



NOTES FOR REVIEW GROUPS

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Structure for a protocol

Main title	What is the evidence of the impact of DFI support (including PIDG support) for PPI, on economic growth and poverty reduction? What conclusions can be drawn from this evidence to help DFIs better target their investment to maximise their impact on economic growth and poverty reduction?
Sub title	
Review group	
Section	PROCOTOL
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1. Background

1.1. Aims and rationale for review

Infrastructure in the developing world is under-provided. Worldwide, more than 1 billion people lack access to roads, 1.2 billion do not have safe drinking water, 2.3 billion have no reliable sources of energy, 2.4 billion lack sanitation facilities and 4 billion are without modern communication services (OECD, 2006: 10). Under-provision of infrastructure is thought to impede economic growth and undermine poverty reduction.

The anticipated roles of the public and private sectors in the provision of infrastructure has changed significantly in recent decades, as described by Estache and Fay (2007: 1)

“During the 1980s, with a few high-profile exceptions in the Anglo-Saxon world, these sectors were clearly seen as a public sector responsibility and governments were looking inward for means to improve their quality and volume. But during the nineties, these concerns largely disappeared from governments’ agenda. Instead, received wisdom was that the private sector was going to take over these services, leaving only a residual role for governments (deregulation and restructuring, and the regulation of remaining residual monopolies). The time had come for the private sector to show what it could do after a frustrating long experience with an underperforming public sector. The vision did not play out as expected. Almost 20 years after privatization began to be touted as the solution to infrastructure woes, the role of the large scale private sector in the delivery of infrastructure services in energy, water or transport is far from being as widespread as many had hoped for, at least in developing countries.”

The seeming inability of both the public and private sectors to finance and develop infrastructure projects at the level deemed appropriate in developing countries has led to more combined approaches, where both public institutions and private firms collaborate on infrastructure projects.

Key players in this process are the Development Finance Institutions (DFIs), which provide guarantees, loans and technical support to help to mitigate the risks posed by private sector projects with large sunk costs, including infrastructure projects. They typically invest in public/private-sector projects in higher-risk, less developed countries where commercial investment is difficult to obtain.

The aim of this review is to assess the developmental impact of this DFI activity in the infrastructure sector. Specifically, whether DFI engagement is able to leverage additional private sector infrastructure investment and, if so, the extent to which this creates positive development outcomes.

The need for such a study is illustrated by the findings of DFID’s (2007) literature review on private sector infrastructure investment:

‘The weakness of the evidence base supporting the dominant PPI [private participation in infrastructure] rationale is a significant challenge for the [private sector infrastructure investment] facilities.’ (p. 51), and: ‘The emphasis of the Facilities is often more market-based than rights-based, and the independent reviews of the facilities suggest they need to strengthen pro-poor impact and community engagement.’ (p. 73).

Unlike ‘traditional’ systematic reviews in the health sector, however, the evidence available is not of a homogenous form. Specifically, there is not a critical mass of randomised control trials (RCTs) available that provides comparable quantitative assessments of the evidence available, to which statistical meta-analyses can be applied. Rather, evidence is available in a range of forms, from purely qualitative assessments, to quasi-experimental evaluations, ex ante modelling work (i.e. Computable General Equilibrium [CGE] approaches), to ex post econometric studies.

As explained in detail in section 1.2, there are a number of links in the causal chain which connect DFI engagement with ultimate development impacts. In order to produce the most useful review possible, a narrowing of focus to the key underexplored issues is required. In this regard, while the general relationship between infrastructure and development has been the subject of considerable primary research – which has been surveyed and summarised extensively, including through previous systematic reviews – the issue of DFI ‘additionality’ in this process has not. Consequently, while there are a number of relevant links in causal chain from DFI activities in the infrastructure sector to development outcomes, some are more important for the commissioners of this review than others. We intend to focus the review primarily on these areas.

Where there is a critical mass of comparable evidence on a particular link in the causal chain, such as ex post econometric studies, we will undertake a statistical meta-analysis of the results. In the majority of cases, however, we do not expect this to be the case, with the result that we will be synthesising evidence of different forms, drawn from a range of sources, but with a preponderance of project evaluation reports from DFIs themselves and from third party evaluators.

Given the heterogeneous nature of the available evidence on the question under review, we propose to employ a ‘realist’ approach, which Pawson *et al* (2005: 1) describe as follows:

“Realist review is a relatively new strategy for synthesizing research which has an explanatory rather than judgemental focus. It seeks to unpack the mechanism of how complex programmes work (or why they fail) in particular contexts and settings.”

The detail of project design and policy context will be very important in this review. Historical experience suggests that interventions in the infrastructure sector which appear similar often produce very different results¹, suggesting that specific features of project design and the policy context within which projects occur play a major role in shaping outcomes. To enhance developmental impacts, it is therefore important for both DFIs and policy-makers to have as full an understanding as possible of “what works for whom, in what circumstances, in what respects and how” (ibid: 1)

A realist review begins with the elucidation of a ‘programme theory’, which details the impacts that an intervention is supposed to have at each stage – the ‘links in the causal chain’ described above. Evidence is then assembled to support, contradict and ultimately modify these links – and the programme theory – itself, so as to inform future interventions and improve desired outcomes. A realist approach is well-suited to synthesising evidence of different methodological types, seeing value to be gained from assessing both qualitative and quantitative evidence.

1.2. Definitional and conceptual issues

In this section, we first define some key terms in this review. Second, we set out our understanding of the causal chain that links DFI engagement in infrastructure investment to growth and poverty outcomes. Third, we reframe this causal chain in terms of ‘programme theory’, where the assumptions that underpin each ‘link’ in the chain (i.e. what is supposed to happen and why) are made explicit. Fourth, we identify and provide a rationale for selection of key links to be covered in this systematic review.

Definition of Infrastructure

Infrastructure is defined for the purposes of this study as transport, energy, information and communication technology, water and sanitation, industrial infrastructure and agri-business related infrastructure. Social infrastructure such as schools and hospitals has been

¹ See Estache and Fay (2007) for a good overview.

excluded as a review of DFI investment has revealed that it is not a target area for DFI support (World Bank & PPIAF, 2010).

Definition of Development Finance Institutions and instruments

For the purposes of this review, DFIs are national or multilateral development agencies “that provide funds, either as equity participation, loans or guarantees, to foreign or domestic investors in order to initiate or develop projects in sectors or countries in which the traditional commercial banks are reticent to invest in without some form of official involvement.” (PIDG, 2010).

