. The first dimension is rational and relates to what is known about the problem at hand and how stakeholders react to such knowledge. Is knowledge valid, trustworthy, and relevant? The second dimension refers to values surrounding the problem and whether stakeholders agree or disagree on how the problem is defined and the values that should guide its solution. This way of thinking about the political context focuses on the relationship among the stakeholders involved in relation to their rational and value-based interpretation of the problem at hand. Some of the questions that could be seen from this perspective involve both the evidence and the value surrounding decisions on the role of the state and the provision and support of ICTs.

Furthermore, it would be interesting to explore the perceptions of stakeholders. For instance, it could be interesting to examine how policy actors see technology, either as something that should be imported from the developed world or constructed locally or the result of the articulation of imported and local knowledge. It could also be interesting to explore if ICTs are seen as a disruptive or progressive force of development (Avgerou 2010), the expected uses of ICTs (Harindranath and Sein 2007), and how they would gauge the success of an ICT policy.

Research in the realm of ICT4D-related policies and its politics is the basis to be able to plan research programmes that can respond to the challenges of public policy. This research allows understanding of the setting where ICT4D research would interact with policy and politics and sheds light on the complexities of policymaking and the adoption of ICTs in public programmes, projects, and regulations.

6.2 Beyond ICT Policy

As discussed in previous sections, ICT4D has moved away from thinking about ICT policy partially because of its narrow conception. For this reason, in a new outlook on the relationship between ICT4D research and policy, I suggest considering two

types of policies: ICT policies and sectoral policies where ICT4D research can have a catalyst effect.

By ICT policies, I refer here to those policies of infrastructure, access, and availability of ICT that the government puts in place. It refers to what has been previously analysed and what is traditionally considered the arena of proposed changes for those working on ICT and development. This arena is still important since countries constantly delineate and adjust their ICT policies in accordance to the context and the appearance of new technologies.

After the revision of the literature in the ICT4D domain, however, it is salient that its outcomes can inform other policies as well. For example, the work carried out on the impact of access to price information through mobiles (Islam and Grönlund 2007) could inform agricultural systems' policies and other agricultural policies. These sectoral perspectives go beyond the traditional ICT sectoral policy perspective and view ICTs as possible disruptive forces in other fields. Informing these policies might be a way in which the catalysing effect of ICT policy can be realised. The challenge of approaching other policy debates, however, is that it might require sectoral experts who understand the specificity of that given debate.

6.3 Knowledge for Policy

The two previous subsections have been focused on setting some guidelines of how to approach the broad questions of politics and policy within the ICT4D and other development studies that face similar concerns. These questions can guide researchers on how to approach the policy process, but it is not research alone that will change policy. This is why this last section examines the types of research that could be carried out.

As stated in the first section of this chapter, this document is based on the conception that not all research can or should influence policy. If such is the case, what are the types of research that become useful in the policy process and how? Vialle (1981) produces a typology of educational research based on its primary objective. As the author summarises, the problem with typologies is that they are not clear-cut categories, but they can help researchers determine their objective and approach their work with more clarity. Based on Vialle's (1981) work, I present five types of research according to their objectives in the policy process: conceptual, planning, implementing, action research, and monitoring. Researches in ICT4D that aim at reaching policymakers could benefit from reflecting on how their work can be used in the policy process before it is launched.

Conceptual research refers to the academic knowledge that explains phenomena, uncaps relationships between different variables, and creates categories and concepts to simplify complex trends. This type of research, often referred to as "blue sky" or "pure" research, is valued in the academic community, but it might be the most distant to policymakers that face day-to-day decisions. Despite this tendency, conceptual research can be extremely important for the development of

policy narratives that convey the reasons for decisions being put forward (Bellettini and Ordóñez 2011). In the case of ICT4D, the broad conceptual frameworks in relation to the development process have been discussed before. However, there is space for developing the theory about ICT policies that respond better to the needs of developing countries.

Conceptual research identifies trends and phenomena but does little to identify why or how they happen. Planning research is the category that seeks to explain the factors that cause or hinder a given outcome. This type of research sheds light on what the policy priorities could be and how these could become crucial for the expected outcome. An interesting case of this type of research is Cecchini and Scott's (2003) which prioritises public policies for ICT4D initiatives to be successful. This type of research frames the possibilities of action for policymakers to consider.

Research in the planning category leaves a blueprint of what should be done and in what sequence, at best. The next challenge which policymakers face is actually making a decision and implementing a policy, programme, or such to address the issue at hand. The research for planning refers to the one that identifies the key factors that affect a development outcome. In the case of ICT4D, research that finds key aspects to make a technology useful or an intervention successful would be relevant knowledge for planning. To plan a policy, the debate should focus not only "on what works" but also on the factors for success. Is it the capacity to use a technology, its availability, or its price? These questions allow policymakers to focus, from a myriad of options, on those that could have the most impact. Ty et al. (2012), for example, have discussed the use of ICTs for environmental planning. In their analysis, they conclude that it is not only necessary to integrate more data with the use of technologies but that, for it to be meaningful, changes in the planning process must occur. This research could inform policymakers of the need to change internal processes and not only introduce new technology.

