ABSTRACT

Title of Document: THE DEVELOPMENT EFFECTIVENESS OF INTERNATIONAL WATER AND SANITATION INFRASTRUCTURE PROJECTS: DEFINING "QUALITY AT ENTRY" OF WORLD BANK PROJECTS.

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Over the past 15 years, the number of international development projects aimed at combating global poverty has increased significantly. Within the water and sanitation sector however, and despite heightened global attention and an increase in the number of infrastructure projects, over 800 million people remain without access to appropriate water and sanitation facilities.

The majority of donor aid in the water supply and sanitation sector of developing countries is delivered through standalone projects. The quality of projects at the design and preparation stage is a critical determinant in meeting project objectives. The quality of projects at early stage of design, widely referred to as quality at entry (QAE), however remains unquantified and largely subjective.

This research argues that water and sanitation infrastructure projects in the developing world tend to be designed in the absence of a specific set of actions that ensure high QAE, and consequently have relatively high rates of failure. This research analyzes 32 cases of water and sanitation infrastructure projects implemented with partial or full World Bank financing globally from 2000 – 2010. The research uses categorical data analysis, regression analysis and descriptive analysis to examine perceived linkages between project QAE and project development outcomes and determines which upstream project design factors are likely to impact the QAE of international development projects in water supply and sanitation.

The research proposes a number of specific design stage actions that can be incorporated into the formal review process of water and sanitation projects financed by the World Bank or other international development partners.

THE DEVELOPMENT EFFECTIVENESS OF INTERNATIONAL WATER AND SANITATION INFRASTRUCTURE PROJECTS: DEFINING "QUALITY AT ENTRY" OF WORLD BANK PROJECTS

By

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DEDICATION

This work is dedicated to my mother

Professor Carol Ann Goff – Kfouri

Thanks, Mom

and

to my children,

Sophia & Alexander

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LIST OF ACRONYMS

ADB	Asian Development Bank
AFR	Africa
AfDB	African Development Bank
AIIB	Asian Infrastructure Investment Bank
CDD	Community Driven Development
CLTS	Community-led total sanitation
CSF	Critical Success Factor
DM	Decision Meeting
DO	Development Outcome
EAP	East Asia Pacific
EBRD	European Bank for Reconstruction and Development
ECA	Europe Central Asia
EIA	Environment Impact Assessment
EIB	European Investment Bank
ESMP	Environment and Social Management Plan
GNP	Gross National Product
HS	Highly Satisfactory
IBRD	International Bank for Reconstruction and Development
ICR	Implementation Completion Report
ICSID	International Center for the Settlement of International Disputes
ID	International Development

IDA	International Development Associations
IEG	Independent Evaluation Group
IFC	International Finance Corporation
IO	International Organization
ISR	Implementation Status Report
LAC	Latin America Caribbean
MDG	Millennium Development Goals
M&E	Monitoring and Evaluation
MENA	Middle East and North Africa
MIGA	Multilateral Investment Guarantee Agency
MS	Moderately Satisfactory
MU	Moderately Unsatisfactory
NGO	Non-Government Organization
O&M	Operation and Maintenance
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
OKR	Open Knowledge Repository
OLR	Ordered Logistics Regression
OP	Operational Policy
PAP	Project Affected People
PCN	Project Concept Note
PDIA	Problem Driven Iterative Adaptation
PDO	Project Development Outcome

PMBOK	Project Management Body of Knowledge
PMI	Project Management Institute
QAE	Quality at Entry
QER	Quality at Entry Review
S	Satisfactory
SAR	South Asia Region
SDG	Sustainable Development Goals
SIL	Sector Investment Loan
SME	Subject Matter Experts
TTL	Task Team Leader
U	Unsatisfactory
UN	United Nations
USAID	United States Agency for International Development
WSS	Water supply and Sanitation Sector
WB	World Bank
WBG	World Bank Group

Chapter 1 - Introduction

Three billion people, i.e. nearly half of the world's population, are poor (UN, 2016). Of these, over 1 billion live in extreme poverty and live on less than $1.25 per day (World Bank, 2016). Over 705 million people do not have access to adequate sources of drinking water. Diarrhea, caused by poor water quality, sanitation and hygiene thus kills over 2,300 people every day, a large proportion of whom are children under the age of five (UNICEF, 2016).