The types of instruments/ facilities to be covered are:

- Investment
- Risk mitigation (e.g. loan guarantees)
- Advisory services (to governments)
- Project preparation and development services

The institutions proposed to be covered (inter-alia) are:

- Private Infrastructure Development Group (PIDG)
- International Finance Corporation (IFC)
- DEG
- EIB
- FMO
- CDC
- SIFEM
- FinnFund
- NorFund
- SwedFund
- European Bank for Reconstruction and Development (EBRD)
- African Development Bank (AfDB)
- Asian Development Bank (ADB)
- Inter-American Development Bank (IADB)
- World Bank

Conceptualising the causal chain

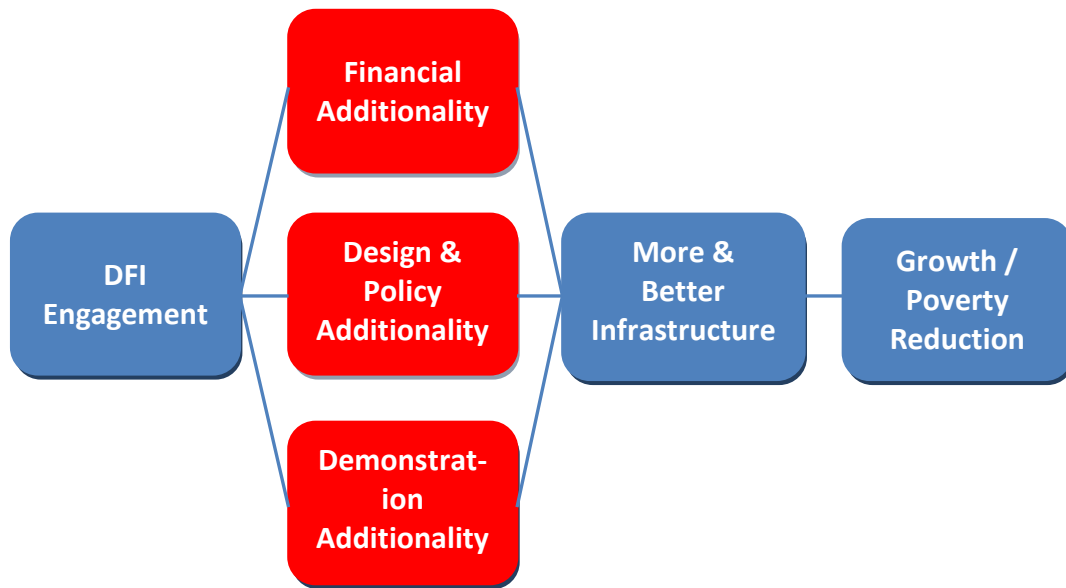


Figure 1. Graphical illustration of causal chain

Figure 1 above sets out the different links in the causal chain from DFI engagement to development impact that underpins our approach. Each of these components can be framed as a sub-question. The questions (or links in the causal chain) are as follows:

1. Does DFI engagement crowd out (i.e. reduce) or create additional (i.e. increase) private investment in infrastructure projects? (*financial additionality*)
2. What influence does DFI engagement in an infrastructure project have on the probability of subsequent private sector funded projects in the same jurisdiction? (*demonstration additionality*)
3. What influence does DFI engagement have on infrastructure project design and the policy context within which projects occur? (*design and policy additionality*)
4. What influence does project design/policy context have on a) poverty reduction, and b) economic growth outcomes?

Link 1: DFIs and (financial) additionality

Ostensibly, DFIs have leveraged significant additional private sector finance. For example, according to PIDG (2010: 1): "US\$390mn from the PIDG donors has helped secure US\$10.5bn of private investment commitments." Whilst PIDG's website suggests that: "Every US\$1 of donor funds channelled through PIDG helps leverage commitments of over \$25 of private sector funding for infrastructure."²

In theory, it should be the case that DFIs are more likely to leverage additional funds, rather than crowd out private investment, particularly with respect to low-income, high-risk developing countries. Infrastructure investments entail large sunk costs, with the long-term viability of projects being heavily influenced by political, regulatory and exchange rate risks. In low-income/high-risk countries, the resultant risks may be considered too high by many private investors, with the result that DFI engagement as co-financiers, mitigators of risk and negotiators with government agencies may be an essential prerequisite for investment.

² <http://www.pidg.org/sitePages.asp?step=4&navID=15&contentID=44>

In middle-income countries, however, the situation may be less clear-cut, where DFIs could in theory be competitors with private finance providers. Te Velde and Warner (2007) report some anecdotal evidence of this.

The rationale for DFI engagement in infrastructure is clear. What is less clear, however, is how much 'additionality' this engagement actually results in, and what the forms this takes. The PIDG quotes above focus on additionality of finance, where the claim is not that \$1 of DFI investment leverages \$25 of private investment, but that it 'helps' to do so. This is due to problems with attribution as there are often additional DFIs/donors involved in these projects.

Methodologically, there is no obvious way to be more precise. No counter-factual exists, and there are obvious asymmetric information and incentive problems. Private investors are the only actors that know whether their investment would have occurred in the absence of DFI engagement, but given that they benefit from this engagement, they have strong incentives to claim that they would not have invested without the DFI.

This highlights the importance of taking a realist approach to this systematic review. As described above, this involves testing the 'programme theory' that underpins the intervention using a wide range of high-quality sources. For link 1, the assumption to test is that DFIs do leverage significant additional private finance into the infrastructure sectors of developing countries. No one source of information or methodological approach will be able to adequately assess this assumption. Instead evidence from a range of sources, taking careful account of the different incentives that different parties face, will be needed to create a synthesis that is policy and practice relevant.

Link 2: DFIs and the 'demonstration effect'

To some extent, establishing an effective demonstration effect is the primary purpose of DFIs. The funds available to DFIs fall far short of the level required to fill the infrastructure funding gap in the developing world. Developing country governmental budgets and donor funds have also historically proven inadequate to fill the gap, at least in lower-income countries. Through their financing and advisory activities, DFIs aim to improve private sector perceptions of the risk/return trade-off of infrastructure projects such that a step-change in private investment results.

In reality, public investment in infrastructure will remain important for the foreseeable future, not least because many of the projects that are required are unlikely to be commercially viable on their own terms. This is particularly true in the case of projects that aim to achieve significant direct developmental benefits by providing access to groups whose ability to pay is incompatible with a commercially viable return on investment. At the same time, however, public funding alone will never be enough to meet the shortfall, particularly in a climate of fiscal consolidation for both developing country governments and developed country donors. Consequently, the demonstration role of DFIs is potentially very important in reducing the infrastructure funding gap by encouraging private investment.

In common with Link 1, hard evidence on DFIs' demonstration effect is not easily available, due to the absence of a counterfactual and the difficulty of isolating the demonstration effect of DFIs from other changes in the investment environment that may encourage private sector investment.

Link 3: DFIs, project design and policy context

As described below (link 4), there are numerous features which influence the impact that infrastructure projects have on economic growth and poverty reduction. This link aims to explore how DFI engagement affects (or does not) design and policy characteristics will also affect (or not) the magnitude and distribution of growth and poverty outcomes.

Many DFIs (including the PIDG DFIs) are run on a commercial basis, so there may be a trade-off between their commercial viability and their developmental impact, as noted in DFID (2008: 21):

“The PIDG investment Facilities are based on a venture capital model in which private sector managers are contracted to achieve investment targets within allocation criteria defined by the investors (or donors). ... Using this type of structure for development finance purposes implies trade-offs between the goals of demonstrating the ability of the Facility and its managers to build a commercially viable investment portfolio and that of restricting allocation of funding resources to socially desirable projects in targeted sectors or locations.”

DFIs’ investment criteria also vary widely, with a corresponding effect on their developmental impact. All the PIDG finance Facilities state that each of their transactions should satisfy at least one of three criteria: 1) underpinning economic growth; 2) benefiting broad based population groups, 3) promoting the interests of poor people (DFID, 2008: 21). The investment criteria are therefore not explicitly pro-poor, although the PIDF DFIs are mandated to focus on low-income countries. The DFID review finds that ‘The mandates of the non-PIDG Facilities [*supported by DFID*] have a more direct pro-poor orientation’ (ibid).

