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ROADS TO PEACE?

The Role of Infrastructure in Fragile and Conflict-Affected States

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ACRONYMS

AusAID	Australian Agency for international Development
CDD	Community-Driven Development
CDR	Community-Driven Reconstruction
CERP	Commander's Emergency Response Program
DFID	Department for International Development
DOD	US Department of Defense
DRC	Democratic Republic of the Congo
EBIDF	Evidence-Based Infrastructure Development Framework
EIA	Environmental Impact Assessment
FARDC	Armed Forces of the Democratic Republic of the Congo
FCAS	Fragile and Conflict-Affected States
FPIC	Free Prior Informed Consent
G7	Group of 7
IDA	World Bank International Development Association
ILO	International Labor Organization
ISSSS/I4S	International Security and Stabilization Support Strategy
M23	Mouvement du Mars-23 (Movement of March 23)
MDGs	Millennium Development Goals
MINUSMA	United Nations Multidimensional Integrated Stabilization Mission in Mali
MINUSTAH	United Nations Stabilization Mission in Haiti
MONUSCO	United Nations Organization Stabilization Mission in the Democratic Republic of the Congo
NGO	Non-Governmental Organization
NSP	National Solidarity Program
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
QIPs	Quick Impact Projects
RAIP	Rural Access Improvement Program
RAP	Rural Access Programme
SDGs	Sustainable Development Goals
Sida	Swedish International Development Cooperation Agency
SPLA	Sudan People's Liberation Army
SSRF	South Sudan Recovery Fund
SSU	Stabilization Support Unit
UNDP	United Nations Development Program
UNMISS	United Nations Mission in South Sudan
UNOPS	United Nations Office for Project Services
USAID	United States Agency for International Development
WASH	Water, Sanitation and Hygiene

EXECUTIVE SUMMARY

Can roads literally lead to peace? Moving towards the 2030 Agenda provides a space for all stakeholders—governments, civil society, regional and international organizations, development banks, financial institutions, and the private sector—to rethink the fundamental role of infrastructure in fragile and conflict-affected states. Infrastructure, it is often said, is a basic prerequisite for economic growth and human well-being. In fragile and conflict-affected states (FCAS) infrastructure is often in a particularly inadequate state. If infrastructure as a means to promote economic development has a long history, more recently, donors have started understanding infrastructure as a means to address conflict and fragility. However, there is no strong record of either evidence or best practices on the stabilizing effect of infrastructure in FCAS.

This report addresses the following question: **under which conditions can infrastructure successfully contribute to reducing violence and fragility?** Addressing this question is of crucial importance to the international community: given the vulnerability of fragile and conflict-affected states (FCAS) to external shocks, building infrastructure might also have negative impacts on already complex conflict environments. In order to address the above question, we need to understand **what mutual linkages exist between infrastructure interventions on the one hand and conflict, fragility and stabilization on the other.** The goal of *Roads to Peace?* is to provide structured input about the relations between infrastructure, conflict and fragility to inform debates among relevant stakeholders on the potential, risks and limits of future infrastructure engagement in fragile contexts.

It is widely agreed that infrastructure plays a key role in modern life. It facilitates economic growth and is crucial for the participation in public life. At the same time, no common understanding of the main purpose of infrastructure in addressing fragile and conflict-affected states exists. The report aims at addressing this gap by proposing that infrastructure is more than a physical asset; it is an agent of change that can, however, only be effective when connected to other societal processes. Infrastructure is dependent on institutions and knowledge, and interacts with the political, economic, social, environmental and security dimensions of the given context. Because the linkages of infrastructure systems to society are complex and multiple, **they interact with all the dimensions of fragility mentioned above. Yet any individual infrastructure project cannot have a major impact on all dimensions alike**. In order for infrastructure projects to have a positive impact

for the people affected, it is therefore critical to acknowledge, and work with, the wider societal processes with which physical assets interact**.**

Based on evidence, experiences and lessons learned derived from academic literature, case studies, impact assessments and interviews with practitioners, this report identifies a set of **six common challenges** that recur across infrastructure projects in FCAS. These challenges emerge both from the limited means with which the international community is endowed to engage in fragile and conflict-affected states, as well as from the difficulty to achieve different goals simultaneously through single projects. The overview presented here is not meant to provide any conclusive answers to the questions it raises, but rather to inform debate around the future of infrastructure spending in fragile contexts.

Challenge 1. Between 'do good' and 'do no harm' addresses the interlinkages between infrastructure projects and violent conflict, and discusses the question of when potential negative impacts of infrastructure interventions outweigh a project's benefits. We identified three unintended consequences of infrastructure in FCAS: the inflow of funds and opportunities along infrastructure might lead to contestation; infrastructure may deepen conflict as it may be seen as representing disputed state power; infrastructure can generate predation and entrench illegal economic activities.

Challenge 2. Between quick impact and long-term transformation discusses potential tensions arising from the need to deliver quick and tangible peace dividends on the one hand and the need for infrastructure to have a lasting positive effect on the fragile situation on the other. Quick delivery projects are critical for demonstrating to stakeholders that change is happening – an important base for establishing trust towards the government. At the same time, quick impact missions seem to have a limited effect on long-term stabilization, whereas projects that involve communities early in decision-making processes can impact positively on conflict and fragility. Linking short-term projects to long-term development strategies remains a challenge in infrastructure planning in FCAS.

Challenge 3. Between local and central state capacities inquires into trade-offs that may emerge when deciding on key stakeholders. While statebuilding mainly aims at enhancing state capacity, stabilization also needs to reap peace dividends to affected local communities. Communi-

ty-driven infrastructure projects have shown some positive effects on conflict and fragility in several fragile contexts. At the same time, there are limits in focusing exclusively on local participation as it is expected that infrastructure is effective across scales.

Challenge 4. Between specific beneficiaries and equal access reflects on challenges emerging when mediating between the need to integrate the most at-risk groups into infrastructure projects, and the need to demonstrate that access to infrastructure benefits the whole population. How do donors know that those who present themselves as spokespersons for local communities in fact have the mandate to speak on behalf of the population? A key question is whether it is more productive to create (new) inclusive and transparent governance mechanisms or to partner with existing institutions that may be an agent for the status quo.

Challenge 5. Between international standards and 'fit for purpose' discusses the trade-off between acknowledged standards in engineering, procurement and implementation and the requirement to adapt to the specific requirements of a given volatile environment. In situations of conflict, some global standards may limit the capacity to accommodate local expertise, technology and labor. Additionally, rather than added as an output indicator, infrastructure expertise should be a constitutive element at the planning stage of stabilization programs.

Challenge 6. Between economic growth and sustainable development discusses the possible negative impact of infrastructure on the environment in FCAS. Today, climate change mitigation often figures lower than economic growth on the list of priorities for governments of fragile states. Yet, whereas both growth and reaching the Sustainable Development Goals rely on infrastructure, the latter also largely affect climate change. This section raises the overall question of how economic growth and sustainable development can be achieved jointly in efforts to address conflict and fragility.

Given the potential value of infrastructure for transformation, given the contested record of accomplishment of infrastructure as a tool to address conflict and fragility, and given the continuously high levels of infrastructure spending in fragile and conflict-affected states, these findings should serve as a potential starting point for re-evaluating the future of infrastructure in contexts of conflict and fragility. ■

INTRODUCTION

Infrastructure, it is often said, is a basic prerequisite for economic growth and human wellbeing. Yet infrastructure is often in a particularly dire state in fragile and conflict-affected states (FCAS). Addressing the infrastructure needs of fragile and conflict-affected states is therefore an urgent priority for the international community. If infrastructure as a means to promote economic development has a long history, more recently, donors have started deploying infrastructure to attempt to address the immediate manifestations of conflict and fragility. Between 2007-2012, over 50% of all the World Bank's International Development Association (IDA) financing went to infrastructure in FCAS[1]; and today, nearly 70% of UNOPS infrastructure portfolio is delivered in countries in fragile situations.[2] In what are now often called stabilization programs, infrastructure projects are oftentimes implemented even when 'there is no peace to keep'.[3]

But implementing infrastructure under conditions of ongoing conflict or elevated fragility is challenging, and little is known about how infrastructure interacts with conflict or the conditions that give rise to it. Being a relatively novel approach, there is no strong record of either evidence or best practices on the stabilizing effect of infrastructure in FCAS.[4] Compounding the absence of significant evidence, key examples of recent ambitious infrastructure programs in FCAS such as Afghanistan have a contested track record. This raises a core question: **under which conditions can infrastructure successfully contribute to reducing violence and fragility?** Addressing this question is of crucial importance to the international community; given the vulnerability of FCAS to external shocks, building infrastructure might also have negative impacts on already complex conflict environments.

In order to address the above question, we need to understand **what mutual linkages exist between infrastructure interventions on the one hand and conflict, fragility and stabilization on the other.** The goal of *Roads to Peace?* is to provide structured input about the relations between infrastructure, conflict and fragility to inform debates among relevant stakeholders on the potential, risks and limits of future infrastructure engagement in fragile contexts. In order to do so, it provides an overview of the main aspirations that drive infrastructure spending in FCAS today, and identifies common challenges that often arise when trying to achieve them. This format enables the reader to navigate through the opportunities, lessons learned, and challenges identified. Addressing these challenges will be key in determining the future of infrastructure spending in FCAS. The objective of this report is to provide input for debate by identifying key questions, not to provide conclusive answers to any of the questions it raises.

The structure of the report is as follows. To begin with, we provide a background to the contemporary use of infrastructure in FCAS. It shows that infrastructure has been around a long time in donor programs in FCAS, but that objectives of infrastructure programs—as well as sensitivity to conflict and fragility—have varied significantly. Secondly, it outlines the framework adopted in this report, and includes a discussion of the selection of sources. The main portion of the report consists of an overview of the main aspirations that drive contemporary efforts to target conflict and fragility through infrastructure. This overview is structured around a number of challenges between urgent priorities of infrastructure projects in efforts to address conflict and fragility. While many examples come from a select number of well-documented cases, they reflect challenges that affect infrastructure spending in FCAS more broadly. The report concludes by summarizing the main findings and takeaway questions. ∎

BACKGROUND

Infrastructure has long been acknowledged to play a crucial role in both generating economic growth and consolidating state power. For many fragile states, their infrastructural problems today date back to colonial times, when infrastructure was largely limited to connections between ports and profitable hinterland resource pockets.[5] After decolonization, western infrastructure spending for development in newly independent states increased sharply.[6] In the subsequent decades of the 1960s and 1970s, infrastructure was seen as a tool to generate economic growth by developing productive areas of what were then called Third World Countries. Following shifts in development discourses in the 1980s, infrastructure projects were increasingly deployed to generate local employment opportunities and to address basic needs and poverty alleviation.[7] The British House of Commons therefore voices a consensus when it states that 'in many ways, infrastructure *is* development.[8]

The late 1980s and early 1990s entailed a sea change in infrastructure thinking. On the one hand, after decades of frustration with public sector infrastructure works, donors started favoring privatization of infrastructure management and delivery in the context of broader structural adjustment programs. The 1994 World Development Report represents a hallmark in this context. Subtitled 'infrastructure for development', its main message was to 'manage infrastructure like a business, not a bureaucracy'.[9] At the same time, the built environment lost its charm for donors, who moved away from productive to social sectors, not least because of the MDGs.[10] At the same time, the late 1990s sees a growing concern with reconstruction in war-affected states, and some studies start to address the relevance of infrastructure and its absences in this context. In this early approach, it was, however, assumed that infrastructure would only be effective after the end of violent conflict.[11]

At the same time, infrastructure is among the first victims of conflict. Infrastructure forms a strategic target in warfare, and conflict often entails a lack of maintenance and repair.[12] In the context of post-2001 counterinsurgency efforts in Afghanistan and Iraq, infrastructure became explicitly incorporated into stabilization and statebuilding efforts. In this new view, infrastructure can act as a 'bridge for peace' that might be deployed to effectuate peace outcomes during ongoing conflict, to close the 'reconstruction gap' between cessation of hostilities and infrastructure rebuilding.[13] This position is most explicit in the approach of the American military to stability operations.[14] Subsequently, stabilization missions have become popular yet heterogeneous, involving militaries, development agencies and local actors in their efforts to address both short-term security as well as long-term development challenges.[15] The variety of stabilization programs now includes, amongst many others, MONUSCO in the DRC, the US army's quick impact projects in Afghanistan or USAID's small-scale development projects implemented under the Transition Initiatives for Stabilization in Somalia.