The roots and causes of global poverty, which manifests itself in the statistics above, have been studied across the history of human civilization[1]. War, weak governance, natural disasters and poor economic policy are now commonly understood to be principal factors that exacerbate global poverty. Notwithstanding, while poverty has been denounced for centuries, the post-World War II period is largely acknowledged to be the "era of development" (A. Thomas, 2000), the period during which the "science" of poverty reduction was established and the term "international development" (ID) became pervasive.

ID involves the search for sustainable *solutions* to global poverty across national governments, international organizations (IO), non-government organizations (NGO), charities, foundations and/or individuals. While ID is related to humanitarian aid, it specifically seeks to implement long-term technical solutions to development problems by

[1] Early quotes by Aristotle and Confucius on global poverty include "Poverty is the parent of revolution and crime" and "In a country well governed, poverty is something to be ashamed of. In a country badly governed, wealth is something to be ashamed of" respectively – both confirming the linkages between poverty, conflict and weak governance.

creating an enabling environment for long term sustainable development (Bradshaw, 2007; Collier & Dollar, 2002; Hulme & Shepherd, 2003).

The most common form of ID assistance to countries is through standalone ID projects (Diallo & Thuillier, 2005; Ika, Diallo, & Thuillier, 2010, 2012a). The ways in which ID projects are designed and implemented are thus critical to the overall effectiveness of a development program. In particular, academic literature is comprehensive in its confirmation of the importance of high "quality at entry" (QAE) of ID projects with QAE referencing technical rigor, client engagement, environmental and social sustainability. Despite the perceived importance of QAE however, a systematic, replicable and measurable set of predictive metrics to define QAE of ID projects does not currently exist.

This research argues that water and sanitation infrastructure projects in the developing world tend to be designed in the absence of a specific set of actions that ensure high QAE, and consequently have relatively high rates of failure.

The research perceives the incomplete delivery of Millennium Development Goals (MDG), coupled with the increasing trend of unsatisfactory project outcome ratings in the water and sanitation sector of the developing world generally, as key indicators of a recurring and systemic problem in the way that water and sanitation infrastructure ID projects are designed.

In light of the vast amounts of financing in the water and sanitation sector of developing countries by individual, bilateral and multi-lateral donors, and the renewed emphasis on improving access to sustainable water and sanitation services through the

2015 Sustainable Development Goals (SDG), the identification of specific upstream actions for the World Bank to enhance project QAE is significant and timely.

1.1 International Development Projects: Official Development Assistance and the World Bank

Developing countries around the world receive funding from donor countries, international aid agencies and development partners to finance projects, programs and reform processes aimed at strengthening economic growth and reducing poverty. When aid is from the public sector, it is known as Official Development Assistance (ODA).

As of the early 1970's, most donor countries pledged to achieve a yearly target of 0.7 percent of Gross National Product (GNP) as ODA (OECD, 2016). While only five countries—Denmark, Luxembourg, Norway, the United Kingdom and Sweden — achieved or exceeded that goal in 2014, ODA contributions from donor countries has risen steadily over the past 30 years (Figures 1 and 2). In 2014, net ODA assistance globally reached 137 billion USD, i.e. approximately 2% more than in 2013 (OECD, 2016)