Analysis of link 3 also requires an understanding of controversies surrounding the impact upon the poor of private sector involvement in provision of infrastructure services. The most common infrastructure policy failures affecting the poor are the failure to provide universal access, and the failure to design tariffs consistent with the poor’s ability to pay (Estache & Fay, 2007). Since private firms aim to maximise profits they do not (in the absence of correctional policy) have incentives to extend access to infrastructure services to those who cannot afford cost-recovery tariffs. As a result, infrastructure developments that are not specifically designed with the poor in mind have often resulted in outcomes that bring far greater benefits to the relatively well-off than the poor (Foster & Briceño-García, 2010).

The problem is most acute in countries with higher risk, where investors require a higher rate of return to justify investment. In consequence ‘the average tariff necessary to generate the minimum required rate of return in the poorest developing countries has to be higher than elsewhere since it needs to cover a higher cost of capital’ (Estache, 2006: 4), putting private investors in a politically very difficult position.

In the light of these debates, Estache and Fay (2007) summarise the instruments available to support access and affordability for the poor where infrastructure investment is privately sourced:

“For access there are three basic types of instruments: (a) instrument requiring operators to provide access (a service obligation to avoid unilateral exclusion by the provider); (b) instruments reducing connection costs (through cross-subsidies or direct subsidies built into the tariff design or through credit or discriminatory payment plans in favor of the poor); and (c) instruments increasing the range of suppliers (to give users choice, including the option of reducing costs by choosing lower-quality service providers).”

And for affordability:

“... all instruments work in at least one of three ways: (a) by reducing bills for poor households (through lifelines or means-tested subsidies based on socioeconomic characteristics or the characteristics of the connection, financed through cross-subsidies or direct subsidies built into the tariff design); (b) by reducing the cost of services (by avoiding granting a monopoly right when it is not necessary or by providing an incentive for operators to reduce costs and pass on the cost reductions to users); and (c) by facilitating the payment of bills (by allowing discriminatory administrative arrangements in favor of the permanently or temporarily poor).” (Estache and Fay, 2007: 19-20)

The mechanisms through which the benefits of infrastructure provision are distributed are thus relatively straightforward. In order to demonstrate DFI additionality, we would therefore need to find a weight of evidence to support the view that DFI engagement influences project design in these areas.

Similarly for the growth channel, the assumption can be tested by examining in detail the extent to which DFI engagement takes account of - and positively influences - the economic and institutional factors which shape the impact of infrastructure on growth.

Link 4: From infrastructure projects to development outcomes: design and policy features

In this section we explore the literature on the links between infrastructure, economic growth and poverty reduction with the following aims:

- (i) To highlight the fact that considerable research has been undertaken in this area and explore the channels through which infrastructure can positively affect development outcomes.
- (ii) To demonstrate that establishing causal links between particular projects and development outcomes is fraught with methodological difficulties
- (iii) To capture the consensus that has developed on the general relationship between infrastructure and development outcomes (in the light of the methodological challenges)
- (iv) To emphasise the role of project design and policy context in shaping ultimate outcomes.

The literature on the relationship between infrastructure and development outcomes is significant. A number of channels have been identified.

First, infrastructure contributes directly to development by providing final consumption items to households, and second by providing intermediate services, which are mostly consumed by firms (Straub, 2008a).

Infrastructure's contribution to economic growth occurs through direct and indirect channels (OECD, 2006: Jahan & McCleery, 2005: Prud'Homme, 2005). The direct impacts of improved infrastructure services on incomes include:

- increased access for poor people to factor and product markets;
- reduced risk and vulnerability;
- enhanced asset mobilisation and use; and,
- employment creation in construction, operation and maintenance.

Direct impacts on non-income aspects of poverty include:

- household access to improved water sources;
- electricity and telecommunications;
- improvements in access to basic social services (such as health and education)
- social cohesion; and,
- empowerment.

The magnitude and distribution of these effects will be determined by the accessibility, quality and affordability of the services provided by the infrastructure.

Indirect impacts occur principally through economic growth. Infrastructure provision may stimulate growth by:

- reduced production and transaction costs;
- increased private investment;
- improved agricultural and industrial productivity; and,
- removal of 'bottlenecks' (conditions under which system components cannot keep up with demand) which slow industrial and economic growth.

The theoretical mechanisms through which infrastructure contributes to growth are thus reasonably well understood. Understanding the outcomes of a particular level and form of infrastructure investment in a given context is more problematic, however.

The main factors contributing to the heterogeneity of infrastructure investment outcomes are:

- the absence of a market test;
- complexity of the relationship between current levels of infrastructure provision and returns on further investment;
- institutional environment;
- time lags; and,
- reverse causality.

Non-infrastructure capital is faced with a market test, where private entrepreneurs make investment decisions on the basis of maximising overall returns. This is rarely the case with infrastructure, where decisions are often politically driven, and many infrastructure investments have non-economic objectives (Estache & Fay, 2007).

The relationship between current levels of infrastructure provision and economic rates of return on further investment is framed by two apparently contradictory theories. The first is that rates of return will be higher in situations of significant under-provision, since even a small investment would provide an important boost to growth. The second is that rates of return will be higher at a higher level of coverage due to 'network effects'. The classic example of network effects in infrastructure is telecommunications, where returns to a connection increase in line with the number of connections already in existence. The concept can also be applied to transportation, water and electricity however; an investment that completes an incomplete network in any of these sectors will have high returns. We cannot, therefore expect constant or linear returns with respect to infrastructure, and it may be difficult to distinguish the two effects in empirical studies (Estache & Fay, 2007; Straub, 2008a).

The institutional environment (regulatory frameworks, market structure, political economy and institutional quality) is a critical factor in determining the degree to which infrastructure investment translates into economic growth and poverty reduction (Straub, 2008; Jahan & McCleery, 2005; DFID, 2002). Key processes influenced by the institutional environment include:

- stakeholder input into investment choices;
- incentives for business expansion and creation on the part of private entrepreneurs; and,
- the quality of construction, operation and maintenance of the infrastructure.

Infrastructure's impact on growth is associated with time lags, which vary depending on the sector and context and are difficult to predict. Time lags are particularly long and unpredictable in the case of transport infrastructure (World Bank, 2008). Growth effects may be delayed by firms' slow adjustment to the new opportunities on offer (Estache & Fay, 2007).

Infrastructure causes growth, but growth also causes greater demand for (and usually supply of) infrastructure - so called reverse causality, or 'endogeneity'. Confusion over the direction of causality is believed to have caused over-estimates of the impact of infrastructure on growth in early studies (ibid). Econometric techniques have been developed to help distinguish between the two effects, but will always be imperfect.

The growth and poverty impacts of infrastructure investment also depend on the sector. Transportation, energy and telecommunications, for example, are more closely associated with economic growth. Drinking water-related infrastructure, in contrast, is more likely to impact on the non-income aspects of poverty, and is more difficult to directly relate to economic growth (although improved water supply is likely to increase worker productivity and the availability of water can be an important part of the investment climate).

Within each sector there are finer distinctions to be made. In transportation, a rural road network connecting an isolated region to a trunk road may have an important impact on poverty in that area, but is unlikely to have the same impact on economic growth as an equivalent investment in a highway connecting the capital to a port. Energy and telecommunications share similar characteristics - their impacts will depend on whether they aim to promote balanced regional development and reduce poverty, or promote economic growth in areas that are already economically vibrant.

Given these factors, it is unsurprising that the results of empirical studies exploring the link between infrastructure investment and developmental outcomes show a high degree of variation. Despite this uncertainty, there is a consensus that infrastructure plays an important role in growth and poverty reduction.

