ICT for Development in a Post-2015 World:
How to conceptualise ICT4D in the context of the Sustainable Development Goals

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ABSTRACT

The understanding of the notion of ICT4D (ICT for Development), strongly depends on what is understood by *development* itself. Hence, this article argues that the introduction of the Sustainable Development Goals (SDGs) in 2015 must be understood as a caesura not only for conceptualising development, but, in turn, for conceptualising ICT4D, as well.

On the basis of literature review, this paper analyses the SDG framework and applies it to theories of ICT4D, outlining the implications of transitioning to the post-2015 concept of *sustainable development*, beyond the cosmetic reflex of adding an 'S' to the acronym. In doing so, this article aims to sensitise the reader towards the challenges and potential dilemmas emerging from this transition, which go far beyond the Agenda's new topical areas, and to spark debate on how to conceptualise ICT4D in response.

Keywords

ICT4D; Sustainable Development Goals; policy coherence

1. INTRODUCTION

The notion of ICT4D (Information and Communication Technologies for Development), encompassing the role of ICTs in development, has evolved alongside the shifting paradigms of development itself [1]. Having advanced from a modernist focus on North-South ICT transfer for economic growth, ICT4D has been attributed increasingly multi-dimensional potential, as the international community has embraced concepts such as human or sustainable development [2,3]. Analogously, coming from the early enthusiasm around, for example, colourful laptops that promised to automatically modernise not only the African classrooms but also the continent's economies and societies, theorists have reached a more nuanced conception of ICTs being only as valuable (or harmful) as the interventions in which they are embedded.

Given that what we mean by ICT4D thus depends on what we mean by development, this paper argues that the introduction of the United Nations' Sustainable Development Goals (SDGs) in 2015 must be understood as a caesura not only for conceptualising development, but, in turn, for conceptualising ICT4D, as well. On the basis of literature review, this paper analyses the SDG framework and applies it to theories of ICT4D, outlining the implications of transitioning to the post-2015 concept of *sustainable development*, beyond the cosmetic reflex of adding an 'S' to the acronym. In doing so, this article aims to sensitise the reader towards the challenges and potential dilemmas emerging from this transition, which go far beyond the Agenda's new topical areas, and to spark debate on how to conceptualise ICT4D in response.

2. WHY SDGs?

While there is a general consensus, at least among theorists, that ICT4D should relate itself to development that goes beyond pure economic growth and that takes account of the multiplicity of local realities [1] , the question of how to exactly define the *D* in ICT4D (and in general) is still debated. Zheng et al [1] argue that "ICT4D researchers often lack nuanced appreciation of what is development, both in terms of what constitutes a developmental outcome and which development processes are involved."

Literature theorising the *D* is ample [1] and works such as Kleine's adoption of Sen's Capability Approach [4] undoubtedly enrich the debate, offering crucial foundations for research. When considering ICT4D as a practice, however, it can be argued that this multitude of theoretical approaches also adds to the fragmentation of the field, increasing the blurriness of what ICT4D actually means. A fragmented definition of *development* bears a number of risks.

2.1 The risks of a 'bubble life'

If, following Heeks [5], we define ICT4D by "technology [being] used to help deliver on the international development agenda" [5], the understanding of the *D* should be aligned with that of the international development community. Misalignment, on the other hand, could first of all potentially side-line ICT4D as a disconnected bubble, not being integrated in the efforts of international organisations and governments. This disconnection, in turn, puts the notion of ICT4D at risk of being appropriated or 'hijacked' by players, who - by fault of flawed concepts or vested interests - fail or even undermine the global development efforts.

In practice, this appropriation can entail what Tim Unwin dubbed "'Development for ICTs' (D4ICT), where governments, the private sector, and civil society are all tending to use the idea of 'development' to promote their own ICT interests" [6]. Moreover, even with good intentions, ICTs can be used for interventions

which are based on outdated development concepts and hence fail to improve or even end up worsening the issues they mean to tackle. This seems to be a particularly likely risk for ICT4D interventions, which have proven prone to lagging behind the shifting development paradigms, often still focusing on a modernist approach of "rather unilinear processes of technology transfer" [7].

2.2 The roadmap exists

If we want ICT4D to have an impact on and be integrated in global development processes, defining the notion of *development* should hence not be treated as a task for the ICT4D bubble. Much rather, its conception should be in line with the understanding agreed upon by the international community – and one does not have to look far to find this shared vision. When the SDGs were adopted with the 2030 Agenda for Sustainable Development in September 2015, the set of 17 goals encompassing 169 targets were the outcome of several years of consultations with governments, international organisations, the private sector, academia, and civil society [8]. As noted by Sachs [9], the goals "are meant to orient the world in clear, specific, measurable, concise, and understandable ways".