For many of these programs, constructing and rehabilitating infrastructure is a significant pillar in building statehood. As an example, complementing the host of donors, development banks and agencies delivering infrastructure in FCAS today, United Nations (UN) engineers are increasingly tasked with more than just mission support. Increasingly, UN civilian and military engineers are also deployed to contribute to building state authority (cases in point being MONUSCO, MINUSTAH or UNMISS).[16] Today, even NGO-delivered Water, Sanitation and Hygiene (WASH) projects are framed as contributions to statebuilding and peacebuilding.[17] ■

FRAMEWORK: INFRASTRUCTURE IN ACTION

There is a broad consensus that conflict, fragility and development are interlinked, and that low development indicators form part of the root causes of conflict. But how exactly they are linked remains contentious. International efforts, most notably the SDGs, point to the significance of sustainable development for peace while acknowledging that economic development, wellbeing and issues of equal access rely on technology and infrastructure.[18] In other words, the international community has renewed its efforts to address the challenges linked to development, conflict and fragility through innovative approaches. The subject of this report is one such innovation, namely, the use of infrastructure to address conflict and fragility.

The use of infrastructure to engage with conflict or to rebuild states has a limited and contested track record, and thus requires a careful investigation of the relations between infrastructure and core aspects of conflict and state authority.[19] Institutional learning on how conflict affects infrastructure, and vice versa, in what way infrastructure projects may worsen conflict, emerges only slowly because within the relevant sectors, as one expert put it, 'you do not get a lot of credit for changing policies, but you get a lot of credit for building yet another road'.[20] This section proposes one avenue to rethink infrastructure in FCAS, by updating the definition of infrastructure to reflect advances in our understanding of fragility.

Fragility is an elusive and slippery concept. It used to be a concept associated with a list of countries (the annual *Fragile States Index* of the Fund for Peace[21] and the World Bank's *Harmonized List of Fragile Situations*[22], the two of which together give rise to the OECD's list of fragile states[23] are the most prominent examples), something that both raised concerns about stigma and risked lumping together very different countries under a homogeneous and simplistic header. Today, the OECD is engaged in an effort to move towards a new understanding of fragility, one that acknowledges the multidimensionality of fragility.[24] The OECD's approach of 'States of Fragility' acknowledges that areas in developed countries might be fragile, while some hitherto fragile countries can be stable in some dimensions. This report follows the OECD's definition of fragility as 'the combination of exposure to risk and insufficient coping capacity of the state, system and/or communities to manage, absorb or mitigate those risks'.[25] The concept of fragility is based on five dimensions: political, societal, economic, environmental, and security. At the same time, the OECD report underscores the fundamental role that violence plays in aggravating all these dimensions of fra-

gility. To underscore this linkage, we therefore deploy the term 'fragile and conflict-affected states' (FCAS) throughout this report to refer to conflict-affected countries with the highest levels of fragility across all of the dimensions the OECD identifies.[26]

At the same time as the international community labors towards a paradigm shift in thinking about conflict and fragility, the dominant definition of *infrastructure* has remained remarkably static. In its various definitions, it can comprise the built environment at large, or can be approached in terms of the sectors it supports (typically energy, transportation, telecommunication, safe drinking water and sanitation). It can also be discussed in terms of its characteristics—longevity, scale, inflexibility, and high investment costs. No definition is ever considered satisfactory; but despite its elusiveness, it is widely agreed that infrastructure is central to modern life and wellbeing, economic growth and political order at the same time. Frequently, contemporary policy towards FCAS continues to use 'infrastructure' to refer to physical assets, outputs which can be added to FCAS programs independently, as discrete components and measures of success. As one practitioner put it, 'in countries [...] where nothing works, it is very attractive for [peacekeeping operations] to emphasize roads and buildings because they show up as tangible progress in reports'.[27] This report aspires to move towards an understanding of infrastructure that does justice to the political role of infrastructure as an agent of change[28], something of particular importance in the context of FCAS. Its premise is that **if we want to appreciate the mutual linkages between infrastructure interventions on the one hand and conflict and fragility on the other, we need to rethink what infrastructure is and does.**

How can we achieve a reframing in which infrastructure does not figure as an output but rather as a complex process and agent of change? One possible starting point for such a redefinition is the acknowledgement that infrastructure does not 'work' in isolation. Infrastructure is more than just a physical output. Rather, infrastructure is an increasingly important element, or mediator, in the way in which social actors organize themselves. Infrastructure can only become effective in society, if it is 'connected' to other processes and networks. In other words, 'infrastructure is something that emerges for people in practice, connected to activities and structures.'[29] These outside linkages determine infrastructure's role as an agent of change.[30] The physical asset's outside linkages are of two kinds: (1) the knowledge and institutions required to make infrastruc-
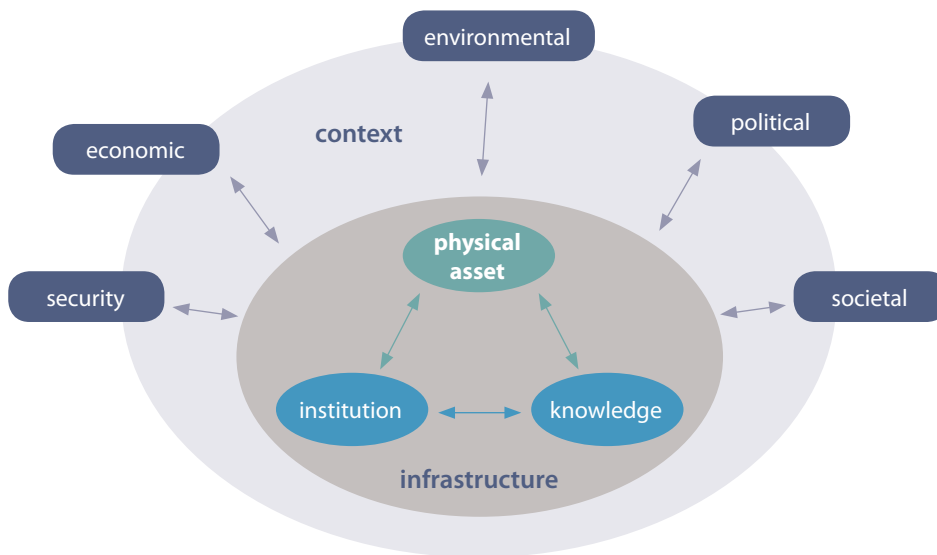
Figure 1. Infrastructure and its linkages.

ture work; and (2) context-specific social, economic, environmental, political and security processes with which infrastructure interacts. Figure 1 outlines these linkages in relation to the OECD's dimensions of fragility.

The *first* set of linkages can also be understood through the distinction between 'hard' and 'soft' infrastructure, the former comprising the built environment and the latter its institutional and technical environment or 'superstructure'—and both are required to make infrastructure work.[31] The implication is that **a physical asset can be delivered in a FCAS, but infrastructure cannot 'work' in an institutional or knowledge void**. This is of particular relevance for FCAS, which often lack advanced engineering capacity and institutional capacity for governance of large technical systems.[32] Infrastructure is, by extension, only one element in systems that make up governance institutions in a particular context.[33]

The *second* set of linkages mirrors advances in fragility thinking: following the OECD's five dimensions of fragility, infrastructure is an agent of change that always has both societal, economic, political, environmental and security implications.[34] While infrastructure is 'fixed', it affects its context differently throughout its lifecycle, ranging from

speculation during planning, job creation during construction, to a swath of variable economic, environmental and security effects after completion.[35] Because its linkages to society are complex and multiple, **infrastructure always interacts with all dimensions of conflict and fragility in FCAS. Yet any individual infrastructure project cannot have a major impact on all alike.** This leads to situations where stakeholders have to decide among often equally urgent priorities, while also at once balancing technical and contextual factors. At the same time, infrastructure impact might equally play out negatively across one or multiple dimensions of conflict and fragility.

Together, these two premises forward the multidimensionality of infrastructure, as a point of departure to better analyze the interactions between infrastructure, conflict and fragility. As the figure shows, the linkage between infrastructure and fragility is a two-way relationship,[36] in which individual or multiple dimension of the context affect delivery, and should inform planning, as much as infrastructure might affect any of the dimensions of fragility.[37] Unpacking these mutual and constitutive linkages between infrastructure and FCAS is the core objective of this report. ■

METHODOLOGY

This report provides a summary of the current debates on infrastructure in relation to conflict, fragility and statebuilding, nested within a broader framing of the issues and questions that need further attention in the longer run. Its approach is as follows. We first identified the most common aspirations driving infrastructure projects in FCAS. We identified six pairs of common aspirations. Each forms a distinct imperative frequently recurring across donor programs in FCAS, but in practice, many individual programs combine any number of these aspirations at once. Second, we looked at lessons from experience, interviewing stakeholders, studying evaluation and impact reports as well as broader assessments, to learn how these aspirations played out in practice. This helped us identify six key challenges, which arise when two equally urgent aspirations lead to tensions and possible trade-offs. These challenges don't map onto the dimensions of fragility outlined above, but together, they comprise the interaction of infrastructure with all dimensions of fragility outlined above.

This report was developed by an author team led by DIIS under oversight of UNOPS, with significant input from a community of practitioners. It builds on a systematic review of 100+ sources on infrastructure in fragile and conflict-affected situations. Primary sources for instance comprise policies of donors and implementing agencies, impact assessments, and project evaluations. The secondary material consists of literature reviews, academic studies, case studies, and other sources that indirectly discuss the linkages between infrastructure and conflict and fragility as well as state- and peacebuilding. Finally, we were able to fill gaps by consulting directly with donors, UNOPS and other practitioners involved in infrastructure planning and delivery in FCAS. The main constraints during the research have been, on a general level, the limited amount of research and evaluation that has been conducted on the interactions between infrastructure and conflict and fragility. In addition, we also encountered difficulties in accessing systematic evaluations by donors and implementers. While no conclusive evidence exists to any of the contentious issues it identifies, increasing case-based and anecdotal material surfaces on how infrastructure interacts with fragility and conflict. Given this rather important constraint, which arises because *Roads to Peace?* breaks new ground, some of its findings are rather speculative, more in the nature of propositions for further study than specific conclusions offered with a high level of confidence. ■

UN Photo/Station Winter

UN Photo/JC McIlwaine

SUMMARY Even though many donors continue to see infrastructure efforts in FCAS as politically neutral fixes, whose impacts can be quantified largely through concrete and measurable indicators, infrastructure as an agent of change will become embedded into structure of local authority and prevailing value systems. Put differently, the impact of infrastructure projects on conflict and fragility will depend much on local-level perceptions, which arise as questions of participation and ownership during construction, use and maintenance. Infrastructure interventions in fragile and conflict-affected contexts, even when aimed at other beneficiaries, may have to work through local obligatory passage points such as traditional authorities or youth groups, on whose participation and co-option success eventually depends. Engaging resilient local power structures through local projects might be the core challenge in order to address issues of conflict and exclusion. At the same time, it poses a potential challenge to notions of impartiality, and it might be both difficult and extremely sensitive to determine and designate relevant stakeholders, especially in light of central state aspirations. How, then, do donors know that the ones who present themselves as spokespersons for local communities in have fact the mandate to speak on behalf of the population? Is it most productive to create alternative governance structures or work through existing ones?

CHALLENGE 1
BETWEEN 'DO NO HARM' AND 'DO GOOD'

ASPIRATION:
Restoring infrastructure can greatly improve security in fragile situations

ASPIRATION:
In situations of conflict and fragility, the first aim should always be to do no harm

Infrastructure has an important facilitating role both for economic growth as well as for political participation, and is today powerfully associated with some of the factors that can act on conflict and fragility. But under which conditions can it do so? One of the most comprehensive reviews of infrastructure in FCAS argues that 'there is little evidence to suggest that infrastructure investment necessarily plays a significant role in the process of stabilization. If weak governance and insecurity are the main drivers of conflict, infrastructure investment may be of little relevance unless it is part of a stabilization strategy to focus on the correct underlying causes'.[38] This cautions that intervening during ongoing conflict is only beneficial in rare cases.

But there is something more at stake beyond the question whether infrastructure can do any good during ongoing conflict. Infrastructure can act as a force multiplier for positive or negative dynamics. While their development potential is great, 'large-scale infrastructure developments including major roads, bridges, dams and other energy generating projects can similarly lead to upheaval and tension and be the subject of social grievance'.[39] Gauging the trade-off between potential positive and negative impacts on conflict and fragility should be an explicit point of departure for any infrastructure project. The starting point should always be to 'do no harm'. This leads to the following question: **at which point do the potential risks of aggravating a volatile situation outweigh the expected benefits**?