Estache and Fay's (2007: 6) review of current debates in infrastructure policy find that "infrastructure generally matters for growth and production costs, although its impact seems higher at lower levels of income". A review of links between infrastructure and development by Prud'Homme (2005: 161) comes to the conclusion that "infrastructure seems to have a relatively high rate of return - something like 15 per cent - comparable to or even higher than the rate of return of private "productive" capital". Straub (2008b: 19) analyses 140 specifications from 64 papers between 1989 and 2007, and finds that "63 per cent of the specifications find a positive and significant link between infrastructure and some development outcome".

Summary of conceptual issues and focus of the systematic review

In this section of the Protocol we have divided the primary question under review into four sub-questions, or 'links' in the causal chain connecting DFIs activities with development outcomes. The first three of these relate specifically to DFI additionality in three areas - financial; design/policy context; and demonstration - while the final link concerns the relationship between infrastructure projects and development outcomes in general, and the relationship between the design and policy context of these projects and outcomes in particular.

As we have seen, the bulk of the academic and policy literature relates to the final link, where the channels of impact, importance of design and context, and methodological challenges have been well researched and summarised. Given that the focus of this review is the additionality that DFIs bring to this area, this systematic review will focus on the first three links, about which far less is known.

Formally reviewing the literature on infrastructure and development outcomes is a systematic review in its own right, and given the amount of work that has been done on this subject, it is not clear that much would be added to our understanding.

While the key studies in this area will be reviewed and summarised, this will not form part of the formal systematic review process. Rather the purpose will be to:

- identify the design and policy factors that the evidence suggests are most important for development outcomes;
- relate these to specific infrastructure sectors, and
- map these different sectors onto the particular development outcomes (e.g. growth or poverty) that they are most associated with.

Core features of design and policy context which the evidence suggests determine development outcomes will be identified and organised by infrastructure sector. Gathering evidence on the extent to which DFIs influence these features will be combined with evidence on financial leverage and the demonstration effect to form the basis for a focused systematic review on DFI additionality in the three areas identified.

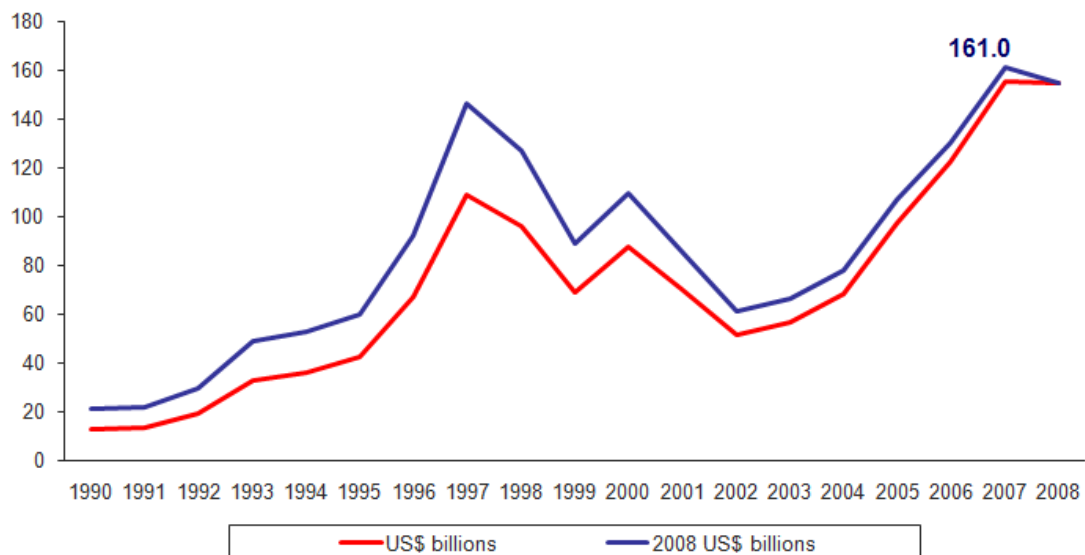
1.3. Policy and practice background

Private sector investment in infrastructure in the developing world during the 1990s and 2000s

The shift to widespread promotion of private sector involvement in the delivery and financing of infrastructure during the 1990s was based on the belief that the private sector would fill the resulting funding gap, thus relieving fiscal pressure on governments, and achieving better outcomes than inefficient public sector monopolies. Private investment did increase, but not sufficiently to compensate for the shortfall as expected, largely due to difficult investment climates (OECD, 2006).

Further, during the 1990s, up to 40 percent of contracts involving private participation in infrastructure were cancelled or renegotiated, mainly due to over-optimistic assessments of financial and political risk and levels of financial return, and public opposition (DFID, 2007).

Private sector investment in infrastructure over the past two decades has proved volatile, as illustrated by the graph below. There was a sharp dip in the late 1990s after the East Asian financial crisis, and investment levels have only recently returned to the level seen in 1997.



Source: World Bank and PPIAF, PPI Project Database (<http://ppi.worldbank.org/>)

Figure 2. Investment commitments to infrastructure projects with private participation in developing countries in real and nominal terms, 1990-2008

The availability of private financing varies by sector, region and scale. Private investment is more likely where returns are rapid and easily captured, for example in telecommunications and energy, and less likely in sectors such as transport and water (DFID, 2002). From 1984 to 2008, approximately 42% of private infrastructure investment in the developing world was invested in telecommunications, 31% in energy, 22% in transport and 6% in water and sanitation (World Bank and PPIAF, 2010). In 2008, energy took the same proportion of investment, transport and water and sanitation decreased to 17% and 2% respectively, and telecommunications had increased to 50% (ibid).

Private finance also tends to flow to more developed regions. Between 1990 and 2008, Latin American and the Caribbean captured 38% of total private infrastructure investment, compared to 6% for sub-Saharan Africa and 12% for South Asia (World Bank and PPIAF, 2010a).

As discussed above, one of the objectives of DFI investment in infrastructure is thus to counter these imbalances by providing guarantees and loans to encourage private investment in high-risk, low-income regions. DFI activity in developing country infrastructure investment has become more significant since 1990. Historic data on the level and pattern of DFI activity in the sector is not easily available in the public domain, but there is evidence of an increasingly important role.

The International Finance Corporation (IFC) made infrastructure commitments of US\$8.2 billion from FY07-FY10; leveraging a considerably greater quantity of private investment as a result (IFC 2006, 2008, 2010). The facilities of the Private Infrastructure Development Group (PIDG) have committed investments of \$709.45million since it was established in 2002 to end 2009.

These figures should be understood in the context of overall infrastructure investment, which continues to be sourced principally from public budgets. One recent study finds that 80 per cent of infrastructure investment in the developing world in the past 15 years has been from public sources (Estache & Fay, 2007). Another finds that developing country government spending accounts for two thirds of total infrastructure investment in the developing world (OECD, 2006).

1.4. Research background

The research team has not found any literature reviews addressing the particular question in this systematic review, though there are some related studies. One of the most relevant is DFID's (2008) *Desk Review of DFID's Private Sector Infrastructure Investment Facilities*, which investigates how effectively DFID's interventions in the private sector infrastructure portfolio of facilities supporting infrastructure investment have contributed to achieving DFID's core objectives.

The study finds that:

"There is currently little quantitative evidence available to assess the development impact of the... Facilities, principally because very few investment projects resulting from their interventions have yet been completed and thus directly enhanced access or quality of infrastructure services" (v).