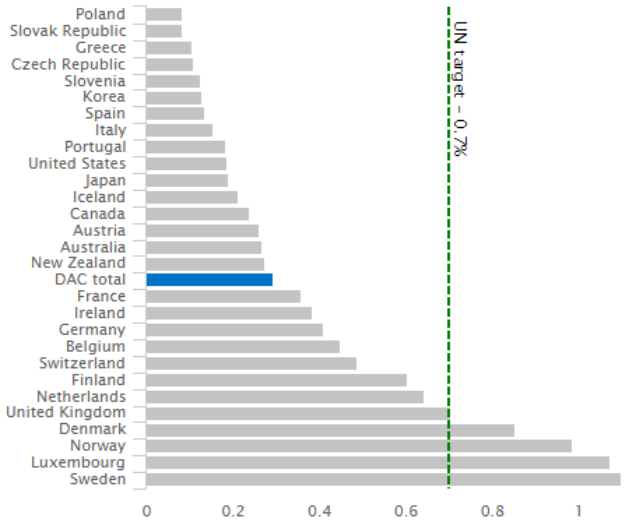


Figure 1: ODA as percent of 2014 GDP (OECD, 2016)

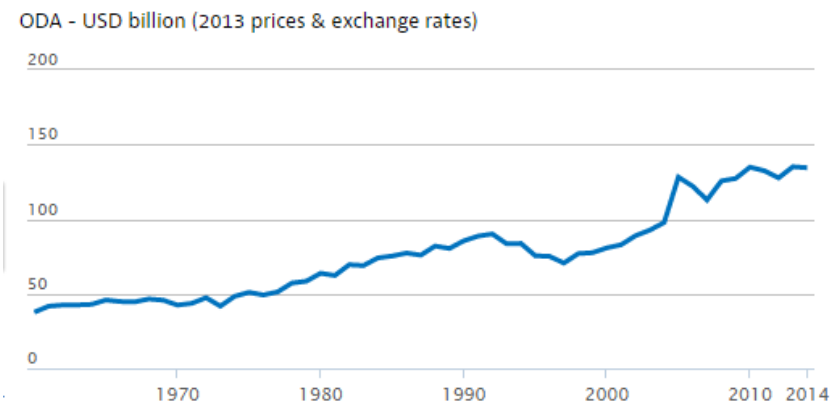


Figure 2: Historical ODA Trends (OECD, 2016)

Donor countries can contribute directly to a recipient country or can fund a multilateral donor agency, such as the World Bank, which in turn, finances a country-specific program of development assistance. In 2014, the World Bank disbursed a total of 28 billion USD in concessional and non-concessional loans and grants, and remains the world's largest multilateral donor agency.

The World Bank is an international financial institution that provides loans, grants and policy advice to developing countries with the twin goals of "reducing poverty and boosting prosperity" (World Bank, 2015). Created in July 1944 at the Bretton Woods Conference in New Hampshire, the World Bank Group (WBG) includes the World Bank (also called the International Bank for Reconstruction and Development - IBRD), the International Development Association (IDA), the International Finance Corporation (IFC), the International Centre for Settlement of Investment Disputes (ICSID) and the Multilateral Investment Guarantee Agency (MIGA).

A large majority of World Bank loans and grants are delivered through standalone projects (Ahsan & Gunawan, 2010a; Bakker, 2013; Globerson & Zwikael, 2002; Ika, Diallo, & Thuillier, 2011; Khagram, Thomas, Lucero, & Mathes, 2009; Love, Edwards, & Irani, 2012; D. A. Rondinelli, 1976). Between 2015 and 2016 alone for example, the World Bank financed 1,660 projects totaling 185 billion USD across 143 countries. Of these, 171 were water and sanitation projects across 67 countries. In effect, since the late 1990's, the water sector has received priority attention from the World Bank Group and country clients, in response to preparation for the launch and implementation of the Millennium Development Goals.

1.2 The Millennium Development Goals

In 2000, the United Nations (UN) and countries worldwide adopted the Millennium Development Goals (MDG's): eight time-bound goals and 21 targets aimed at reducing global poverty linked to hunger, education, child mortality, maternal health, the environment, gender, global partnerships, HIV/AIDS and other diseases (UN, 2000).