Instrumental research refers to identifying new actions or reforming current existing programmes. It is probably the most innovative aspect of research for policy. This type of research aims at creating solutions. Considering local context, specific needs, and constraints, it creates options. In this sense it is inventive and creative. Many ICT4D projects could be framed as instrumental research. These projects, however, are usually carried out outside the governmental arena. Research that takes into consideration the limitations, possibilities, and requirements for scaling up could support policymakers to view some of these ideas as valuable policy options.

Action research is the fourth proposed category. Its primary focus is changing behaviours or actions through direct interventions. These types of research seek to connect researchers and practitioners directly in solving issues encountered during the implementation of an idea and tweaking issues in the process. These are usually endeavours best carried out in smaller settings with direct and constant interaction between researchers and those involved in the policy (i.e., teachers, bureaucrats, extensionists). For such research to be meaningful, strong links are necessary and researchers become not only observers but participants. In this sense,

Table 1 Examples of types of questions in different types of policies and research objectives

Research objective/type of policy	ICT policy	ICT for sector policies
Conceptual	Models for the regulation of ICT in developing countries, including the costs, issues, and incentives for the expected consequences	Analysis of how ICTs increase capacities in different aspects of development: education, health, and productivity
		Broad conception and categories of the role of ICTs in sectoral policies
Planning	Analysis of the social, economic, or political factors that incentivise or hinder the use of ICTs	Implications of the introduction of ICTs in sectoral policies
Instrumental	Concrete research that can yield information regarding good mechanisms for governance, pricing, regulation, promotion of services, competition, etc.	Prototypes, technology options for specific policy needs
Action research	Pilot programmes of new regulations, prices, or governance structures	Joint implementation of programmes with constant research to shift courses or change policies to achieve a successful implementation
Monitoring and evaluating	Evaluation of compliance with the law, quality of services, who are the beneficiaries, and how and whether policies are achieving their expected outcomes or not	Evaluation of the role of ICTs in the sectoral policies and if they are having the expected outcomes

Gitau et al. (2010)s have pointed to the relevance of the action research approach in ICT4D and the role NGOs can play in them.

The last type of research is for monitoring and evaluating or for impact assessment and seeks to answer the question of whether a policy is delivering on its expected goals. The primarily goal of these initiatives is accountability, focusing on the accomplishments of goals. This type of research might become influential in trying to strengthen a successful policy or eliminate useless ones. This research, however, tends to lack solution or alternatives since its primary focus is defining and measuring success. Many project evaluations would fall in this category. The following table summarises how research questions could be framed in terms of the policies it will inform and the objective of the research process (Table 1).

6.4 Actors Involved in ICT4D and Policy Research

The proposed framework for ICT4D research and policy above encompasses many dimensions of the inquiry needed for sound policymaking. Understanding the politics and policy processes of ICT4D adoption as well as setting out an agenda

with an explicit focus on policy is necessary. To cover this wide range of issues and disciplines, various actors could and should be involved. ICT4D already has a tradition of contribution from the perspective of practitioners; similarly, the new set of questions with a policy focus will require a wide participation. Furthermore, ICT4D is also a market, where telecommunication companies compete for their share of customers and their right to operate in given countries thereby adding yet another layer of complexity.

ICT4D and policy research is not an arena that will be successfully covered by academia alone. The interface between policy and research is complex, with more actors participating in the knowledge production process including NGOs, think tanks, government research department, consultants, and others (Young 2005). A wider analysis of the knowledge that is being generated in this arena would not only require a review of the work present in journals but also in grey literature that involves research that does not appear in the usual venues. This further analysis can depict the existing knowledge and the gaps of ICT4D and policy research. Furthermore, as Chib et al. (2012) have suggested, it is important to understand the interactions among the various actors in ICT4D. This work should not only be carried out as an ex post analysis but an ex ante evaluation to determine power structures and struggles that may allow or prevent research from being used.

7 Conclusion

This chapter has critically analysed the knowledge production within ICT4D where the concepts of policies and politics have not been specifically considered. The variety of existing literature reviews point to the diversity of research that has emerged in the field but also acknowledge a lack of focus on the power struggles and the decision-making processes surrounding policies related to ICTs. An overemphasis on proving a link between ICT and development has overshadowed other research that focuses on finding policy options and understanding the factors that may affect them and successfully implement them.

The proposed framework seeks to challenge the external vision of development currently mainstreamed in ICT4D and proposes to embed research not only broadly in the local context but most importantly in the political context. This implies taking a critical view of both the politics and policy aspects of ICT not only in the ICT policy realm but also in other sectoral policies' debates. Furthermore, it argues for framing projects not only in the context of expanding the field's knowledge but from the perspective of policy choices and political constraints. Widening the space of research on ICT4D and policy questions also implies the inclusion of other actors whose research is not always published in international journals or, for that matter, on the specific ICT4D-related journals. An exercise of a wider sample of sources is suggested to better understand all research involved in the process of informing policymaking.

Research, as has been described throughout this chapter, has political implications; it can set new agendas, change the way problems are depicted, and shed light on its solutions. The proposed set of questions is an attempt to acknowledge this in order to help researchers navigate the political contexts they participate in. By spelling out the motivations of policymakers, the drive of researchers, the complexity of the context, and the types of policies being changed, researchers are better equipped for entering a political debate. Researchers, however, are well advised to recognise the variety of reasons why policies are being carried out, including political and economic benefits for certain groups. In this context, research is one aspect where many others are intertwined.

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