The assessment is therefore based principally on:

- the growth and distribution of the DFIs' activities;
- alignment with host country priorities;
- cost effectiveness;
- effectiveness in monitoring development impact; and,
- the demonstration effect.

The review concludes that

"The PSI portfolio supports DFID's broad strategic objectives, in particular in promoting economic growth in target...countries through advancing private participation in infrastructure development" (ix)

However, the authors are not able to provide solid empirical evidence of the links between DFI activity and developmental outcomes, namely economic growth and poverty reduction.

DFID also commissioned preparatory research for the above study: *Literature Review of Private Sector Infrastructure Investment* (2007), which is relevant to this review, though the results of the review are again inconclusive:

“ while at the broad level, there is clear association between infrastructure investment, economic growth and poverty reduction, the steps in causality that lead from one to the other, and how these work specifically in the case of PPI are less obvious... empirical evidence for robust links between the steps in the causal chain is limited.” (p.8)

There are a number of papers discussing links between infrastructure, growth and poverty reduction, some of which incorporate discussion of the impact of private sector investment. Two of the most helpful and current evidence-based studies are Estache & Fay's (2007) *Current Debates on Infrastructure Policy*, and Estache's (2006) *Infrastructure: A survey of recent and upcoming issues*. The first study includes an analysis of the challenges inherent in understanding the causal linkages between infrastructure, growth and poverty reduction, while both studies (but particularly the latter) discuss in some detail the role of the private sector, and the relationship between private sector investment and provision of infrastructure services to the poor.

A selection of other studies which are relevant to some aspects of the question under review are (see references section for more):

Calderón, C. & Servén, L. (2004) *The Effects of Infrastructure Development on Growth and Income Distribution*, *World Bank Working Paper No. 3400*. Washington D.C.: World Bank

Estache, A., Gomez-Lobo, A. & Leipziger, D. (2001) *Utilities Privatization and the Poor: Lessons and Evidence from Latin America*. *World Development* 29(7) 1179-1198

OECD (2006) *Promoting Pro-Poor Growth: Infrastructure*. OECD

Jahan, S. & McCleery, R. (2005) *Making Infrastructure Work for the Poor: Synthesis Report of Four Country Studies - Bangladesh, Senegal, Thailand and Zambia*. New York: UNDP

Straub, S. (2008b) *Infrastructure and Growth in Developing Countries: Recent Advances and Research Challenges - World Bank Policy Research Working Paper 4460*. Washington D.C.: World Bank (Systematic review)

te Velde, D., and Warner, M. (2007) 'The use of subsidies by Development Finance Institutions in the infrastructure sector', *ODI Working Paper 283*. Overseas Development Institute.

1.5. Objectives

The objective of this systematic review is to synthesise the evidence on the following two questions:

What is the evidence of the impact of DFI support (including PIDG support) for PPI, on economic growth and poverty reduction? What conclusions can be drawn from this evidence to help DFIs better target their investment to maximise their impact on economic growth and poverty reduction?

As described above, the additionality created by DFI activities in the infrastructure sector can be examined through a causal chain with four linkages. These linkages jointly comprise the 'programme theory' which provides the rationale for DFI engagement in the infrastructure sector. The objective of this review is therefore to collate, analyse and systematise the relevant evidence to support, refute or modify the following propositions:

- (i) DFIs leverage significant additional private finance into the infrastructure sectors of developing countries
- (ii) Successful projects where DFIs have been involved provide a positive demonstration effect, thus increasing the probability of increased private investment in the future independently of whether DFIs are involved or not.

- (iii) DFI engagement influences features of project design and policy context so that the development outcomes resulting from the provision of infrastructure are greater than they would have been without DFI engagement.
- (iv) Identifiable characteristics of infrastructure project design and the policy context within which projects take place significantly affect development outcomes.

As has been described, this systematic review will focus on the first three propositions (links 1-3 in the causal chain). Each of these propositions is underpinned by a number of assumptions. For example:

“DFIs leverage.....” because;

- a) Their activities improve the commercial viability of a project through up-front project preparation, co-investing, risk mitigation (e.g. guarantees), or the provision of finance on terms not commercially available in local capital markets (e.g. longer maturities).
- b) They are able to positively influence the regulatory framework.
- c) ...

“Successful projects...provide a positive demonstration effect” by;

- a) Altering foreign and domestic private investors perceptions of the risk/return trade-off in such projects
- b) Altering developing country governments’ perceptions on the feasibility and desirability of private sector engagement
- c) Altering developing (and donor) country governments on the policy framework needed to achieve positive outcomes.

“DFI engagement influences these characteristics...” by;

- a) Negotiating with governments and investors on project access and price conditionality
- b) Brokering agreement between the parties on these issues
- c) Analysing the influence of network effects on growth and proposing complementary interventions to enhance growth outcomes.
- d) ...

In order to support, refute or refine each proposition, evidence on each of these sub-theories will be gathered, tested for relevance and rigour and synthesised. Given the quantity and quality of research exploring Link 4 (Proposition 4 above), this systematic review will rely on these - and similar - studies to identify the core features of success, with ‘success’ being defined as infrastructure projects where private participants are able to achieve a stable and acceptable level of return, and significant positive development impacts are achieved.

The bulk of the review will then explore the available and relevant literature to collate and analyse evidence on the extent to which a) DFI engagement leverages additional financial resources into the infrastructure sector, b) provides a demonstration effect thus increasing the subsequent flow of private investment into the infrastructure sectors of developing countries, and c) is instrumental in incorporating core features of design and policy context into infrastructure projects.

Given the major differences between infrastructure sectors, this central part of the review will be organised sectorally, where evidence on points a) to c) will be categorised and synthesised on a sector by sector basis. This approach will enable the review to identify similarities across sectors and sector specific features of success - the developmental objectives of a port will differ significantly from that of a water treatment plant, and the core features of design/policy needed to maximise development benefits in each case will also differ.

The review will primarily address the impact of DFI support in Least Developed Countries (LDCs), but will also draw upon evidence from developing countries more generally where this is relevant to the activities of DFIs in low-income/high-risk countries. This is appropriate, as LDCs face the greatest challenges in attracting private sector investment, and are the principal target countries for DFIs in the infrastructure sector. We will also only review studies from 1990 onwards, reflecting the concentration of DFI activity from this date.

2. Methods used in the review

This systematic review adopts a 'realist' approach. (Pawlson et al, 2005). As such we will seek evidence to support, refute or modify the three propositions given above. The table below provides a template for the steps involved in a realist review from Pawlson et al (2004)