Among the MDG goals was a specific objective to "*halve by 2015, the proportion of populations without sustainable access to safe drinking water and basic sanitation*" (UN, 2000). The inclusion of MDG sub-targets on water and sanitation led to a significant increase in aid funding generally and to a substantial increase in the number of global water and sanitation infrastructure ID projects. Between 2000 – 2015, i.e. the period largely recognized as the era of the implementation of the MDG's (Hailu; Degol; and Raquel Tsukada, 2012; Harttgen & Klasen, 2013; Onda, Lobuglio, & Bartram, 2012a; United Nations, 2008), World Bank investments in water, sanitation, agriculture and irrigation infrastructure increased by USD 21 billion (Figure 3). Today, an additional USD 5.9 billion

of water and sanitation projects are currently under preparation (World Bank, 2014). Standalone projects are the largest conduit of development financing worldwide (Chen & Dahlman, 2005; Gasik, 2011; Harrison, 2002; Ika et al., 2012a; Kilby, 2000a; K King, 2004; Mehta, 2001; World Bank, 2007).

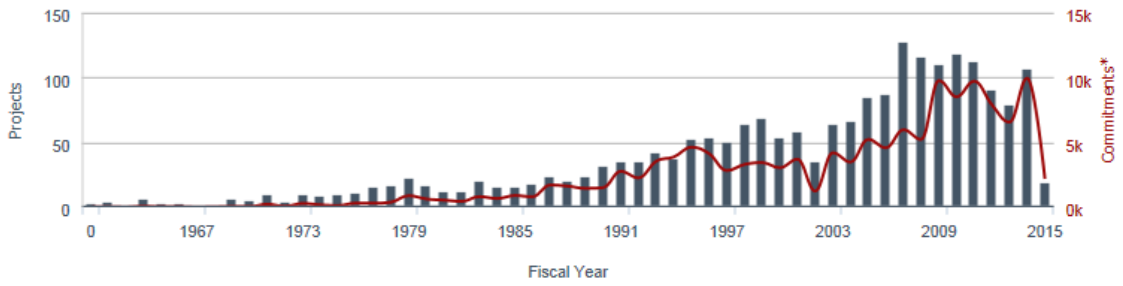


Figure 3: Historical overview of the increase in number of water-related projects and financial commitments made by the World Bank since its establishment in 1944.

1.3 The Effectiveness of International Development Projects: The case of the MDG's and Independent Evaluation Group Project Outcome Ratings

ID projects, including those in the water and sanitation sector, are however largely challenged by many factors including the large number of national stakeholders involved, the slow rate of policy reform and the often low economic returns involved with poverty alleviation projects. (P. Crawford & Bryce, 2003; Diallo & Thuillier, 2005; Flyvbjerg, 2007). In light of the challenges inherent to the design and implementation of ID projects, "development effectiveness', which studies the means by which aid is distributed and administered as well as the impact that the aid produces (Goldin, Rogers, & Stern, 2002), has become an important area of study in the ID sector.

As of the late 1990's and in order to ensure that recommendations for improved development effectiveness were being applied, the World Bank and other development agencies emphasized the effective capture and quantification of development impact of ID

projects, through project "outputs" and/or "outcomes". "Results Frameworks" (Figure 4) were incorporated into investment projects, projects were evaluated more rigorously and emphasis was placed on capturing and integrating lessons learned into future operations. (de Carvalho, Patah, & de Souza Bido, 2015; Deli, Patricia, Aart, 2014; Dreher, Sturm, & Vreeland, 2009; Gore, 2000; Ika, Diallo, & Thuillier, 2012b; Kamara, Anumba, Carrillo, & Bouchlaghem, 2003; Radelet, 2006; D. A. Rondinelli, 1976; St. Clair, 2006; A. Thomas, 1996).

In effect, the adoption of the MDG's by the global community is considered the ID sector's most high profile example of assigning specific global development effectiveness targets and achieving tangible impact both through project outcomes and outputs (Birdsall & Londoño, 1997; Broad & Cavanagh, 2006; Denizer, Kaufmann, & Kraay, 2013; D. A. Rondinelli, 1976; D. a. Rondinelli, 1983).