While critiques on the SDGs are plentiful, their mere existence makes them "the single most-important force shaping the future of international development and, hence, the single most-important force shaping the future of [ICT4D]" [10]. Considering that research indicates that ICT4D interventions have "not produced substantial and sustainable impact […], unless they are embedded in long-term development processes" [1], the SDG framework offers a clear roadmap to align ICT4D efforts with such processes.

3. WHAT IS NEW ABOUT THE SDGs?

In order to assess the implications of the SDG framework for ICT4D, we must consider the novel nature of the SDGs, in contrast to their predecessors such as the Millennium Development Goals (MDGs), which had guided development efforts since 2000. As LeBlanc [11] synopsises, "[t]he novelty of the SDGs […] is that they aim to cover the whole sustainable development universe, which includes basically all areas of the human enterprise on Earth."

The obvious novelty of the SDGs' widening scope of goals concerning "people, planet and prosperity" [8] might suggest that post-2015 ICT4D simply faces a widening 'playing field', which would be a short-sighted assumption. In fact, the holistic architecture of the SDGs goes far beyond these new topical areas.

The resolution adopted by the UN General Assembly [8] defines a "universal Agenda" of goals and targets that "are integrated and indivisible, global in nature and universally applicable," [8]. These notions represent three novel characteristics of the SDGs, which are (1) the holistic scope of targets, (2) their applicability for all countries alike, and (3) their essential interconnectedness and interdependence. While the former of these aspects has been subject to research from many sides, the latter two shall be central to the remainder of the paper. Section 4 will demonstrate the link between (1) the topical and (2) the geographical conceptual expansion before discussing their implications for (3) policy coherence in Section 5.

4. ICT4D AND UNIVERSALITY

The SDGs large amount of new goals, covering areas across the economic, social and environmental dimensions of sustainable development, can be understood as new opportunities for ICT to play a role in international development. ICTs, while recognised as integral drivers for sustainable development, are featured surprisingly little in the SDGs, being mentioned in merely four of the 196 targets. This striking absence was met by a significant amount of research, making the implicit potentials of ICT to support the SDGs explicit [12, 13, 14].

However, these new target areas in which ICTs can be utilised represent only one aspect of how the landscape for ICT4D changes in light of the SDGs. The holistic nature of the Agenda also widens the horizon of development in a geographical sense.

4.1 ICT 4 Global Development

As opposed to the MDGs, the SDGs acknowledge sustainable development as a global challenge, being "universal goals and targets which involve the entire world, developed and developing countries alike" [8]. In fact, this can be understood as a result of the widened topical scope.

The Global North might be more developed with regards to 'traditional' development issues such as absolute poverty or health. Areas such as climate change, sustainable production, or reducing inequalities, however, are as much a challenge for the Global North as they are for so-called developing countries. In the words of Jeffrey Sachs, "[t]he United States, just like Mali, needs to learn to live sustainably. The rich countries like the poor have to promote more social inclusion, gender equality, and of course energy systems that are low carbon and resilient" [9]. In a Post-2015 world, there is hence no longer such a thing as a *developed world*.

4.2 'Everything' is ICT4D?

This widened topical and geographic understanding of development leads to a number of potential dilemmas, when applied to ICT4D. Following the holistic and universal interpretation, ICT4D becomes a field going far beyond its traditional conception. To give an example, using big data to improve public transport in Brussels does, according to this definition, represent as much of an ICT4D intervention, as does a smart farming project in Burkina Faso.

On the one hand, this corresponds with the development challenges of our time. A better public transport, to stick with this example, does not only correspond to SDG11 on sustainable cities and, in turn, help reduce inequalities (SDG10) by improving mobility and thus increasing people's access to employment (SDG8), education (SDG4), and health care (SDG3), to name a few examples. Beyond their local impacts, such interventions also have an effect on climate change (SDG13), thus affecting the planet as such, including so-called developing countries, which carry the biggest burden of global warming.

On the other hand, however, it might be understandable if ICT4D practitioners question the practicality of such a definition of their field. While the old and largely overcome understanding of ICT4D as merely fostering economic growth in the Global South is clearly misaligned and counterproductive to the global development efforts, taking the SDG narrative literally could arguably pose the risk of diluting the notion into a meaningless catch-all term.