In its sustainability policy for infrastructure, UNOPS recognizes that 'the development of infrastructure improves communication and accessibility to national territory, fosters trade and is a cornerstone of development; however, facilitating accessibility and communication can also lead to increased security risks for certain segments of the population, including marginalized and vulnerable groups'.[40] The large investments associated with infrastructure 'in-

evitably alter traditional systems and, even in relatively peaceful environments, can easily lead to a heightening of tensions and possibly violence'.[41] Some therefore propose that infrastructure planning in FCAS follows a rigorous conflict-sensitive approach, with inbuilt due diligence mechanisms.[42]

It remains a question to which extent donor supply of equipment and its engagement in strengthening a state's executive through infrastructure[43] is embedded in a holistic stabilization strategy. The risk of such state capacity building is that it empowers state agents who may not only have a track record of unaccountable security practices but who are also seen as illegitimate by the affected communities. It requires careful consideration in planning and design on how to avoid that infrastructure reinforces structures that have led to violent conflict.[44] This challenge not only affects government buildings but also roads. Roads are often thought of as facilitating access, not only for locals to markets, for UN missions and humanitarians to populations at risk, but also the return of state authority (see Box 1 below). While most of the studies incorporated adopt a rather 'soft' approach to stabilization, it is to be remembered that as an active intervention in ongoing conflict, particularly road construction is an activity rubbing closely, and perhaps uncomfortably, with military logistics. Lt. Gen. Karl Eikenberry, American military commander in Afghanistan famously posited that 'Wherever the road ends, that's where the Taliban starts'.[45] The assumption is pervasive that extending infrastructure begets increased security, by allowing state security forces to circulate. There are, indeed, some indications that this works in practice (see Box 1).[46]

There is also evidence that infrastructure attracts violence. On the one hand, **infrastructure may become a legitimate target in conflict because it symbolizes state power or facilitates military access**.[47] There is a number of cases in which insurgent groups and militia violently resist infrastructure projects which are aimed at extending international or state presence in contested areas. In 2014, Boko

BOX 1 INFRASTRUCTURE DURING CONFLICT: THE SOUTH SUDAN RECOVERY FUND

Violent conflict during project implementation not only poses a challenge to the feasibility of infrastructure delivery, infrastructure assets may also affect conflict dynamics. In order to facilitate the transitioning from humanitarian to development assistance, in 2008 donors established the South Sudan Recovery Fund (SSRF). While the first two rounds aimed at improving livelihoods of communities in all states, round three reacted to increased inter-communal violence in four particular states and aimed at **contributing to 'increased security and reduction of interethnic violence' through the delivery of strategic infrastructure** in Jonglei, Eastern Equatoria, Lakes and Warrap states. With a budget of US$102 million, the main outputs were government buildings and 'security access roads' to enable state agents to address violence.[48]

In December 2013, violence broke out between the Sudan People's Liberation Army (SPLA) and the breakaway faction of the then vice president Riek Machar. While all outputs in Lakes, Eastern Equatoria and Warrap were delivered before December 2013, most of the outputs in Jonglei state either remained incomplete or were destroyed during conflict. While the UNOPS annual performance report on one of the stabilization programs is cautious about the program's outcome on security,[49] the only on-site outcome evaluation of SSRF's round 3 **identifies positive outcomes of the roads and institutions projects on the perceptions of security**. Communities interviewed in three of the four states responded that they feel safer and that police presence along the road reduced conflicts around cattle raiding.[50] At the same time, due to the inconsistency of quantifiable data, the findings are based on perceptions of local communities and leaves out Jonglei where controversies in relation to the project made an on-site study unfeasible.

One donor acknowledged in the aftermath of the outbreak of violence that the 'assets may exacerbate rather than reduce tensions'.[51] In relation to one of the security access roads in Lakes, a DFID report states that 'the construction of the Karich-Poloich-Amok Piny road resulted in unanticipated harm by facilitating troop movements during the conflict'.[52] In FCAS, a conflict-sensitive approach entails the question of **when potential negative consequences are tangible enough to decide against or abort a project.** Yet in general, there seems to be a reluctance to abandon infrastructure projects because of their potential negative impact on conflict. Speaking on the interaction of harm and infrastructure, a UNOPS official said that unless a negative consequence is already identified in the conflict assessment, infrastructure should not be denied to beneficiaries because the system may be used by armed groups after completion.[53] While infrastructure should benefit everyone, possibilities of steering its usage are limited.

Haram kidnapped Chinese subcontractors who were delivering a World Bank road in northern Cameroon, which was meant to extend government authority in an 'ungoverned zone'.[54] In the DRC in 2011, Hunde rebels sought to block repair of a bridge by an international NGO 'out of fear that it would lead to FARDC[55] deployments into their territories'.[56] And in Afghanistan it is a core characteristic of Taliban tactics to target roads built by the Coalition.[57] About 30% of American-built Afghan roads audited in 2016 had insurgent activity along them as well as 13 rebel checkpoints.[58] Indeed, *because* 'roads are vital when building a stable and viable state',[59] this also means that road projects easily become magnets for violence. There are also examples where infrastructure attracts armed groups, because they aim to use it for the same purposes as the state,

namely, to expand their control and authority. A practitioner gave us examples from DRC: the rebel group 'Raya Mutumboki' in Shabunda let us work the road because they used it to extend their political grip (more so than set up illegal barriers, in fact), and when the M23 took Goma, one of the first things they did was turn the I4S-built police training center into their own recruitment and propaganda center'.[60] In these cases, the usage of physical assets is beyond the control of implementing agencies, but donor strategies and impact assessments should factor the risk of such unintended outcomes of infrastructure delivery into their considerations.

On the other hand, **extended infrastructure might become a conduit for intensified predation**. Indeed, many

rehabilitated roads in Afghanistan became home to protection rackets by Taliban and other local warlords, who then charged US subcontractors for security for their convoys.[61] As RAND puts it more generally, 'infrastructure projects with inadequate oversight can become a source of funds for insurgents and militias'.[62] Based on historical data and disaggregated data on 58 low-intensity conflicts since 1997, one scholar posits that less road infrastructure should lead to less violence because armed actors are in those cases reliant on local populations for supplies and should therefore be expected to show more pacific behavior.[63] Such examples lead to a very important caution: in highly contested areas, infrastructure during and after delivery can easily become a magnet for conflict and insecurity, rather than conduits for security and stability.[64]

A more mild but nonetheless crucial aspect of this problem is often overlooked. In contexts where many locals survive on illicit natural resource exploitation, newly opened roads can become avenues increasing illegal economic activities. It is widely known that **road projects in earlier isolated places can lead to a drastic expansion of deforestation through illegal logging, slash and burn agriculture, illegal mineral extraction and poaching**, depending on the natural resources available. When not matched with institutional accompaniment (police, customs, enforcement agencies, etc.) roads meant to become drivers of legitimate economic growth might risk leading to the opposite by facilitating illicit markets and exports.[65] This challenge is a broader one for developing countries, but in FCAS, this kind of economic activity often attracts conflict actors, and is recognized an incentive for armed actors to sustain ongoing conflict.[66] DFID has recognized this risk in its discussion of MONUSCO's theory of change of road construction in DRC,[67] but it is not clear how these considerations influenced subsequent decision-making. ■

UN Photo/Staton Winter

UN Photo/Logan Abassi

SUMMARY Individual cases such as Afghanistan provide a strong signal to continuously address potential trade-offs between short- and long-term objectives and stabilization impacts. The need to showcase benefits of peace quickly through the delivery of basic services or infrastructure projects often requires an agenda, expertise and technology that come from the outside rather than being carried by the local population that is most affected. A World Bank study on roads and conflict sums up the tension as follows, 'targeting of specific social groups may go counter to the political need for speedy project delivery. The question to consider is what matters more: a few months "delay" or the potential fallout of strengthening existing inequalities and perhaps being seen to mostly benefit the government's power base'. Even though local communities benefit from enhanced access to services and better transportation, there is no evidence that such quick impact projects have an impact in terms of conflict resolution or long-term transformation. Both infrastructure and stabilization projects are long-term efforts and hence can only be effective with sustained commitment and a clear strategy for transitioning the task of maintaining service provision to host nation actors.

BETWEEN QUICK IMPACT AND LONG-TERM TRANSFORMATION

ASPIRATION:

Infrastructure needs to showcase an immediate impact for local stakeholders

ASPIRATION:

In order for infrastructure to have a stabilizing effect, their utility needs to last

The need to attend to the two aspirations above at once generates a second set of challenges. As we have discussed above, one of the defining characteristics of infrastructure is its durability. In the same way, statebuilding and addressing the root causes of conflict and fragility are essentially long-lasting processes.[68] Infrastructure and stabilization thus share an intrinsic commitment to the long term. Nevertheless, in conflict and immediate post-conflict contexts, long-term considerations of infrastructure efforts might have to be sidelined in favor of more immediate priorities. This has given rise to a tension between the demands of humanitarian or emergency responses on the one hand, and development or long-term strategies on the other. However, infrastructure delivery is in both contexts now conceived as a stabilization tool, with demands that short-term infrastructure delivery also affects conflict and fragility.

This has become all the more relevant since the counter-insurgency efforts in Afghanistan and Iraq. Ever since, infrastructure is increasingly employed across stabilization efforts to achieve short-term objectives in fragile and conflict-affected states. Short-term local impact infrastructure delivery can take different forms. On one end of the spectrum, there are quick impact projects delivered by outside engineering teams, most often military engineering units. These aim at influencing conflict and fragility immediately by delivering high-quality infrastructure. On the other

hand, donors often deploy short-term projects in FCAS which aim at engaging a maximum of locals in conflict-affected settings in infrastructure work. These labor-intensive public work programs aim at reducing conflict and fragility through a quick influx of cash for disadvantaged groups (see Table 1 below).

The first type of short-term infrastructure projects, often called **Quick Impact Projects** (or QIPs) have the objective to stabilize ongoing conflict by delivering peace dividends in the form of visible symbolic or tangible rewards of peace to signal that tensions have reduced. As James I. Wasserstrom, former head of the Office for Oversight of Publicly-Owned Enterprises (utilities) in the United Nations Mission in Kosovo, puts it, infrastructure adds 'arms and legs' to strategies aimed at winning 'hearts and minds'.[69]

The guiding assumption of this type of project is that quick delivery of services will positively affect the legitimacy of the state. To be sure, the reconstruction of a collapsed bridge, opening of main roads, and provision of clean water can send an important signal to local communities affected by conflict that peace and development are arriving. Some QIPs have incontestably positive short-term impacts, such as the construction of ammunition storage in northern Mali, enabling the Malian authorities to operate more safely.[70] However, many stabilization programs aim higher with such interventions, for instance aspiring to

Table 1. Two ends of the spectrum of short-term local impact infrastructure projects

Type of project	Approach	Theory of change	Advantages	Drawbacks
Quick Impact Projects	Quick delivery of asset by outside engineers	Functionality of output	Quality and speed; resumption of activities	Sustainability; no local ownership
Community Development	Labor-intensive community-based planning and construction	Construction as process	Quick influx of labor and cash; community involvement; possible to target specific beneficiaries	Sustainability; no state ownership
Source: compiled by authors. For the distinction between impact during construction or after asset completion, see Hawkins et al. 2015: 1				

also strengthen the state by influencing local perceptions of a potentially contested central government. A multiplicity of studies on infrastructure in FCAS notes, however, that the link between service improvement and increased state legitimacy is far from given.[71]

A key challenge emerging from recent experience is that short-term infrastructure delivery risks upending long-term stabilization objectives. In the most immediate sense, quick deliverables often rely on foreign technologies and engineering teams, because host nations lack both human capital and the necessary equipment. As an effect, ensuring visible impact in the short term may in fact involve bypassing local populations—arguably the beneficiaries who need to own the project in order to achieve sustainable stabilization.[72] This has become evident in the legacy of the US military's quick impact projects in Afghanistan, which delivered usable infrastructure but had, with few exceptions, no meaningful longer-term impact on social relations or security.[73] On the contrary, as Fishstein and Wilder summarize in their study of US Commander's Emergency Response Program (CERP) projects in Afghanistan, 'the research actually found more evidence of the destabilizing rather than the stabilizing effects of aid'.[74] In the long term, it is the local communities and/or the host state that need to appropriate, manage and maintain infrastructure. Hence, engineering ownership is crucial from day one (see next challenge for discussion).