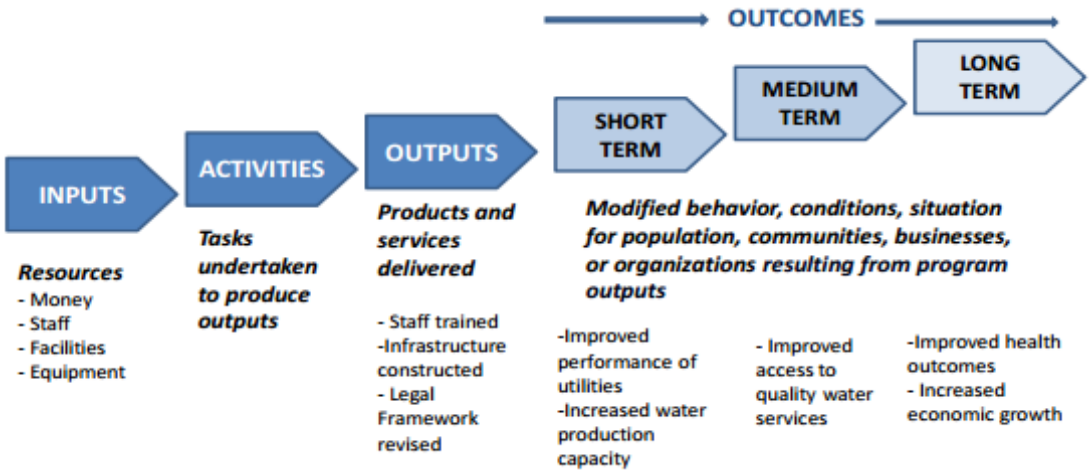


Figure 4: Example of a Results Chain and Framework to capture project outputs and outcomes (World Bank, 2013)

The MDG's, which are superseded by the 2015 Sustainable Development Goals[2] (SDG), have however had mixed results and over 750 million and 1 billion people today remain without access to an improved water source or sanitation source respectively (UN, 2015). Within the water sector specifically, while 2.1 billion people gained access to improved drinking water sources, water quality and sustainability of access to improved water remain significant challenges globally (Onda, Lobuglio, & Bartram, 2012b). In the sanitation sector, country-level analysis of MDG results shows that over 30% of developing countries are estimated to be "seriously off target" from the 2015 MDG's in improved sanitation (Figure 5). Accounting for countries that are "moderately off target" and those with "insufficient progress", approximately 60% of countries have failed to achieve improved sanitation targets (UN, 2015).

[2] Following extensive global consultations and a multi-year international set of negotiations, the UN announced the SDGs in September 2015. These include Target #6 to "*ensure availability and sustainable management of water and sanitation for all*." SDG6 expands the MDG focus on drinking water and sanitation to cover the entire water cycle, including the management of water, wastewater and ecosystem resources.