These two poles thus provide a spectrum, reaching from a clearly outdated development concept to an approach that might prove too idealistic to (yet) fully apply to ICT4D (see Figure 1). This paper
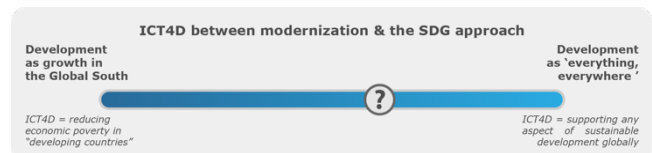
Figure 1. *Spectrum:* To which extent can the SDGs' universal approach be applied to the notion of ICT4D?

does not aim at providing an answer to this dilemma. Much rather it hopes to sensitise stakeholders towards this spectrum, along which ICT4D must consciously and rationally be situated.

5. ICT 4 INTEGRATED DEVELOPMENT

As indicated in Section 3, another defining novelty of the SDG architecture can be found in the "deep interconnections and many cross-cutting elements across the new Goals and targets" [8]. The network character of the goals adds another crucial element of complexity. As the goals and targets are "integrated and indivisible" [8], coherence must be ensured between all of the SDGs' 169 targets. The network architecture of the SDGs shall at this point briefly be outlined, before its implications for ICT4D are assessed.

5.1 A network of goals

In a Working Paper for the UN Department of Economic and Social Affairs, David Le Blanc [11] analyses the manifold links between the 169 targets, which spin a complex network between the 17 goals. As the intricacy of Figure 2 indicates, most areas of sustainable development are featured not only in their specific goal, but are highlighted in the targets of other related goals as well [11].
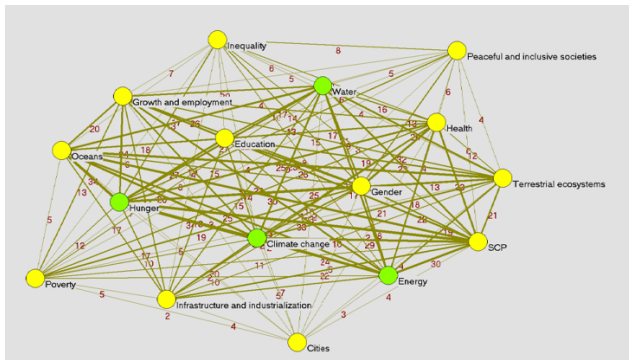

Figure 2. Links between SDG targets and other goals [11]

This network architecture responds to the fact that "[t]he interlinkages […] of the Sustainable Development Goals are of crucial importance in ensuring that the purpose of the new Agenda is realized." [8] To provide an example, sustainable economic growth (SDG8) cannot be achieved, unless women are allowed to work, linking it strongly to gender equality (SDG5). Women will not enter the work force, unless they receive proper education (SDG4), which in turn would positively affect issues such as maternal health (SDG3) and overcoming poverty (SDG1), just to name a few [15].

Acknowledging these interdependencies between the SDGs could "correct one of the drawbacks of the MDGs, in which 'silo' goals encouraged silo policies and did not make links and trade-offs across areas explicit" [11]. In a Post-2015 world, actors working in specific development sectors "will have to take into account targets that refer to other goals" in designing their interventions [11].

Translating this post-silo architecture into development action that does take the whole of the SDG Agenda into account, will represent one of the biggest challenges for development practicioners, including those working in ICT4D. As the following sections will demonstrate, this transition bears another potential dilemma for ICT4D, which should be debated within the community.

5.2 Coherence for Sustainable Development

On the one hand, the interconnectedness of goals indicates that an intervention in one of the areas of sustainable development can simultaneously support other goals as well. On the other hand, however, if the intervention is not coherent with the entirety of the SDG framework, its effects can undermine other objectives of the agenda. The work of Mackie et al. [16] on the transition from Policy Coherence for Development (PCD) to Policy Coherence for Sustainable Development (PCSD) explains why the struggle for coherence in the SDG context is becoming "infinitely more complex" [16].

Traditionally, the concept of PCD meant ensuring that domestic policies do not harm efforts of development policies. Its importance has often been illustrated by the prominent example of agricultural subsidies in Europe resulting in developing countries being flooded by European surplus products. Sold at dumping prices, these results of European agricultural policies had catastrophic effects on the economies and food security in the receiving countries, thus undermining Europe's development objectives [16].

In the framework of the SDGs, the relatively straightforward objective of considering a certain policy's potential effects on "the poor in developing countries" [16] turns into a far more complex challenge, assessing coherence with "many policy sectors, for all countries and for future generations as much as for the poor now." [16] As a result of the SDGs' holistic and universal approach, PCSD represents a multi-directional challenge, in which coherence must be achieved throughout the three dimensions of space, time, and the scope of development goals.