A second approach to local infrastructure projects is premised on **reducing conflict and fragility by generating employment**, as a tool to generate a quick influx of cash, offer alternatives to engagement in violent behavior, and bring together fractured communities around shared, concrete goals.[75] In effect, most cash-for-work projects in FCAS revolve around infrastructure—paying local communities to repair or maintain damaged community infrastructure such as schools and roads.[76] Such short-term projects often deploy employment to provide immediate opportunities to former combatants or other vulnerable groups. There is some evidence in support of this approach. The World Bank provides statistical evidence that infrastructure as a means of work generation benefits the very poor in the short term.[77] In another statistical analysis, one study[78] found significant evidence that CDD related infrastructure projects correlated with reduced attacks against NGOs and state personnel in Afghanistan, whereas quick impact projects implemented by the US army did not. This seems to imply that it is crucial to integrate local communities in infrastructure works even in projects with a short-term cycle. At the same time, involving communities in infrastructure construction also has its drawbacks: public works create short-term employment during which new qualifications are rarely developed. Public works may also draw people away from their everyday economic activities and hence straining rather than benefitting the local economy.[79]

Another aspect of this challenge concerns the trade-off between quick delivery of output and long-term durability of infrastructure. The OECD, in its latest report on fragile states, calls short-term emergency response approaches 'firefighting', foregrounding instead the importance of long-term development to address the root causes of fragility.[80] To be sure, the symbolic value of restoring roads and government buildings is often highlighted as an important effect on peace, as it sends the powerful signal that peace brings rewards. One World Bank study points, however, to serious drawbacks of such programs in terms of sustainability.[81] Both employment and infrastructure maintenance often cease immediately after donor funding dries up. The same study points towards Liberia and South Sudan, where short-term employment led to unrealistic expectations and disappointments in the medium term.[82] **If not married to a durable maintenance strategy, infrastructure will crumble and risks coming to stand for the failure of peace**. Of course, labor-intensive public work infrastructure projects attain their effect on conflict and fragility during construction rather than through the effects of the asset once delivered. Yet lacking a long-term commitment, both the peace dividends of the physical asset and employment generated by its construction 'can quickly turn into peace "disappointments"'.[83] Afghanistan is a dramatic example. Over the past 15 years, donors have allocated more foreign aid to that country than Western European received under the Marshall Plan[84]—and most of it was invested in security forces and infrastructure. Due to lack of domestic capacity, but also due to donor routines including short-term rotation of staff, this hardware proved impossible to maintain. As the World Bank puts it, 'The country's public finances will not be able to absorb the costs of operating and maintaining the infrastructure assets created in an often fragmented manner over the past 10 years and delivering the social and other services financed through donor-funded programs'.[85] Arguably, an equation of infrastructure as a physical output has in the context of Afghanistan trumped an understanding of functioning infrastructure as involving asset, knowledge and institutions, as evolving in a societal context (see Box 2).

These examples once more point to the importance of conceptualizing roads, not as assets only, but as integrated into wider support systems sensitive to the local political economy, in order to effectively address conflict or specific dimensions of fragility. A general problem beyond these individual examples is the challenge of assessing the impact of infrastructure systems in violent or fragile settings. While there is a large body of literature on evaluations of infrastructure, these usually do not discuss the specificities of FCAS.[86] At the same time, peace and conflict impact assessments, if conducted at all, tend to understand infrastructure either primarily as output or as denoting a mere social communicative structure in order to build peace between conflict parties.[87] A USAID review on proj-

ect evaluations has identified a number of features that sets a post-conflict setting apart from other cases: political and military considerations, conflated objectives, missing baseline data, problematic theories of change, foreshortened time frames, lack of spatial precision and the institutional complexity constitute a set of widespread challenges for any vivid assessment.[88] This points to an important methodological but structural challenge: if infrastructure's impact in FCAS is supposed to be more than asset delivery, assessment needs to mirror these broader ambitions. The challenge seems to be two-pronged. First, it seems that donors too easily assume project delivery equals impact **without conducting systematic assessment of the impact of the infrastructure intervention on the conflict and fragility aspects it was supposed to mitigate**. Second, very little is known of the long-term effects of infrastructure on conflict and fragility, because of the lack of longitudinal studies undertaken on the impact of infrastructure investment across FCAS, itself a result of the difficulty to undertake solid research in volatile environments. ■

OUTPUT DELIVERY AS A MEASURE OF SUCCESS IN AFGHANISTAN

BOX 2

Through the US Department of Defense (DOD) and USAID, the US government has spent nearly $3 billion on road projects in Afghanistan. The DOD projects were financed through the Commander's Emergency Response Program (CERP), a funding stream that allowed individual commanders to decide non-bureaucratically on the disbursement of funds for small infrastructure projects as a tool to win the trust of the Afghan population in the US counterinsurgency. Reviews cast doubt on the program's effectiveness. Some of the CERP-funded projects were not sufficiently synchronized with the priorities of the affected communities but guided instead by a strategic counterinsurgency logic. Funding was often disbursed on a 'use it or lose it' policy. The Afghan government was bypassed or invested with unrealistic expectations as to its capacities. Paired with the short-term rotation of staff, this incentivized a focus on output over impact.[89] In October 2016 a report by a US government oversight body on the state of roads in Afghanistan found that 19 out of 20 of the assessed segments of roads constructed or rehabilitated by USAID or the DOD were seriously damaged by attacks, weather conditions or lack of maintenance. A number of efforts by the US to commit the Afghan Ministry of Public Works and other Afghan institutions to engage in maintenance had failed, so that in 2012 the US government stopped funding this department—yet continued building roads.[90] This example shows that infrastructure as a peace dividend or to impact conflict and fragility without a tailored long-term strategy is, simply put, a waste of money—and it might directly imperil the overall mission of stability by delivering 'peace failures'.

The Swedish International Development Cooperation Agency (Sida) adopted a completely different approach to road rehabilitation in their Rural Access Improvement Program (RAIP), yet a similar view on infrastructure—output as a measure of success in itself—underpinned it. Between 2007 and 2013, Sida funded a rural road expansion program in four northern provinces in Afghanistan (Saripul, Samangan, Balkh, Jawzjan). The objective was to improve access to markets, services and employment opportunities. At a later stage the project additionally included objectives and activities on maintenance and the creation of public works for women in areas close to the roads. An evaluation report for Sida highlights the professionalism in planning and implementation as well as the long-term relationship that has been built with provincial authorities.[91] While the project without doubt has significantly improved rural infrastructure, the evaluation posits that the project was overtly focused on output rather than the larger objectives of poverty reduction and economic opportunities, particularly for women. Creating employment during construction does not automatically translate into economic empowerment. The evaluation highlights that while roads may be a necessary condition for economic development, they are not a sufficient one as in rural areas other factors, primarily water shortages, impinge on development. As the report illustrates, 'deep levels of poverty mean that many poor rural households cannot afford to pay for transport on the improved roads.'[92]

UN Photo/Logan Abassi

SUMMARY   Donors can aspire at once to build central state capacity and to assist local populations through infrastructure programming. Reviewed material indicates that community-driven infrastructure projects are more likely to have a positive impact in contexts of conflict and fragility. This impact is primarily economic (reduced transport cost, better connectivity which may lead to increased income and hence reduced poverty) and can reap some results in terms of changed attitudes towards inclusion and democratic norms. However, evidence of a clear link to more legitimate state authority or security is sparse. This begs the question of who are the key stakeholders when it comes to the provision of security: national state authorities or resilient communities. Additionally, community-driven projects suffer from continuity deficits, entailing the risk to upend any short-term gains in the medium term. Without institutional follow-up, even CDDs risk perpetuating a perverse cycle of 'invest, neglect and (expensively) reconstruct'. How, then, do we make sure infrastructure addresses local grievances and at the same time extends state capacity?

CHALLENGE 3
BETWEEN BUILDING LOCAL AND CENTRAL STATE CAPACITY

ASPIRATION:
Infrastructure can improve central state capacity

ASPIRATION:
Infrastructure needs to benefit local communities affected by conflict

A third, and very much related, challenge revolves around who are the main drivers of transformation, hence what stakeholders should be targeted by infrastructure projects: **Should infrastructure be engineered to primarily enhance state capacity to address conflict and fragility 'top down', or should it rather especially strengthen resilience 'bottom up', at the local level**?[93] There is, then, no overarching consensus around what slice of a society should primarily be targeted through infrastructure to achieve the best results in reducing conflict and fragility.

In conventional statebuilding approaches the construction of roads and government buildings into conflict-affected zones is explicitly used to extend the geographical reach of state authority and security provision. There is ample academic support for the assertion that historically, large infrastructure played a key role in the consolidation of modern strong states.[94] At the same time, the absence of infrastructure correlates positively with conflict and fragility,[95] pointing towards infrastructure as a precondition for state building.[96] These insights inform donor policy centrally. Stability efforts in the Central African Republic and Afghanistan, for instance, prioritize keeping open and secure those single road corridors without which their governments would collapse.[97] Most archetypally, the US Army has developed a strong emphasis on large-scale national infrastructure in FCAS, which is also at the center of its stability operations doctrine.[98] From this perspective, public goods provision such as road maintenance and electricity makes government an obligatory passage point for citizens, who as customers in turn gain a mechanism to keep their leaders accountable on clear grounds.[99]

However, **the question can be raised whether building infrastructure is, in these cases, a conduit for or rather an expression of the capacity for the state to impose its rules and its ambitious projects on society.** In other words, will external efforts to build large infrastructure also lead to more robust states? There are reasons for being cautious about investing first and foremost in state institutional capacity when engaging in infrastructure construc-

tion. First, the building of strong state institutions is often associated with large-scale and therefore very costly infrastructure. Donors might be reluctant to do so. In the experience of one practitioner, host governments in FCAS often emphasize infrastructure as a peacebuilding tool, because infrastructure delivers jobs and a sign of progress, without threatening elite positions or addressing root causes of conflict.[100] Investing in large-scale infrastructure in politically fragile contexts carries a risk of bypassing or perpetuating the inequalities that formed part of the sources of conflict. The pre-existence of skewed and partial political systems means that such large-scale infrastructure can become embedded in pre-existing, or new, patron-client relations, used to expand leverage and attract rent-seeking.[101] As an example, the Government of South Sudan used its infrastructure budget to channel money to companies owned by the President's family in a period when oil was shut down, leading to a budget overshoot of 1513% for infrastructure.[102] Even the announcement of roads and electrification often triggers land speculation in fragile areas, pushing out vulnerable populations and benefitting those who already have capital and power.[103] In other words, while poverty correlates with the absence of infrastructure, infrastructure is not a sufficient precondition for poverty alleviation (also see Box 2 above).[104] On the other hand, there seems to be increasing awareness that if infrastructure projects are supposed to have a positive impact on security and stability, they need to be owned by the parties most affected.

The evidence reviewed shows that efforts at extending central state capacity through infrastructure have led to mixed results in countries such as the DRC or Afghanistan (see Box 3).[105]

In most FCAS, including Afghanistan, community-driven infrastructure has come to complement approaches that prioritize building state capacity. As a general finding, much of the literature reviewed agrees that infrastructure projects reap greater effects on the reduction of conflict and fragility when local communities are part of the decision-making process within the projects. As the OECD

Between 2008-2012, the UN led a nearly $400 million multi-donor stabilization program (ISSSS) in which the extension of state authority figured as a prominent pillar. Its approach to this ambition was premised on a version of the counterinsurgency doctrine of 'clear hold build' called 'Islands of Stability'. Its substance: 'A network of 90 state infrastructure for administration, police, justice, prisons and mineral trade were constructed in strategic locations across the Kivus and Ituri, connected by some 630 kilometers of improved roads. 860 police officers and 195 administrative officers were trained by the partners to provide services to the people from these new buildings'.[106] Much of the proposed output was hardware to increase capacity of state actors to provide security. In Walikale territory, 'security corridors' allowed state forces to take over control over main roads and hubs.[107] Nonetheless, state authorities largely limit themselves to the main roads, and the communities who live in the interior remain home to armed groups.[108] The second ISSSS (2013-2018) has incorporated those experiences as a lesson learned after a by and large disappointing three-year top-down approach. It has discarded much of the top-down approach, focusing much more on local community development and security initiatives.[109]

puts it more categorically, 'Community-based approaches show great potential and may be the only feasible, attainable option in very difficult environments'.[110] This has given rise to a new generation of infrastructure projects in stabilization missions, referred to as community-driven reconstruction (CDR) or community-driven development (CDD) approaches, which attempt to both generate local employment and bring together conflicting communities around concrete common goals in mutual interest—common goals that most of the time involve physical construction or reconstruction.[111] It was for instance a guiding premise of the Australian Agency for International Development's (AusAID) efforts in Timor-Leste and Papua New Guinea.[112]

There is some support for the claim that community-based approaches can have a direct impact on levels of violence. One statistical analysis compared infrastructure programs in Afghanistan, which worked through communities with those that did not. It found that the CDD-based National Solidarity Program (NSP), that focuses on the rehabilitation of tertiary roads as well as projects on water and irrigation (see Box 4), led to a significant reduction of violence, whereas approaches predicated on quick impact by having the US military implement directly, had either no impact on levels of violence or even correlated with an increase of violence.[113] **CDD approaches to infrastructure also seem to have some bearing on root causes of conflict**. Case studies from Nepal and the DRC show that it is in particular rural roads that, by reducing transport costs, increasing local wages and by facilitating access to other services including health and education, contribute

to economic growth and the reduction of socio-economic inequalities which are often among root causes.[114]

However, all in-depth qualitative studies among populations affected by CDD infrastructure efforts warrant significant caution: while there is *some* indication that these projects decrease isolation and increase access to markets and thus livelihoods, **effects on security are doubtful at best, and improved trust towards the central government cannot be taken for granted.**[115] In much of the post-colonial world, a multiplicity of layers of authority exist s—from traditional, religious, professional, district, province to state levels. While focusing entirely on the local level may to some extent limit opportunities to reach higher stabilization objectives, that is, extending the authority of the state, there is admittedly no simple zero-sum relationship between supporting local authorities and the central government in infrastructure projects. The dynamics between scales can be highlighted in the case of the National Solidarity Program in Afghanistan.