Define the scope of the review	Identify the question	<ul style="list-style-type: none"> • What is the nature and content of the intervention? • What are the circumstances or context for its use? • What are the policy intentions or objectives? • What are the nature and form of its outcomes or impacts? • Undertake exploratory searches to inform discussion with review commissioners/decision makers
	Clarify the purpose(s) of the review	<ul style="list-style-type: none"> • Theory integrity – does the intervention work as predicted? • Theory adjudication – which theories about the intervention seem to fit best? • Comparison – how does the intervention work in different settings, for different groups? • Reality testing – how does the policy intent of the intervention translate into practice?
	Find and articulate the programme theories	<ul style="list-style-type: none"> • Search for relevant theories in the literature • Draw up 'long list' of programme theories • Group, categorise or synthesise theories • Design a theoretically based evaluative framework to be 'populated' with evidence
Search for and appraise the evidence	Search for the evidence	<ul style="list-style-type: none"> • Decide and define purposive sampling strategy • Define search sources, terms and methods to be used (including cited reference searching) • Set the thresholds for stopping searching at saturation
	Appraise the evidence	<ul style="list-style-type: none"> • Test relevance – does the research address the theory under test? • Test rigour – does the research support the conclusions drawn from it by the researchers or the reviewers?
Extract and synthesise findings	Extract the results	<ul style="list-style-type: none"> • Develop data extraction forms or templates • Extract data to populate the evaluative framework with evidence
	Synthesise findings	<ul style="list-style-type: none"> • Compare and contrast findings from different studies • Use findings from studies to address purpose(s) of review • Seek both confirmatory and contradictory findings • Refine programme theories in the light of evidence
Draw conclusions and make recommendations		<ul style="list-style-type: none"> • Involve commissioners/decision makers in review of findings • Draft and test out recommendations and conclusions based on findings with key stakeholders • Disseminate review with findings, conclusions and recommendations

Source: Pawlson et al (2004: vi)

As we can see, considerable emphasis is placed upon defining the scope of the review. The process begins with question identification and clarification, which equates to the formulation of our 'causal chain' at the start of section 1.2. The next stage is to clarify the purpose of the review, where there are four options:

- (i) Testing theory integrity (does the intervention work as expected?)
- (ii) Adjudicating between rival theories
- (iii) Comparing how the same intervention works in different settings
- (iv) Contrasting the intention of policy-makers (or DFIs) with actual outcomes

Clearly there is considerable overlap between these potential approaches to the review. While there is scope to revise this as the review progresses, our initial assumption is that purposes i) and iii) are the most appropriate.

The next stage of the process is to articulate the 'programme theories' which underpin the intervention. The bulk of section 1.2 was devoted to this task.

Having laid the foundations for the review, the remaining aspects of a realist review proceed as follows:

- Evidence search
- Appraisal of evidence (inclusion/exclusion)
- Extraction of results
- Synthesis of findings
- Conclusions and recommendations

2.1. User involvement

2.1.1 Approach and rationale

The question of this review is of significant importance for DFIs, for policy-makers in developing countries and also for private sector investors. We will communicate with our PIDG lead throughout the review process in order to ensure that the review responds to the policy expectations. This is a distinguishing feature of a realist review, and is particularly important at the beginning and end of the process. The final part of the review - conclusions and recommendations - requires the active engagement of PIDG to hone preliminary findings, and make sure that the ways in which the review is communicated are as useful as possible.

To further engage with policy makers and development practitioners, we will be working with our information department at IDS in order to identify appropriate channels through which the review can be communicated in different policy spaces. The results will be disseminated to IDS subscribers (a large heterogeneous group formed by NGOs, Development Agencies, Government units and embassies, academic institutions in the South, university libraries and individual development practitioners).

Regarding academic users, we aim to present the paper at our internal seminars at IDS/University of Sussex, as well as submitting the paper for journal publication.

If possible, the research team would also seek to obtain feedback from some of the PIDG's clients during the review process. The feasibility of this will be discussed with the PIDG during the review.

2.2. Identifying and describing studies

2.2.1 Defining relevant studies: inclusion and exclusion criteria

From a 'realist review' perspective, the primary inclusion criterion is *relevance* to the aspect of programme theory being examined, and rigour, in that the inferences drawn by researchers are valid and based on robust methodological approaches. We will follow this best practice.

As described above, for Proposition/Link 4 we intend to draw evidence on core features of design and policy context primarily from existing studies and reviews, such as those listed in section 1.4. This will precede and inform the formal review process, which focuses on Proposition/Links 1-3.

For Propositions 1 and 3 (financial additionality and design/policy additionality) we expect to be largely reliant upon evidence produced by DFIs themselves in the form of project evaluations produced by their internal but independent evaluation departments (e.g. The World Bank's IEG).

In the light of this, our inclusion/exclusion criteria are based upon the OECD-DAC 'Quality Standards for Development Evaluation' criteria³. We cannot, at this point, state that we will exclude any studies that do not conform to these criteria, which sets a standard of excellence that many evaluations may not meet. Rather, each evaluation that passes the relevance criteria for inclusion will be assessed on the basis of the ten quality criteria below and given a quality score. Each criterion will yield a mark between 1 and 10, such that the maximum quality score possible for any evaluation is 70.

We will then take a decision on where to set the 'quality threshold' for exclusion based on the quantity (and quality composition) of the available materials and in consultation with our PIDG lead.

Rigour in the methods and logic used by the evaluators to draw inferences from results

1. The evaluation report describes and assesses the intervention logic or theory, including underlying assumptions and factors affecting the success of the intervention.
2. The evaluation report describes the context of the development intervention, including:
 - a. policy context, development agency and partner policies, objectives and strategies;
 - b. development context, including socio-economic, political and cultural factors;
 - c. institutional context and stakeholder involvement.And identifies and assesses the influence of the context on the performance of the development intervention.
3. Conclusions are substantiated by findings and analysis, and any assumptions underlying the analysis are made explicit.

Quality of the evaluation process

4. The evaluation process is transparent and independent from programme management and policy-making.
5. The evaluation takes a partnership approach - it is carried out through an inclusive process involving different stakeholders such as government, parliament, civil society, intended beneficiaries and international partners.
6. The evaluation applies the agreed DAC criteria for evaluation development assistance: relevance, efficiency, effectiveness, impact and sustainability.
7. The evaluation report explains any limitations in process, methodology or data, and discusses validity and reliability.

For Proposition 2 (the demonstration effect) a more explorative approach is required. While we do not expect to find significant quantities of evidence we will review what is available in the academic and grey literatures. If this assumption proves to be correct, and given the importance of this issue, a key output of the review will be to recommend means by which better evidence can be obtained.

2.2.2 Identification of potential studies: Search strategy

The systematic review will focus on gathering evidence on Propositions 1 and 3, primarily using electronic searches of key databases, and hand searches of evaluation documents

³ <http://www.oecd.org/dataoecd/55/0/44798177.pdf>

provided by DFIs. In each case the aim will be to identify evidence relevant to the question of additionality (financial, design/policy and demonstration).

Electronic Searches

The review team will benefit from expert advice on search strings and sources from the librarians at the British Library for Development Studies (BLDS), which is housed at IDS.

We will try to maximise coverage by searching in the following databases EconLit; IBSS; Science Citation Index Expanded; Conference Proceedings Citation Index - Science; Arts & Humanities Citation Index; IDEAS; Eldis and Google Scholar.

In all likelihood, however, we expect to be largely reliant on documents supplied by DFIs themselves and electronic searches of key databases for project evaluations: a) JOLIS, b) the World Bank's 'Documents and Reports', and c) the DAC Evaluation Database

Key search terms to be used (using different combinations and with increasing levels of specificity) are:

"Additional(ity)"; "crowd(ing) out"; "demonstration or example"

"Evaluation OR review OR appraisal"; "PPP OR PPI OR Public Private"; "Infrastructure OR water OR road OR energy OR power OR electrification OR sanitation OR telecom OR ports OR Railway OR transportation OR ICT"

"Design"; "policy"; "framework"; "context"; "market based OR privatization OR model OR revenues OR conditions OR regulation".