As opposed to the concept of PCD, PCSD in turn also acknowledges that the realm of *development* is no longer simply the protégé of policy coherence. Much rather, coherence must also be achieved within and between the various areas of development cooperation. If actors in certain areas of sustainable development disregard their potential effect on other goals, their interventions risk doing more damage than good. Without internal coherence, it will thus be impossible to deliver on the SDGs as a whole.

To quote an example used by Nilsson et al., "using coal to improve energy access (goal 7) in Asian nations, say, would accelerate climate change and acidify the oceans (undermining goals 13 and 14), as well as exacerbating other problems such as damage to health from air pollution (disrupting goal 3)." [15] For ICT4D projects in specific development areas, alignment with the SDGs thus means finding synergies with other areas, or, at least, preventing side-effects that may potentially undermine other SDGs.

5.3 SDGs as a Deadlock for ICT4D?

At first glance, the idea that measures to support one SDG should not undermine the rest of the goals appears self-evident and rather straightforward. On a closer look, however, the multi-directionality of coherence required for sustainable development presents another dilemma for ICT4D.

When practising ICT4D in line with the SDG Agenda, should projects hence be abandoned if they are incoherent with other goals? Clearly, this would be the logical consequence of the prior arguments laid out in this paper. When translating them into practice, however, it becomes obvious that a radical interpretation of these claims could put ICT4D, and arguably most other development sectors, into a deadlock.

Can practitioners be expected to forecast all potential "interactions within and between all the SDGs, everywhere, now and in the future" [16]? Is it even possible to have only ICT4D projects that use technology which has been produced sustainably and under fair conditions? Can we possibly guarantee a neutral environmental footprint for the technology that is used in ICT4D projects?

Mackie et al. argue that it is impossible to guarantee complete and absolute multi-directional coherence. However, while "trade-offs remain inevitable" [16], they must be addressed in a transparent manner, opting for the greatest possible coherence. ICT4D, like any other development sector, thus faces another spectrum, along which its position must be negotiated rationally and consciously.
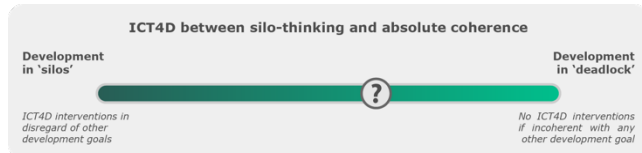
Figure 3. *Spectrum:* **What level of coherence can be granted without ICT4D becoming unworkable?**

At one end of the spectrum, the outdated, yet not entirely overcome, approach of solely considering a project's desired direct outcome seems to offer a *road of least resistance* to achieving a specific goal. However, research on PCSD shows "the impossibility of delivering on all of the Agenda's commitments using a silo approach" [16]. At the other end of the spectrum, considering absolute coherence a requirement for any ICT4D project can be seen as a utopian approach, making ICT4D an almost impossible endeavour altogether.

This spectrum leads to the question, where a line should be drawn to avoid putting ICT4D in a deadlock? Arguably, ICT4D will never be entirely free from unintended side-effects, but does, for example, the energy consumption of Bitcoin, which already in 2014 matched that of Ireland [17], indicate that the e-currency should in fact not be used in the context of development? Or does a certain project empowering a certain group of people using ICTs actually enhance inequalities in a country or region, for example between those who have access to ICTs and those without?

When is a project's positive impact in its target area outweighed by its negative side-effects on others? Surely, there will not be a one-size-fits-all answer to this dilemma. Yet, it must be discussed how ICT4D actors can guarantee that these side-effects are being thoroughly and transparently assessed.

6. CONCLUSIONS

The introduction of the SDGs marked a caesura for conceptualising development. In turn, it must be understood as caesura for conceptualising ICT4D as well. As this paper demonstrated, defining ICT4D in a post-2015 world requires more than applying ICTs to the new areas of development and cosmetically tweaking the acronym to ICT4SD or ICT4SDG. The complexity of the SDG framework is mirrored in the complexity of challenges that must be faced in order to comply with it.

We cannot stop at the comfortable task of embracing the SDGs' new topical scope, which offers a new 'playing field' for ICTs to support international development. We must equally open the Pandora's Box of considering the complexity that results from this transition. Should ICT4D open up to the Global North, as development is no longer an exclusive challenge of the Global South? How close can ICT4D come to meeting the holistic and integrated SDG approach without becoming an unworkable utopia? How far can it afford to stay behind without failing or even undermining the SDGs by doing more damage than good? And how can practitioners, to whom these questions might not seem pressing or even relevant, be incentivised to acknowledge that sometimes no ICT4D project is the better choice for sustainable development?

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