A downside of CDD is that there are limits to the scalability of its advantages, as 'infrastructure generally spans a geographical area too large to be addressed through a community planning approach'.[116] While the importance of bringing local communities into infrastructure planning as beneficiaries and stakeholders is evident, at the same time, mechanisms need to be in place to ensure feasible and durable public administration. Decentralization and the empowerment of alternative local governance networks might create structures that upend statebuilding efforts. As the World Bank puts it, 'In the absence of attention to en-

sure the institutional and financial sustainability of CDD programs, the viability of the community institutions and benefits will remain at risk'.[117] However, institutional capacity is less tangible a deliverable for donors to report back to home constituencies, and with development budgets under pressure, many donors aspire to impact what they can sell at home.[118] UNOPS Evidence-Based Infrastructure Development Framework (EBIDF) is one potential avenue to make sure that local projects become embedded in national strategies, to avoid coherence and sustainability issues.[119] ■

THE NATIONAL SOLIDARITY PROGRAM IN AFGHANISTAN — BOX 4

Dubbed the 'largest people's project in the history of Afghanistan' by the Ministry of Rural Rehabilitation and Development, the National Solidarity program (NSP),[120] has contributed to local communities' well-being on different levels. Since 2003, the program has been rolled out over all provinces with more than 80.000 projects implemented. The NSP emphasizes participatory and community-driven development and has created around 35.000 gender-balanced and elected community development councils across Afghanistan who define their own priorities in relation to infrastructure and basic services.[121] The committees decide on the nature and design of the project that is supposed to be implemented. The main sectors are water and irrigation, power, and tertiary roads. Based on a randomized controlled trial of 500 villages, an evaluation by Harvard economists of the second phase of the NSP found that the effect on access to water and electricity, on democratic norms and procedures, as well as on women's participation has been positive. And while a World Bank evaluation holds that 'NSP has extended the reach of Government to almost all rural communities in the country'[122], the independent study found the program has been less successful in regard to a long-term increase in the legitimacy for the national government. Furthermore, despite the increased awareness of democratic norms, the community development councils do not seem to challenge existing leadership structures at the village level, despite integrating women into governance structures.[123] Rather, as both the World Bank and the Harvard study point out, the NSP gave rise to parallel structures of power, which, given the limited project funding they've enjoyed over the past decade, NSP local representatives understandably far less influential than local authorities that draw power from other sources.[124] The authors conclude that legitimacy of the government seems to hinge on service provision that is continuous and predictable rather than on visible outputs. In order to build on its gains, in October 2016, the NSP was transformed into the 'Citizen's Charter Afghanistan Project'. The new project gives additional autonomy to the community development councils and envisions strengthening local procedures at the local level and establishing a 'social contract between government and local councils'.[125] The project once more aims at reinforcing 'stability' through improvements in access to and quality of infrastructure.

UN Photo/WFP

SUMMARY Even though many donors continue to see infrastructure efforts in FCAS as politically neutral fixes, whose impacts can be quantified largely through concrete and measurable indicators, infrastructure as an agent of change will become embedded into structure of local authority and prevailing value systems. Put differently, the impact of infrastructure projects on conflict and fragility will depend much on local-level perceptions, which arise as questions of participation and ownership during construction, use and maintenance. Infrastructure interventions in fragile and conflict-affected contexts, even when aimed at other beneficiaries, may have to work through local obligatory passage points such as traditional authorities or youth groups, on whose participation and co-option success eventually depends. Engaging resilient local power structures through local projects might be the core challenge in order to address issues of conflict and exclusion. At the same time, it poses a potential challenge to notions of impartiality, and it might be both difficult and extremely sensitive to determine and designate relevant stakeholders, especially in light of central state aspirations. How, then, do donors know that the ones who present themselves as spokespersons for local communities in have fact the mandate to speak on behalf of the population? Is it most productive to create alternative governance structures or work through existing ones?

CHALLENGE 4
BETWEEN SPECIFIC BENEFICIARIES AND EQUAL ACCESS

ASPIRATION:
Infrastructure projects should target marginalized populations and former combatants

ASPIRATION:
Infrastructure projects should be completely transparent and open to participation by all

As forwarded by our framework above, infrastructure necessarily impacts differently on different stakeholders in FCAS. Yet unless coherently linked to institutions, knowledge and the societal context (see the framework for this paper above), **a physical asset does not necessarily change pre-existing power relations and inequalities.** We have identified two potentially conflicting local ambitions. On the one hand, programs might want to leverage the impact local infrastructure initiatives have by targeting specific beneficiaries, such as potential spoilers, specific marginalized groups, or the most vulnerable populations in an area. On the other, programs might want local infrastructure projects to come and stand for new and higher values of participation, inclusion, transparency, and fairness, which might preclude favoring specific interests. This leads to the question, **what should be the premise driving community development infrastructure projects: targeting specific beneficiaries or showcasing equal opportunity?**

As outlined before, the literature tends to agree that a positive impact of infrastructure projects in FCAS is conditioned upon the participation and buy-in of local communities. Engaging local communities through labor-intensive public works is a recurrent approach in conflict and immediate post-conflict situations, applied across counterinsurgency QIPs and CDR projects (see discussion above). The general idea behind this practice is that alternative forms of income need to be provided to marginalized communities (for humanitarian or socio-economic reasons) or communities at risk of otherwise engaging in violence (for stability reasons). Nonetheless, earlier experience shows no straightforward pathway between such efforts and improved social, political and economic conditions at the local level.

Most reviews caution that projects need to have an explicit local-level understanding as point of departure. An alternative is to use infrastructure to level the local playing field, creating equal opportunities for all. This entails adopting a rigorously transparent approach, which leaves no room for doubt about the process through which participants have

been selected on the basis of equal access. To strengthen such a mechanism of impartiality, Engineers Against Poverty and International Alert propose a 'conflict-sensitive business practice' defined as 'early consistent meaningful and empowering stakeholder engagement'[126] through transparent project plans, the provision of forums for discussion, shared decision-making and a 'social license to operate'. Such a license involves the informed consent by the local stakeholders when working in conflict prone areas—particularly when the project is seen as coming from the outside, when land tenure is disputed, or when major social and environmental transformations are to be expected.[127] Additionally, in conflict-affected environments perceptions based on rumors can easily structure perceptions of infrastructure projects. Local customary authorities might for instance easily claim infrastructure delivered by outside donors as their work to strengthen their power position.[128] Impressions that specific groups are benefiting from them to the detriment of others can therefore feed into and even increase conflict.[129] This highlights the importance of the utmost transparency and high investment in communications around procurement and beneficiaries.

It is by now an established trope that 'the impact of deficient infrastructure is greatest on marginalized groups including the poorest communities, women and girls, the elderly and disabled people'.[130] Yet whether a subsequent infrastructure intervention will address the power structures that gave rise to these inequalities and marginalized positions might be the crucial question. Rebosio and Wam, in a World Bank study, have argued that the construction of roads affects different stakeholders in a multiplicity of different ways and warn that 'in cases where specific population groups or regions benefit disproportionately from investments in roads infrastructure at the expense of other groups, divisions between groups are likely to be exacerbated'.[131] They point to the example of Kosovo where in reaction to the hesitations of Albanians and Serbs to share the same roads and the same means of transportation, NATO troops constructed roads that connect Serb minority enclaves. While facilitating mobility of minority communities on the one

hand, the roads may have also exacerbated division in the country as there is less interaction between the groups.[132]

Equal access, while an important principle, may be resisted and seen as illegitimate and a threat to local power brokers who see their hold on power bypassed. In the past, most infrastructure projects, while explicitly envisioning a stabilization effect, were not informed by contextual analysis of local political economy dynamics. Instead, they simply aimed at reconstructing what was destroyed during the conflict. This has led to disappointing or even negative outcomes. As large infrastructure projects involve the influx of large amounts of money, they are a potential resource along which contestation between power-holders arises. Transparency and equal access easily becomes a challenge in contexts where governance mechanisms to a large extent are decided in informal networks. Furthermore, employment generation in the road sector can also fuel frustration. Rebosio and Wam discuss the case of Liberia were non-combatant youths considered giving employment opportunities to former combatants as undeserved reward.[133]

One take on what makes CDR-informed infrastructure projects specific is their linkage to a good governance agenda aimed at fostering accountability, transparency and inclusion at the community level.[134] This requires ownership, which in turn means that communities are involved in defining their priorities and needs and that the infra-structure project matches their expectations. Community-driven development projects facilitate such an aim by setting up representative community development committees who are part of the decision-making process in planning, design, construction and governance of the infrastructure system.

Kyamusugulwa, in what is one of the most in-depth studies of CDR projects, raises the question of whether bypassing extant 'traditional' power-holders (e.g. chiefs or religious leaders) and targeting specific groups such as youths or women's groups, make delivery more accountable and effective. Traditional authorities may not be the primary agents of change and external projects may undermine their authority. However, Kyamusugulwa, in his study on CDR in South Kivu, DRC, has pointed to the continuously strong influence of village chiefs and religious leaders. In cases where projects had the backing of these authorities, communities developed a greater sense of ownership. In cases where traditional authorities were not interested in a project or opposed it, the perception of ownership in communities was lower.[135] A delicate intricacy in this regard is that community development councils may constitute a parallel structure to existing local chief authorities, leading to a further fracturing of rule, as seems to be an imminent risk in Afghanistan.[136] Yet at the same time, it might be necessary to target and appease certain power brokers or former combatants in order to gain stability. ■

UN Photo/Arpan Munier

THE RURAL ACCESS PROGRAMME IN NEPAL   BOX 5

The UK-funded Rural Access Programme (RAP) in Nepal is seen in the literature as evidence for an inclusive and long-term infrastructure program under conditions of political turmoil. Though not designed explicitly to pursue issues of security and stability, DFID was forced to react to heightened insecurity and, as a consequence, supplemented a pro-poor approach with a conflict-sensitive framework.[137] The project, which since 2001 mainly invests in the construction of rural roads and tracks, has had tremendous impact on poverty reduction in vast parts of the country, while at the same time involving the Nepalese government.[138] RAP deploys a gender-balanced enrolment of local women into the workforce. An evaluation reports that through RAP rural household incomes increased by 218%. RAP's contribution to peace lies in engaging rural youths into the public works program, and by doing so discourages them from engaging in violent practices. The main lesson of the project may be that it is possible to invest in participatory pro-poor, and quick-delivery infrastructure programs during turmoil and in areas where local government institutions have ceased to function.[139] Based on the existing evaluation it is however not possible to assess if and to what extent RAP's engagement of rural populations has yielded positive effects on state authority.

UN Photo/Isaac Billy

SUMMARY   Infrastructure delivery in contexts of conflict and fragility faces a double challenge: to adhere to acknowledged standards in engineering, procurement and implementation, which in theory can be applied universally, and to adapt project management to the volatile environment the project aims at affecting. One of the key challenges is how to make sure that infrastructure projects provide services based on need in FCAS while operating with standards in engineering and project delivery that are 'fit for purpose' in the given context? In situations of conflict, universal procurement standards, efficiency and rate of return may need to be adapted while the engagement of local expertise, technology and the use of local labor may gain in priority. A potential pitfall emerges in relation to quality and transparency in bidding processes. Another issue which is closely tied to the challenges discussed above is what kind of infrastructure project serves what kind of purposes and agendas. Pros and cons have to be weighed in relation to speed of delivery, quality and short-term impact (job generation, inclusiveness) in order to facilitate the overall objective. Novel donor principles, such as payment by result, work in some contexts but are most likely inappropriate for FCAS due to uncertainties in project delivery.