"Impact or effect(s) OR outcomes"; "Poverty"; "growth"

2.2.3 Screening studies: applying inclusion and exclusion criteria

The inclusion and exclusion criteria will be applied successively to (i) titles and abstracts and (ii) full reports. We will manage this using EPII Reviewer. In the first stage we will exclude those studies that are not relevant to the question under review, or clearly do not meet the criteria detailed above. At the second stage, full reports will be obtained for those studies that appear to meet the criteria or where we have insufficient information to be sure. For those studies we will produce a quality score based on the criteria described, and develop a quality threshold, excluding evaluations that fall below this level.

We expect a significant number of evaluations not to be available online. For those studies we will attempt to obtain them directly from the organisations concerned, but where this does not prove possible in the time available will exclude them due to access problem.

A list of included studies will be sent to relevant specialists and academics in order to identify potential important evaluations not found by the search strategy. We will follow the same inclusion and exclusion criteria to new studies proposed through this channel.

2.2.4 Characterising included studies

Table 1 summarises the characterisation of the included studies in the database. Studies will be analysed according to their relevance to particular Propositions (or the sub-theories which underpin these Propositions).

Table 1 Characterisation of included studies

General Information	Author, publication date, publication type, journal, year, funding agency, author affiliation, abstract.
Form	DFI evaluation; Independent evaluation of DFI project; Quantitative academic study; Qualitative academic study; Synthesis of primary studies
Methodological Approach	Narrative; Quasi-experimental; Quantitative (ex ante) e.g. CGE Quantitative (ex post) e.g. Econometric Analysis
Sector	Power/energy; Water; Transport; Telecommunications
Infrastructure form	BLT; BOT; BOO
Focus	Poverty effects; Growth effects; Poverty and growth effects
Relevance to proposition (primary)	Proposition 1 (financial additionality) Proposition 2 (demonstration effect) Proposition 3 (identification of factors influencing impact of infrastructure on poverty/growth effects)
Sample	Country, region, period of study
Main results	Summary of main findings
Econometric issues	Type of econometric estimation Does the author correct for potential endogeneity? Proxies for infrastructure Dependent variable Impact coefficients and standard errors Coefficients from different specifications R2
CGE issues	Systematic Sensitivity Analysis Type of model - country, Global Main assumptions Policy experiments simulated (growth effect; poverty effect) Sensitivity analysis reported Baseline year
Other	Other relevant information

After the preliminary characterisation has occurred, the process of evidence identification and extraction will begin. To reiterate, the purpose of the review is to gather evidence to support, refute or refine the ‘programme theories’ that underpin DFI activity. To make this possible, we have developed a causal chain with a number of linkages and distilled the theoretical assumptions that underpin these into three Propositions. What we are interested in is the ability of units of evidence (which may be whole studies or just small components of studies) to support, refute or refine these Propositions, particularly with regard to the importance of context.

For each of the three Propositions, we will develop a matrix for each sector, similar to that shown below for Proposition 1.

	<i>Co-invest</i>	<i>Risk mitigation</i>	<i>Finance cost</i>	<i>Finance maturity</i>	<i>Regulatory framework</i>
<i>DFI evaluations</i>					
<i>Govt report</i>					
<i>Quantitative academic</i>					
<i>Qualitative academic</i>					
<i>Synthesis</i>					
<i>NGO</i>					
<i>Similarities/differences</i>					

Units of evidence from the selected studies will then be coded, extracted and used to populate these matrices.

2.2.5 Identifying and describing studies: quality assurance process

Initial searches will be carried out by an RA, who will download references and abstracts to the database. From this database the RA and the two researchers will apply the inclusion and exclusion criteria. From the excluded references we will re-examine 5% at random, in order to guarantee consistency in the decisions.

The RA will then characterise the studies according to Table 1. Before starting with full data extraction, we will conduct a pilot stage where the RA and one of the reviewers will extract data independently from three studies, compare extractions, discuss discrepancies and shape the extraction method and definitions according to this comparison. In order to guarantee some further moderation, the researchers will randomly sample 5% of the studies and ensure that appropriate data is extracted for each study.

2.3. Methods for synthesis

2.3.1 Assessing quality of studies

See above for the general approach to quality assessment. When assessing the quality of quantitative studies, however, the following additional criteria will be applied:

Ex post econometric

Higher quality if:

- Econometric analysis that use time-series or panel over cross-sections
- Studies that proxy infrastructure directly
- Studies that consider lagged effects
- Studies that use instrumental variables to correct for potential endogeneity
- Peer reviewed, including journal publications, working papers, thesis and other documents that explicitly undergo a process of peer review.

Ex ante CGE

Higher quality if:

- CGE studies that use Systematic Sensitivity Analysis (SSA)
- Peer reviewed, including journal publications, working papers, thesis and other documents that explicitly undergo a process of peer review.

2.3.2 Overall approach to and process of synthesis

“Realist review perceives the task of synthesis as one of refining theory... Decision makers generally appreciate that programmes operate through highly elaborate implementation processes, passing through many hands and unfolding over time. Realist review starts with a preliminary understanding of that process, which it seeks to refine by bringing empirical evidence to the various highways and byways of the initial theory map. It thus begins with theory and ends with – hopefully – more refined theory. What is achieved in ‘synthesis’ is a fine-tuning of the understanding of how the intervention works. Synthesis, by these lights refers to making progress in explanation.” (Pawlson et al, 2004: 24)

Within this framework, the form of the synthesis is shaped by its purposes. Above we suggested that these were twofold. First, to test the integrity of the programme theories, and second, to consider the impact of context on the veracity of these theories.

In the first instance, the synthesis aims to discover what have been the weakest points in the implementation of projects where DFIs have engaged, and will collate, analyse and

distil evidence on this from the matrices described above. The aim, however, is not just to identify these weak points, but to provide as complete an explanation for why they are weak points.

In the second case, the assumption is that interventions will work (or work better) from a developmental perspective more in some settings than in others. To assess this, the matrices for each of the three Propositions will be duplicated for a range of contexts, such as:

- Geography
- Income
- Sector
- Infrastructure form (e.g. Greenfield)

Analysis of the similarities and differences between these 'sub-syntheses' (in relation to what works and what does not) will enable the role of context to be incorporated into the final synthesis.

We do not assume a hierarchy of evidence, with quantitative studies automatically receiving a higher weight. All studies are partial and flawed to some extent. Ideally the process of synthesis will allow the strengths of some approaches to compensate for the weakness of others.

In the remaining sections, we give more details on our approach to quantitative synthesis.

2.3.2.1 Selection of studies for synthesis

All studies to be included

2.3.2.2 Selection of outcome data for synthesis

Outcome data will be selected and extracted according to Table 1. Qualitative studies data will be introduced in EPII reviewer, while quantitative studies data will be inputted in Excel and synthesised in STATA

2.3.2.3 Process used to combine/ synthesise data

For quantitative studies, we will use meta-analysis and meta-regression if the number of studies is large enough. We expect a small but significant number of studies regarding the impact of infrastructure projects on growth and poverty that potentially can be summarised using meta-analysis. We will test for publication bias using funnel plots and meta-regression, although we expect the number of studies published in journals to be very small.

We will also look at ex ante CGE studies, although ex post econometric evidence is preferred. For CGE studies we will look at growth and poverty outcomes, but looking at how the policy experiment is formulated and more importantly, its main assumptions.

The results of these quantitative studies will then be combined with other evidence in the matrices described above in accordance with their relevance for particular Propositions. The initial coding (i.e. characterisation) of studies will form the basis of the sector-specific matrices to be constructed. For example, when considering the factors that determine financial additionality (e.g. risk mitigation or financing terms), it may be that certain mechanisms are more important in some sectors than others.