CHALLENGE 5
BETWEEN INTERNATIONAL STANDARDS AND 'FIT FOR PURPOSE'

ASPIRATION:
Infrastructure delivery in FCAS should follow accepted standards

ASPIRATION:
Infrastructure delivery should be tailored to context-specific conflict dynamics

Global engineering and project quality benchmarks and procurement rules have become crucial to contemporary infrastructure delivery, including in FCAS. This guarantees quality delivery of outputs as well as sustainable rates of return on assets. While this might be a criterion of quality, it might also impose straitjackets on projects. There is an obvious reason for international standards, and in many ongoing infrastructure projects in FCAS, their implementation remains to be desired. Long-term evaluations of post-disaster reconstruction find that donors and host governments prefer to focus on 'numbers' (i.e., quantity of physical assets reconstructed), with a risk of discarding building standards—increasing future risks and higher mortality rates in case of a natural disaster.[140] At the same time, if standards and benchmarks drive delivery in FCAS, this might lead to an inflexible approach unable to cater to the needs given by the context of operation, impinging not only on the impact that infrastructure projects might have locally, but also on conflict sensitivity. To put it on another level: **Do standards that often derive from priorities defined outside the country necessarily work in fragile and conflict-affected settings?** Is there a need for adjusting standards, making them 'fit for purpose' in FCAS? In other words, how do we make sure that infrastructure projects concern 'the provision of services in response to demands elicited from societies in crisis, while operating with acceptable standards in engineering and project delivery?[141]

This challenge comprises two components. On the one hand, in many cases, infrastructure components figure as an afterthought to comprehensive stabilization programs. A common complaint among field practitioners in FCAS, was that infrastructure experts are only called in for the implementation phase, when little is left to decide on.[142] This entails the risk that infrastructure is thought as a simple output with expected impacts that are fixed and can no longer be adapted to contextual considerations—as one informant put it bluntly, 'many donors just 'add a road' for a program to have a concrete deliverable', outside of theories of change.[143] Yet as was highlighted in the framework of this report, infrastructure interacts with all dimensions of fragility. In order to maximize its positive impacts and mitigate negative ones, **infrastructure's interaction with aspects of conflict and fragility needs to be thought of early on in program design, based on context-relevant considerations**. In a parliamentary hearing on DFID's infrastructure work in FCAS, it was suggested that stakeholders involved in program design in FCAS need to have engineers on their team, to factor in what infrastructure components can and cannot help achieve.[144]

On the other hand, this question concerns the challenges of working in FCAS with established and deeply ingrained mechanisms of infrastructure delivery. While standards should not be abandoned in search of impact on dimensions of conflict and fragility, our framework forwards that infrastructure can and needs to be engineered to work in fragile and conflict-affected contexts. However, a number of stringent global standards and domestic legislation in donor countries place limits on the adaptability of infrastructure delivery to local needs in FCAS. Western building codes impose high costs and top-down directives that can be unadapted to developing countries' needs.[145] This poses an acute problem when, according to a USIP report, in ongoing conflict, 'traditional engineering concerns, such as efficiency, are secondary'.[146] Rather, the objective might be to act on dimensions of conflict and fragility by generating employment, bringing on board local communities through consultation and participation, or improving state-society relations through new maintenance initiatives. Standard quality benchmarks for infrastructure might preclude that infrastructure is 'fit for purpose' in specific FCAS contexts. Based on a decade of experience in road construction in Afghanistan, the US Army Corps of Engineers has called **for adjusted standards and procedures that take into account the terrain, available local skills and local standards for design and construction**. Acknowledging local engineering capacities will also win the trust of the population. The authors remain vague however about what exactly they mean when calling for establishing 'adaptable engineering design and construction

standards for local infrastructure by developing guidelines with cultural and local consistency and acceptance'.[147]

A World Bank study also cautions that the rate of return, normally a key rationale in designing infrastructure projects, risks reducing impact on conflict dynamics. While a key priority would normally be,

> *'solutions and designs that produce outcomes with high financial returns comparative to the investments [...] projects that take place in conflict settings would almost always be more costly than in other settings because of challenges such as insecurity and low government capacity. Considerations that may be demanded from a conflict perspective, for instance giving priorities to roads projects in marginalized areas, are likely to further lower the rate of return. Neglecting such opportunities, however, may risk strengthening rather than weakening factors driving violent conflict in such areas'.[148]*

Large infrastructure projects, in particular, have the drawback that their procurement tends to disfavor small local enterprises and jobs, with requirements favoring established international contractors instead. In a number of contexts, strict procurement systems favor internationally 'certified' rather than local bidders for materials and project execution that can be a missed opportunity for insourcing local capacity.[149] Sourcing material locally could be a way of integrating the local economy. However, interviewees explain that despite aspirations, local sourcing remains the exception as first, an assessment of the suitability of local resources requires strategy, time and resources with regard to developing a production chain for those materials; and, second, on the global market industrialized materials are ready at hand.[150]

So how could infrastructure projects be tailored to deliver the services most needed in the FCAS context? In the West infrastructure construction is characterized by expensive labor and cheap credit, in developing countries it is the inverse.[151] Many local contractors might not have access to credit to complete long-term projects. Infrastructure projects could thus be engineered along these lines.[152] Doing so would lead both to a reduction in costs as well as an opportunity to employ locals, and labor generation creates economic benefits and may even contribute to conflict reduction (see discussion above). When sourcing with local contractors, donors have however also had bad experiences—of projects not delivered, cost overruns, corruption, embezzlement and subcontractors who took off with the project funds. While cost overruns are inherent to infrastructure delivery,[153] the search is for mechanisms that enhance local entrepreneurship while ensuring delivery. In this regard, DFID has increasingly concentrated on following the 'payment by result' principle, where funds are disbursed upon project completion.[154] However, in the context of conflict and fragility, which entail higher levels of uncertainty as many factors cannot be controlled by the implementing agencies, this principle may in fact discourage potential funders from engaging in conflict-affected contexts.[155] Such an effect may undermine donor commitments to channel significant portions of their ODA to FCAS. How, then, do we leverage the benefits from global standards while maximizing impact on context-specific priorities in terms of conflict and fragility and at the same time engineering 'fit for purpose'? ■

UN Photo/Isaac Billy

SUMMARY   Infrastructure is often prioritized in fragile and conflict-affected states because of its potential to contribute to economic growth. Infrastructure is additionally key to climate change and environmental degradation—dynamics that often factor into the very root causes of conflict and fragility. While climate change adaptation usually figures lower on the hierarchy of priorities of FCAS, host governments and donors alike, it will be a central challenge over the coming decades to address the resulting challenge: how do we plan projects in FCAS that are environment-sensitive and generate economic growth facilitated through infrastructure that is sustainable? Infrastructure thinking should aspire to promote 'climate-resilient peacebuilding' as much as economic growth, but the exact parameters for such an approach remain to be defined.

CHALLENGE 6
BETWEEN ECONOMIC GROWTH AND SUSTAINABLE DEVELOPMENT

ASPIRATION:
Infrastructure should drive economic growth in FCAS

ASPIRATION:
Growth needs to benefit future generations

Perhaps the key assumption underpinning contemporary infrastructure spending today in FCAS is that it drives economic growth. Donors and host countries alike point to deficient infrastructure as a major obstacle for growth and poverty reduction, and they hold that infrastructure can contribute to stabilization by facilitating economic growth.[156] Economic wellbeing as well as participation in societal affairs increasingly rely on access to infrastructure, including power, water, sanitation and transport. Realizing human rights as well as attaining many of the SDGs, such as poverty eradication, climate change mitigation and industrialization is conditional upon functioning and sustainable infrastructure and, hence, energy.[157] Economic take-off in the form of industrialization requires an increase in energy consumption and, for many countries, resulted in higher emissions of carbon dioxide.[158] Furthermore, for governments of fragile states climate change mitigation often figures lower than economic growth on the list of priorities.

In addition, the environment and climate change receive increasing attention as potential conflict triggers in FCAS. A 2015 G7 report[159] for instance recognizes that compound climate-fragility risks pose serious threats to the stability of states and populations. A number of the major stabilization missions, such as in South Sudan or Haiti take place in settings where climate and environment-related challenges factor into the causes of fragility. And as UNOPS and the New Climate Economy recognized in 2016, infrastructure is one of the greatest influencers of greenhouse gas emissions today.[160] This raises the question, overlooked in most discussions on infrastructure in FCAS, of **how contemporary models of infrastructure planning play into environmental and climate pressures in FCAS** and how infrastructure programming can be streamlined towards facilitating systems that are both resilient and sustainable?

On the one hand, **there is evidence that well-developed infrastructure reduces the likelihood of violent conflict in the aftermath of drought, desertification, and other natural calamities**. Infrastructure can channel scarce resources or accommodate populations migrating away from climate-induced scarcity.[161] Conversely, a lack of adequate infrastructure to manage scarce resources is often pointed at as an intermediate factor that humans could have controlled to mitigate the effects of environmental degradation on conflict.

Current models of infrastructure delivery in FCAS have the inbuilt requirement to conduct environmental impact assessments (EIAs) and many follow environmental mitigation and monitoring plans. While these models make sure that infrastructure delivery does not exceed the bounds of negative determinations during construction, they have limited bearing on the broader environmental impact of infrastructure use after completion. At the same time, impact of infrastructure projects is often positively assessed in terms of indicators of economic growth, usually counted in terms of traffic intensity. Mostly affecting roads and power generation, there should be a strong concern whether infrastructure generates high-carbon economies that are unsustainable in the long term given shared global climate objectives.

As the Global Commission on the Economy and Climate emphasizes in its 2016 report *The Sustainable Infrastructure Imperative*, there need not be a trade-off between economic growth and sustainability. Rather, infrastructure forms a common denominator of the success of both economic growth and environmental sustainability strategies.[162] As UNOPS policy for sustainable infrastructure puts it: 'Infrastructure projects foster development, improving the living conditions of individuals and communities; however, development activities must not only focus on meeting the needs of the present, but also make certain that the rights and needs of future generations are also protected.'[163] Within the expected lifetime of large infrastructure built today, moderate temperature increases projected for Africa will reduce the continent's arable land for basic foodstuffs by 40-80%.[164] Environmental sustainability then, adds a whole new meaning to the notion of 'long term' that ought to underpin infrastructure planning in FCAS. Yet as we have

cited above, according to a House of Commons review of infrastructure planning in FCAS, it is often extremely short-sighted, favoring construction over maintenance, leading to unsustainable and wasteful cycles of 'build-neglect-(expensively) reconstruct'.[165] One can for instance raise the question whether the reconstruction work in Haiti in the wake of the 2009 earthquake was sufficiently attuned to render the country's populations resilient against highly likely future hurricanes, such as the one that struck the country in October 2016 and which washed away many of the donor-built infrastructure. As the 2016 New Climate Economy report on sustainable infrastructure puts it: 'bad infrastructure [...] literally kills people'.[166] But climate-resilient infrastructure can cost, according to a World Bank estimate, about 50% more compared to extant approaches.[167]

From another angle, an often-overlooked point is that the private sector is already driving infrastructure development in many FCAS. This mainly concerns the more risk-prone non-renewable natural resource extraction sectors. For instance, the African Union found that the extractives sector is actively driving road building and power generation projects in contexts in Africa where other investors shy away.[168] On a more stunning note, on average 38% of all roads in the Congo Basin are opened up as logging roads, which thereafter quickly become utilized as public roads.[169] UN-Habitat insists that we not overlook such small-scale operators providing infrastructure.[170] The extractives sector, both in its formal and informal instantiations, thus has the potential to contribute to much-needed infrastructure delivery in FCAS, potentially benefiting stability and economic growth.

However, there are real concerns about the developmental impact of extractives-driven infrastructure development. More broadly, ecological assessments warn that **road (re)construction throughout fragile states risks intensified deforestation, charcoal harvesting and poaching activities, which can engender increased scarcity-related conflicts in the medium term.** According to a recent World Bank study, in deforestation, the dictum holds: the better the road, the more drastic the deforestation rate—with a typical increase of 20% in deforestation and a marked increase in poaching activities.[171] As UNOPS recognizes, the most vulnerable populations suffer most from environmental degradation that can result from infrastructure,[172] and there are strong indications that the benefits of logging and mining are unequally distributed, where 'local inhabitants lose out and may be further marginalized'.[173] ■

CONCLUSION

Today, infrastructure figures prominently across programs for FCAS, on the assumption that infrastructure can help stabilize fragile and conflict-affected states, reduce conflict by extending state authority, increase local security, bring an influx of employment, and restore access to markets. But implementing infrastructure under conditions of ongoing conflict or elevated fragility is challenging, and little is known about how infrastructure interacts with conflict or the conditions that give rise to it. This raises the question driving this report: **under which conditions can infrastructure successfully contribute to reducing violence and fragility?** In order to address the above question, this report explored **what mutual linkages exist between infrastructure interventions on the one hand and conflict, fragility and stabilization on the other.** In order to do so, we advanced one avenue to for analyze analyzing infrastructure, which takes infrastructure not as a fixed asset alone. In our framework, we explore infrastructure as an agent of change by emphasizing its outside linkages, both to the governance arrangements required to sustain them and to the five dimensions of fragility forwarded by the most recent OECD framework.

This led to the main premise of this report: **that infrastructure always interacts with all dimensions of conflict and fragility in FCAS, yet any individual infrastructure project cannot have a major impact on all alike.** This leads to situations where stakeholders have to decide among conflicting and often equally urgent priorities, while also at once balancing technical and contextual factors. At the same time, infrastructure impact might equally play out negatively across one or multiple dimensions of conflict and fragility.

The **main conclusion** of the report follows from this framework: **infrastructure needs to be thought earlier in the process of program design, where its impacts on conflict and fragility (both positive and negative) need to be operationalized in detailed theories of change**. Moving beyond output-oriented infrastructure programming in FCAS requires thinking carefully about the role of infrastructure early on in planning, rather than adding a physical output to a program as an afterthought. In terms of the *first* set of outside linkages (knowledge and institutions), we identified some advances in infrastructure thinking. UNDP and others now explicitly call for more attention to what is often called 'soft infrastructure', 'software', or 'infrastructure for peace' (I4P), i.e., the institutional accompaniment of physical infrastructure to leverage stabilization by increasing public administration.[174] In practice, this means

that if donors construct roads or government buildings, they also face the challenge of engaging in the right kind of 'influencing work' to make sure these assets are manned and maintained.[175] To advance the *second* kind of outside linkages—to dimensions of conflict and fragility—equally involves continuous monitoring, and impact assessment of, all of infrastructure's outside linkages to dimensions of fragility in planning comprehensive stabilization efforts.

Yet this main finding doesn't specify the substantive considerations that need to be taken up when planning infrastructure in FCAS. Based on a review of published material, we identified six pairs of aspirations that inform most infrastructure projects in FCAS today (see Table 2, next page). Each pair consists of two equally important objectives that any particular infrastructure project might have in FCAS, but which might be difficult to attain simultaneously, given strained donor budgets and perhaps inherent trade-offs. These six challenges do not map onto the five dimensions of fragility that the OECD identified, but all dimensions of fragility do surface across them.

A final important lesson that cuts across all challenges is the **lack of evidence** for any of the linkages between infrastructure, conflict and fragility that are nonetheless assumed by infrastructure spending in FCAS. The context in FCAS makes the kind of conflict assessments and evaluations that should guide infrastructure difficult, leading to a meager evidence base. We also lack knowledge about the long-term effects of infrastructure on conflict and fragility, because no longitudinal studies have been undertaken on the durability of infrastructure investments across FCAS. Therefore, we urgently need independent research on the impact of infrastructure on dimensions of conflict and fragility in specific settings.[176]

In sum, is delivery of infrastructure outputs an objective in itself or is the physical asset, as one means amongst many, supposed to serve a wider transformative ambition? The answer to this question is crucial, as it will generate different approaches to conflict, fragility and stabilization.[177] Necessarily, stabilization, as AusAID acknowledges, seems inherently a story of parallel sets of objectives, which ought to converge but often clash.[178] The challenges outlined in this report should caution us that no individual project can tackle all aspects of fragility and conflict at once. Rather, decision-making needs to be informed by the potential trade-offs facing individual interventions. Looking forward, addressing these challenges will be central to determining the future of infrastructure spending in FCAS. ∎

Table 2. The six main challenges pervading contemporary infrastructure planning in fragile and conflict-affected states.

Challenge	Core question	Main concerns
1. Between 'do good' and 'do no harm'	Given the imperative to contribute meaningfully in fragile and conflict-affected states, how do we make sure that infrastructure doesn't adversely impact conflict dynamics?	Building new state infrastructure in sensitive domains like security and justice might constitute a real opportunity to move away from the governance dynamics which existed when the conflict started, to engineer different social relations. However, as direct support for state authorities in environments where the state's legitimacy is weak, investments in justice and security sector infrastructure, might risk fortifying repressive state authority, being used by armed groups, extend unequal power-relations, or being perceived as such. Donors need to conduct elaborate environmental, conflict and social impact analyses to gauge to which extent their interventions might facilitate political economies of conflict or exacerbate root causes of conflict.
2. Between quick impact and long-term transformation	Is it possible to have a quick impact that is meaningful in terms of the long-term commitment inherent in both stabilization and infrastructure?	There is substantive support for the positive impact of infrastructure delivered through community-driven development. Yet delivery of an asset is not enough; if not married to a durable maintenance and stabilization strategy, infrastructure will crumble and risks coming to stand for the failure of peace.
3. Between local and central state capacity	How do we balance peace dividends for communities affected by conflict and fragility with building up central state capacity in infrastructure planning?	Statebuilding approaches favor extending central state authority through infrastructure, but stabilization programs aim to tackle conflict and fragility through infrastructure work with local communities. It has proven difficult to bridge the gap between the two.
4. Between specific beneficiaries and equal access	Should infrastructure projects target specific beneficiaries (communities at risk, potential spoilers) or rather aspire towards transparent and equal access?	Tensions might emerge when mediating between the need to integrate the most at-risk groups into infrastructure projects, and the need to demonstrate that access to infrastructure benefits the whole population. A key question is whether it is more productive to create (new) inclusive and transparent governance mechanisms or to partner with existing institutions that may be an agent for the status quo.
5. Between international standards and 'fit for purpose'	Is it possible to adhere to global standards while also making sure that infrastructure projects respond to context-specific needs in terms of conflict and fragility?	In situations of conflict, some global standards may limit the capacity to accommodate local expertise, technology and labor. Additionally, infrastructure expertise is often brought in only during implementation, with little space to engineer infrastructure as an agent of change.
6. Between economic growth and sustainable development	How do we balance the aspiration to effectuate economic growth and poverty reduction with the adverse impact that infrastructure often has on the environment and climate?	Infrastructure is a key factor determining carbon consumption patterns and the depletion of non-renewables; it mediates the impact of climate shocks on populations, and constitutes a liability in natural disasters. Thus, engineering climate challenges into specific projects ought to inform forward donor thinking on infrastructure in FCAS.

NOTES

1   US$5 billion out of 11 billion in that period (45%) was directly allocated to infrastructure, while a large part of $2.5 billion of this 11 billion earmarked for 'economic policy' was actually spent on infrastructure-heavy rural CDD programs (IEG 2014: 32, 72 & 84).

2   UNOPS nd: 5

3   Eliasson 2016

4   Jones & Howarth 2012: iii

5   African Union 2011: 19; European Development Report 2009: 50-51

6   Rankin 2009

7   Tucker 2010; see Ferf et al 2014: 6

8   House of Commons 2011: 5, emphasis in original

9   World Bank 1994: 2

10   House of Commons 2011: 7

11   Hoeffler 1999; Mashatt et al 2008

12   DFID estimates that because of conflict, Africa lost 50% of its infrastructure between 1980-2000 (DFID 2001: 11).

13   Mott MacDonald 2005: 4. It can be said that most counterinsurgency efforts have a strong infrastructure component. See for a discussion of Vietnam, Nunan (2016). On the 'reconstruction gap', see Williams (2005).

14   See Department of Defence Directive 3000.05 (2005). The US military doctrine on Stability Operations (US Department of the Army 2008) defined as a crucial stability task to 'support economic and infrastructure development' (Department of the Army HQ 2008: 40). In 2009, it requested RAND to formulate a guidebook for infrastructure and economic reconstruction (RAND 2009).

15   Despite its widespread adoption, the term 'stabilization' remains underdefined to allow for a wide variety of approaches. See Collinson et al. 2010.

16   Boutellis & Smith 2014, 4

17   ODI 2012

18   https://sustainabledevelopment.un.org/?menu=1300

19   See Jones and Howarth 2012, Taylor 2014, Fishstein & Wilder 2012, Ferf et al. 2014

20   Quoted in House of Commons 2011: 10

21   http://fsi.fundforpeace.org/rankings-2016

22   http://www.worldbank.org/en/topic/fragilityconflictviolence/brief/harmonized-list-of-fragile-situations

23   https://www.oecd.org/dac/governance-peace/conflictfragility-andresilience/docs/List%20of%20fragile%20states.pdf

24   OECD 2016

25   OECD 2016: 16

26   See OECD 2016: 76ff

27   Source: written communication with practitioner, December 2016

28   Righi & Gardner 2016: 17

29   Star & Ruhleder 1996: 112

30   As experts on development impact put it, 'Understanding impact means understanding the context in which an intervention takes place and the channels through which the impact on outcomes is expected to occur' (Hansen et al 2011: 1).

31   UN-Habitat 2011: 5-6; cf. Asian Development Bank 2012: xi; the insistence on institutions was also one of the main takeaways of the 1994 World Development Report

32   House of Commons 2011

33   UNDP 2010: 6

34   The New Climate Economy's 2016 report (NCE 2016) also urges towards a 'comprehensive' definition of infrastructure, in which infrastructure also comprises natural configurations which can be consciously engineered to engender sustainability.

35   Hawkins et al. 2006: 1

36   Engineers Against Poverty & International Alert 2006: 7

37   UNOPS and the University of Oxford work together towards a 'system of systems' approach to infrastructure, which aims at overcoming sector-thinking to plan for resilient and robust national infrastructure plans. See https://www.unops.org/english/News/Pages/The-Systems-of-Systems-Approach-to-Infrastructure.aspx

38   Howarth & Jones 2012, iv. More generally, Collier and Hoeffler have shown in their regression analysis of growth, aid and post-conflict societies that while it is important that foreign aid is delivered quickly after the cessation of conflict, foreign aid is most effective in the period of four to seven years after the end of conflict due to the absorptive capacity of the state (see Collier and Hoeffler 2004: 1135-1136). These arguments are confirmed in a study on infrastructure rehabilitation and economic benefits in conflict regions (Ali et al. 2015: 21-22). The authors found that during a high level of violence the economic pay-off of lower transportation costs may primarily benefit rebel activity rather than peaceful economic practices.

39   Engineers Against Poverty & International Alert 2006: 3

40   UNOPS 2012a: 4

41   Engineers Against Poverty & International Alert 2006: 5

42   See Engineers Against Poverty & International Alert 2006; Mashatt et al 2008

43   For examples, see UNOPS Security Sector and Justice Portfolio (2012b: 12ff)

44   Source: personal correspondence, November 2016. For a similar position, see UNOPS 2012b: 10

45   Cited in Integrity Watch Afghanistan 2007: 4

46   Ferf et al. 2014, 7, confirmed in Jones and Howarth 2012; Farhat and Hayes 2013

47   Rebosio & Wam 2011: 21

48   DFID 2014, Barnes et al. 2015.

49   UNOPS South Sudan Operations Center. 2014.

50   Barnes et al. 2015, 27-28; also confirmed in DFID 2014: 24.

51   Quoted in Barnes et al. 2015: 4.

52   DFID 2014, 24.

53   Written communication with UNOPS practitioner, December 2016.

54   http://www.voanews.com/a/world-bank-boko-haram-stalls-african-projects/1964237.html

55   Armed Forces of the Democratic Republic of the Congo.

56   UN GoE 2011, para 220

57   Meyerle & Malkasian 2009: 1; Foust 2012: 4

58   SIGAR 2016: 17

59   UNOPS 2011: 1

60   Source: written communication, practitioner, December 2016

61   House Subcommittee for National Security 2010

62   RAND 2009: 53

63   Zhukov 2015

64   Also see Zhukov 2012

65   Debroux et al 2007: 49

66   Collier 2004

67   DFID, n.d.: 6

68   It takes years for social, economic and political relations to be restored to pre-conflict levels; if ambitions are scaled up towards global goals (often aspiring to levels far above pre-conflict levels), stabilization requires an even more long-term commitment (Eliasson 2016).