The final synthesis will bring together what can be learned from the literature on the primary question under review and the role of contextual factors in influencing the results.

2.4. Deriving conclusions and implications

Using a realist review approach, the process of deriving conclusions and recommendations is a central part of the review itself, rather than simply its end point. We will work closely with PIDG during this stage of the review so as to provide the most useful (and usable) results possible.

It is therefore not possible to give details at this stage as to what this will involve in any detail. We shall give the last word on this issue to Pawlson et al (2005: 27-8)

“The analysis and conclusions section of realist review is not a final judgement on ‘what works’ or ‘size of effect’. Rather, it takes the form of revisions to the initial understanding of how an intervention was thought to work. Should close assignation between commissioners and researchers continue at this point? We advocate a precise division of labour. Realist review has the traditional role of providing an independent and dispassionate assessment of how and how well an intervention has worked as viewed through the existing research. Conclusions and recommendations have to reflect this objective and this standpoint. However, the end product is a more refined theory rather than a final theory...The progress made in a review is not one from ‘ignorance’ to ‘answer’ but from ‘some knowledge’ to ‘some more knowledge’. Accordingly, there is room for debate about the precise scope of the policy implications of realist review. Extraordinary care must be taken at the point where findings are transformed into recommendations, and close involvement with decision makers is once again required in thrashing this out.”

References

- Bellier, M. & Zhou, Y.M. (2003) Private Participation in Infrastructure in China: Issues and Recommendations for the Road, Water, and Power Sectors: World Bank, Washington D.C.
- Brook, Penelope J. (ed.) & Irwin, Timothy C. (2003) Infrastructure for Poor People: Public Policy for Private Provision. Washington, DC: World Bank Publications, March.
- Budds, J. & McGranahan, G. (2003) Are the debates on water privatisation missing the point? Experiences from Africa, Asia and Latin America, *Environment and Urbanisation* 15(2), 87-113
- Clark Annez, P. (2006) Urban infrastructure finance from private operators: what have we learned from recent experience? *World Bank Policy Research Working Paper 4045*
- DFID (2002) Making Connections: Infrastructure for Poverty Reduction. London
- DFID (2007) Literature Review of Private Sector Infrastructure Investment, London
- DFID (2008) Desk Review of Private Sector Infrastructure Investment Facilities, London
- Estache, A. (2006) Infrastructure: A survey of recent and upcoming issues. World Bank
- Estache, A., Gomez-Lobo, A. & Leipziger, D. (2001) Utilities Privatization and the Poor: Lessons and Evidence from Latin America. *World Development* 29(7) 1179-1198
- Farlam, P. (2005) Working Together: Assessing Public-Private Partnerships in Africa: The South African Institute of International Affairs
- Foster, V. & Briceño-García, C. (Eds.) (2010) Africa's Infrastructure: A Time for Transformation. Washington D.C.: World Bank
- Gilbert, A. (2007) 'Water for all: How to combine public management with commercial practice for the benefit of the poor', *Urban Studies*, Vol. 44, Issue 8, July
- Gray, P. (2001) Private participation in infrastructure: a review of the evidence: World Bank, Washington D.C.
- Harris, C., Hodges, J. Schur, M. & Shukla, P. (2003) A Review of Cancelled Private Projects, Public Policy for the Private Sector, Note No. 252, World Bank: Washington, D.C.
- International Finance Corporation (IFC) (2010) Annual Report. Washington D.C.: IFC
- International Finance Corporation (IFC) (2008) Annual Report. Washington D.C.: IFC
- International Finance Corporation (IFC) (2006) Annual Report. Washington D.C.: IFC
- Jahan, S. & McCleery, R. (2005) *Making Infrastructure Work for the Poor: Synthesis Report of Four Country Studies - Bangladesh, Senegal, Thailand and Zambia*. New York: UNDP
- Kirkpatrick, C., Parker, D., Zhang, Y.F., (2006). State versus private sector provision of water services in Africa: an empirical analysis. *The World Bank Economic Review* 20 (1), 143-163.
- Laffont, J.J. and Meleu, M. (1999) 'A positive theory of privatisation for sub-Saharan Africa', *Journal of African Economies*, 8: 30-67

- Marin, P. (2009). Public-Private Partnerships for urban water utilities. A Review of Experiences in Developing Countries. World Bank PPIAF paper. 2009 Trends and policy options No. 8
- Nickson, R.A. and Franceys, R. (2003) *Tapping the Market: The challenge of institutional reform in the urban water supply sector*, Basingstoke: Palgrave
- Nickson, RA and Vargas, C. (2002) 'The limitations of water regulation: the Cochabamba concession in Bolivia', *Bulletin of Latin American research*, Vol. 21 No. 1 pp 128-149
- OECD (2006) Promoting Pro-Poor Growth: Infrastructure. OECD
- Panggabean, A. (2005) Using market mechanisms to expand access to basic services in Asia pacific: public-private partnerships for poverty reduction, paper presented at Joint Workshop on "Making Markets Work Better for the Poor", Manila, 2005
- Pawson R, Greenhalgh T, Harvey G, Walshe K. (2005) 'Realist review-a new method of systematic review designed for complex policy interventions'. *Journal of Health Services Research & Policy*. 2005 Jul;10 Suppl 1:21-34.
- Pawson R, Greenhalgh T, Harvey G, Walshe K. (2004) Realist synthesis: an introduction, ESRC Research Methods Programme, University of Manchester, *RMP Methods Paper 2/2004*
- Plummer, J. (2002a) Inclusive partnerships: Redefining public-private partnerships to focus delivery of water and sanitation services on the poor, Paper for the DFID Governance Advisers' Retreat, Improving Service Delivery in Developing Countries, Eynsham Hall, Oxfordshire, 24-30 November
- Private Infrastructure Development Group (PIDG) (2010) Impacts and Achievements. Available at: <http://www.pidg.org/sitePages.asp?step=4&navID=15&contentID=44> [Accessed 21.10/2010]
- Prud'Homme, R. (2005) Infrastructure and Development, in: Bourginon, F. & Pleskovic, B (Eds.) (2005) *Lessons of Experience: Annual World Bank Conference on Development Economics 2005*. Washington D.C.: World Bank
- Straub, S. (2008a) Infrastructure and Development: A Critical Appraisal of the Macro Level Literature - World Bank Policy Research Working Paper 4590. Washington D.C.: World Bank
- Straub, S. (2008b) Infrastructure and Growth in Developing Countries: Recent Advances and Research Challenges - World Bank Policy Research Working Paper 4460. Washington D.C.: World Bank
- World Bank (2008) Safe, Clean, and Affordable... Transport for Development: The World Bank Group's Transport Business Strategy 2008-2012. Washington D.C.: World Bank
- World Bank and PPIAF (2010a) Private Participation in Infrastructure Database: Regional Snapshots. Available at: http://ppi.worldbank.org/explore/ppi_exploreRegion.aspx?regionID=2. [Accessed 20.10.2010]
- World Bank and PPIAF (2010b) Private Participation in Infrastructure Database: Glossary. Available at: http://ppi.worldbank.org/resources/ppi_glossary.aspx#subtypes [Accessed 21.10.2010]
- Zhang, Y., Parker, D., & Kirkpatrick, C. (2008). Electricity sector reform in developing countries: an econometric assessment of the effects of privatization, competition and regulation. *Journal of Regulatory Economics*, 33 (2):159-178