69   Quoted in Mashatt, Long, Crum 2008: 1; cf. Taylor 2014: 2.

70   Source: correspondence with UNOPS officer, November 2016

71   House of Commons 2011: 36; OECD 2008: 9; Rebosio & Wam 2011: 5-6; UNOPS, nd, p. 3-4.

72   Jones & Howarth 2012: ii. Nonetheless, individual actors might have Sustainable Procurement policies, insisting on local sourcing.

73   E.g. Action Aid et al. 2010; SIGAR 2009: 18-19.

74   2012: 3

75   Projects on food security might use common rehabilitation and maintenance of productive assets (i.e., infrastructure) as a way to strengthen inter community relations which then increases resilience UNOPS 2012: 92.

76   See Ralston 2014; UN-Habitat 2011

77   Khandker & Koolwal 2011

78   Novotny 2011

79   Interview UNOPS official, 30 November 2016.

80   OECD 2016: 26

81   Rebosio & Wam 2011: 12

82   For a similar conclusion, see Khandker & Koolwal 2011

83   United Nations Peacebuilding Commission 2010: 13; cf. Hoeffler 1999

84   Under the Marshall Plan the US channeled inflation-adjusted $103 billion to the rebuilding of Western Europe between 1948 and 1952. Between 2002 and 2014, the US has delivered $104 billion in foreign aid to Afghanistan. It needs to be noted that nearly 60% of that amount was used for the build-up the Afghan National Security Forces (SIGAR 2014: 4-5). See also: http://foreignpolicy.com/2014/07/30/the-united-states-has-outspent-the-marshall-plan-to-rebuild-afghanistan/

85   World Bank 2012: 18; see SIGAR 2016 for discussion

86   See, for instance, Estache 2010; Hansen et al 2011; Sawada 2015

87   For the former see Peacebuilding Center 2013; for the latter UNDP 2013 as well as Unger et al. 2013.

88   USAID 2006.

89   Feinstein & Wilder 2012

90   SIGAR 2016: 8

91   Pain et al. 2015.

92   Pain et al. 2015: 22, 35.

93   In many ways, this challenge mirrors the debate on infrastructure and economic development between the 1960s focus on 'economies of scale' on the one hand, and the emphasis in the 1980s on poverty reduction on the other (see Ferf et al 2014: 6).

94   See an overview Taylor 2014: 7-8; cf Herbst 2000

95   See Schouten 2013, Taylor 2014: 3

96   Van de Walle et al 2011

97   The Bangui-Douala corridor in CAR and the Kabul-Kandahar corridor in Afghanistan. See SIGAR 2016: 17; RAND 2009.

98   Department of the Army 2008: 48

99   IMF 2015: 17; OECD 2008: 16

100   Source: correspondence with practitioner, December 2016; on skewed preferences influencing infrastructure preferences in host countries, see Benitez et al 2010

101   Burgess et al. 2014; Jones & Howarth 2012: 1; RAND 2009: 52; Taylor 2014: 3. However, it is to be noted that building infrastructure always seems subject to high contestation, even in relatively stable contexts (Likosky 2006).

102   Republic of South Sudan 2013: 12. More generally, infrastructure spending—particularly during construction—tends to run high risk of corruption issues. See Benitez et al 2010

103   Rebosio & Wam 2011: 13; Khander & Koolwal 2011; Unruh & Shalaby 2012.

104   Lebo & Schelling 2001: 1

105   ISSSS nd: 11; Beath et al. 2015; Fishstein & Wilder 2012

106   ISSSS, nd: 9

107   UNOPS nd

108   Source: interviews in Walikale, November 2016

109   See ISSSS nd.

110   OECD 2008: 9; cf. Jones & Howarth 2012, Fishstein and Wilder 2012

111   IEG 2014: 72; ILO 2009; Ralston 2014: 7

112   AusAID 2011: 45; for its wider adoption, see cf. Jones & Howarth 2012: iv; Mashatt et al 2008: 11. In fact, the use of local communities in local infrastructure work has a long history, dating back to 1986 when UN-Habitat and ILO started using it in Sri Lanka. Since, they have developed firm guidelines and best practices out of decades of experience of employment intensive investment programs in over 23 countries, under the title 'community contracts' (ILO, undated; UN-Habitat 2007). The absence of these insights in literatures concerned with stabilization is remarkable.

113   Novotny 2011: 71—this despite such sophisticated strategies adopted by the PRTs such as tracking prices offered by insurgents to attack roads and vehicles and offering slightly more to road workers (Taylor 2014: 10)

114   Calderon & Servén 2010: 53; Mott MacDonald 2012; for an extended discussion, see Ferf et al. 2014

115   Ferf et al 2014: 7; Fishstein & Wilder 2012: 41, see also Farhat & Hayes 2013: 2. To illustrate, a review of Tearfund WASH projects noted that local infrastructure projects in the DRC, which aimed at rendering the state visible in a positive way at the local level, showed that the NGO coordinating it, not the

government—which is considered as corrupt and a source of predation—were rendered visible through the projects (ODI 2012: 21).

116 Cliffe et al 2003: 4

117 IEG 2014: xxiv; cf. de Vries & Specker 2009, 26

118 House of Commons 2011: 10

119 See http://ebidf.org/

120 The NSP is funded by the World Bank as well as the government of eighteen Western governments. See http://www.nspafghanistan.org/

121 World Bank 2015a

122 World Bank 2015b: 1

123 Beath et al. 2015

124 World Bank 2015b: 1-2

125 World Bank 2016c

126 2006: 4

127 Engineers Against Poverty & International Alert 2006, 9-10. Such a suggestion corresponds with the principle of 'free prior informed consent' (FPIC) that has an increasing leverage in the field of natural resource exploitation and management where indigenous people are affected (OHCHR 2013), a mechanism however absent from the statebuilding literature.

128 Source: communication with practitioner, December 2016

129 Rebosio and Wam 2011: 11 & 18 and Taylor 2014: 17

130 House of Commons 2011: 6

131 Rebosio & Wam 2011: 8

132 Rebosio & Wam 2011: 9

133 2011: 12; cf. De Vries and Specker 2009, 36-46. Somewhat similarly, AusAID recognized that its previous efforts at stabilization in Aceh had been based on a wrong assumption. It favored job creation for former combatants, expecting that these would have fewer job opportunities in post-conflict Aceh. However, employment turned out higher among former combatants than those who had not participated in fighting, because they formed part of networks of patronage that kept on existing and which divided peacetime spoils (AusAID 2011: 56).

134 Kyamusugulwa et al. 2014: 813

135 Kyamusugulwa 2013: 382-383.

136 World Bank 2015b: 1

137 Mott MacDonald 2012

138 House of Commons 2011: 25

139 Mott MacDonald 2012a, 12 & 17

140 UNCRD 2009: 14; cf. House of Commons 2011: 22; Hawkins et al. 2006; cf. Beuran et al 2015: 693

141 Robertson & Olson 2013: 1

142 Source: multiple interviews with infrastructure practitioners, November 2016

143 Source: communication with infrastructure expert, December 2016

144 House of Commons 2011: 28; see also Hawkins et al. 2006: 1

145 GFDRR 2014: 3

146 Mashatt et al 2008: 2

147 Affleck and Freeman 2010, 12

148 Rebosio & Wam 2011: 5

149 House of Commons 2011: 24; Boutellis & Smith 2014, 33; see also Anand 2005

150 Source: communication with UNOPS officer, November 2016; see Hawkins et al. 2006

151 See Engineers Against Poverty, nd: 1

152 House of Commons 2011: 30

153 Flyvbjerg et al 2003

154 DFID 2014

155 Jackson 2015

156 DFID 2013; RAND 2009; Ali et al 2015; UN-HABITAT 2011; cf. Beuran et al 2015

157 As stated in SDG 7. See https://sustainabledevelopment.un.org/sdg7; See also UNOPS policy for sustainable infrastructures (UNOPS 2012a) and the UN Resolution on the human right to water and sanitation (UN General Assembly 2010).

158 This trend is most visible in the cases of India and China. Per capita emissions in China have more than doubled in the last fifteen years. See data at http://data.worldbank.org/indicator/EN.ATM.CO2E.PC?end=2013&start=1962

159 https://www.newclimateforpeace.org/

160 Jones 2016; NCE 2016: 10

161 See Detges 2016 for Sub-Saharan Africa; de Chatel 2014 for Syria

162 http://newclimateeconomy.report/

163 2012a: 1

164 World Bank 2016b: 3

165 House of Commons 2011: 28; cf. Gwilliam et al 2008

166 NCE 2016: 10

167 World Bank & GFDRR 2013

168 African Union 2011. Mobilizing private sector involvement and capital in infrastructure delivery for stabilization, while having a poor track record, remains high on the policy agenda. However, the private sector is not always neutral in conflict zones. There is a risk that such initiatives taint the project and its stakeholders. A controversial example is the Niger Delta Job Creation and Conflict Prevention Initiative, where UNOPS working in the Niger Delta was funded by Shell to create employment for those youths that otherwise resist Shell's presence (UNOPS 2012b: 20).

169 Laporte et al 2007: 1451

170 2011: 3

171 Ali et al 2015: 130; Debroux et al 2007: 16 & 31

172 2012a: 12

173 Rebosio and Wam 2011: 13

174 UNPSO 2012: 18; cf UNDP 2013, 2014

175 Bynens & Taylor 2012: 11

176 Cf. Holmes et al 2013: v; Taylor 2014: 1

177 Communication with UNOPS officer, November 2016.

178 AusAID 2011: 23

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p iv. UNPREDEP Peacekeepers, part of the Indonesian Engineering platoon, construct a new observation post along the Yugloslav Border. 04 September 1998, The former Yugoslav Republic of Macedonia

p 5. A Japanese engineer at work at the United Nations Mission in South Sudan (UNMISS), in Juba. 19 July 2012, Juba, South Sudan

p 6. A group of UNMISS peacekeepers participates in community work, or "Umuganda", helping build a new school in Kapuri, a town close to the capital of Juba in the Central Equatoria State of South Sudan. 13 September 2014, Kapuri, South Sudan

p 9. Japanese engineering peacekeepers serving with the United Nations Mission in the Republic of South Sudan (UNMISS), use heavy rollers to smooth out Yei Road, where they have been uprgdrading the surface, as trucks and South Sudanese Boda-Boda motorcycle taxis roll by, in Juba, South Sudan. The Japanese Engineers have been undertaking major road upgrades around the city in order to improve the lives of the people living in the area, and traffic in general. 15 August 2012, Juba, South Sudan

p 10. Chilean and Brazilian UN Peacekeepers are paving a new road to the general dump in Port-au-Prince. A Haitian girl walks along the partially completed asphalt work road. 08 September 2009, Port-au-Prince, Haiti

p 14. Gravel is poured in the waterfront community of Wharf Jeremy, Port-au-Prince, during a joint project by the UN Stabilization Mission in Haiti (MINUSTAH)'s Community Violence Reduction section and the International Organization for Migration (IOM) to repair roads and drainage systems. 12 September 2012, Port-au-Prince, Haiti

p 18. Afghan men work on a road construction under the auspices of the World Food Programme (WFP) food-for-work project through which more than 560,000 people have been assisted with over 10,000 tons of food during March. The project also includes the rehabilitation of irrigation canals, ponds and water channels. 08 June 2009, Badakhshan, Afghanistan

p 20. Jan Pronk (right), Special Representative of the Secretary-General for the Sudan, visits the site of the Bailey Bridge constructed by the Bangladesh military engineering company on the Juba-Yei Road, today in Juba, Sudan. 14 November 2005, Juba, Sudan

p 22. The United Nations Mission in South Sudan (UNMISS) handed over a completely rehabilitated fifty-six kilometre road to government authorities in Juba today. The new road allows for travel between Rokon and Juba in an hour and a half, whereas previously it took five hours. Picture: A UN heavy equipment vehicle finishes grading the road. 07 June 2016, Juba, South Sudan

p 25. Pakistani United Nations Mission in Liberia (UNMIL) peacekeepers and Liberian villagers repair a flooded road on the outskirts of Voinjama, Liberia. UNMIL has been working on various projects to improve the living conditions of the local residents there. 03 April 2006, Voinjama, Liberia

p 26. A team of Japanese Engineers arrive in Juba, South Sudan to help the Government of South Sudan with road construction activities. Road construction is underway. 29 February 2012, Juba, South Sudan