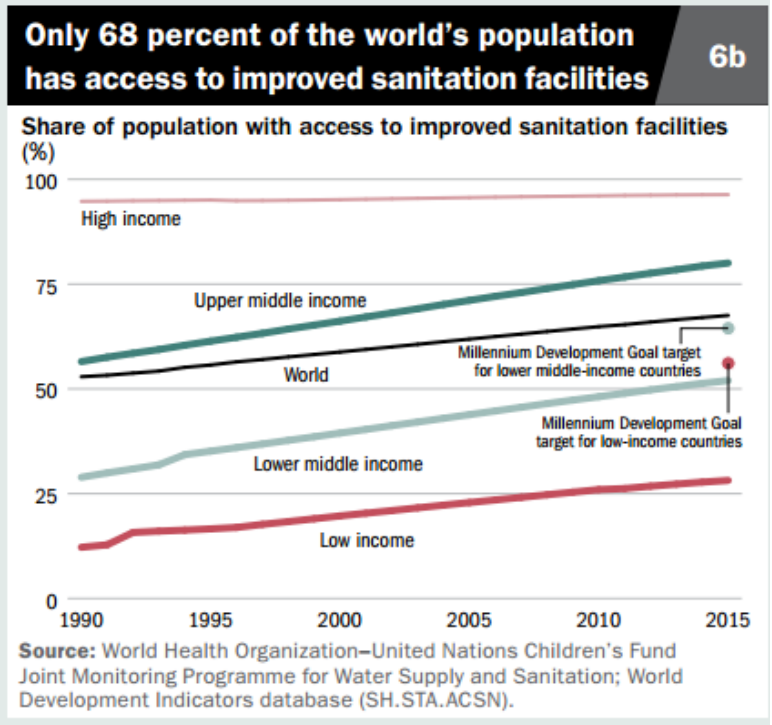
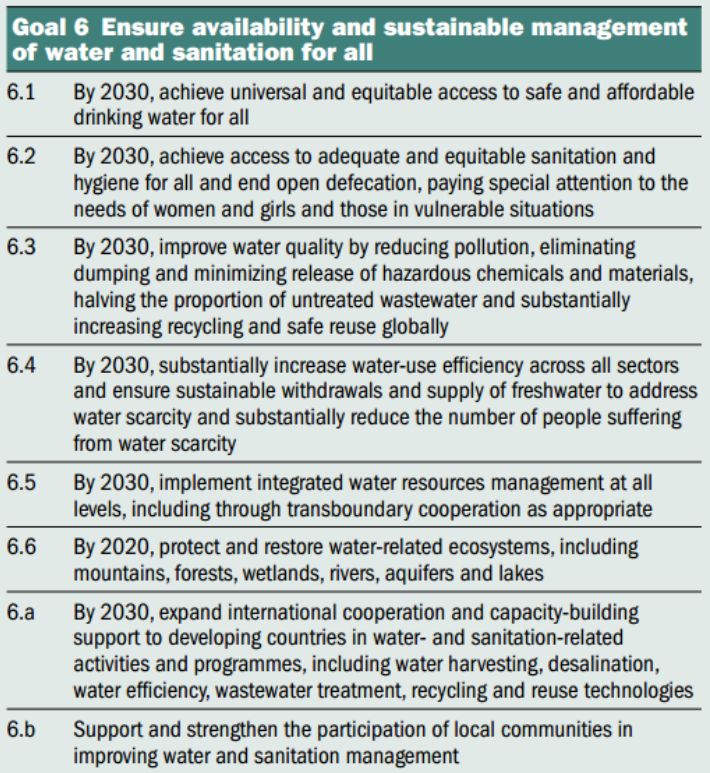


Figure 5: Progress towards achieving sanitation MDG's (World Bank, 2016)

Poor sanitation has significant negative impacts on the daily lives of the poor around the world. As shown in Table 1, estimates of water and sanitation related mortality fluctuates from approximately 3 million to over 12 million, depending on the source (Gleick, 2002). Achieving the objectives of water and sanitation projects in the developing world, through SDG Target6 to "ensure availability and sustainable management of water and sanitation for all" (Figure 6) is thus of crucial importance to developing countries and their individual project beneficiaries.

Table 1: Various estimates of global water related mortality (Gleick, 2002)

Source	Deaths per Year
World Health Organization 2000	2.2 million (diarrheal diseases only)
World Health Organization 1999	2.3 million
WaterDome 2002	more than 3 million
World Health Organization 1992	4 million
World Health Organization 1996	more than 5 million
Hunter et al. 2000	more than 5 million
UNDP 2002	more than 5 million
Johannesburg Summit 2002	more than 5 million
Hinrichsen et.al, 1997	12 million



Goal 6 Ensure availability and sustainable management of water and sanitation for all	
6.1	By 2030, achieve universal and equitable access to safe and affordable drinking water for all
6.2	By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations
6.3	By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally
6.4	By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity
6.5	By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate
6.6	By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes
6.a	By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies
6.b	Support and strengthen the participation of local communities in improving water and sanitation management

Figure 6: The Sustainable Development Goal 6 on Water and Sanitation (UN, 2015)

A review of literature concerning key reasons why MDG's on water and sanitation did not reach anticipated targets, repeatedly lists poor "quality-at-entry" (QAE) standards for the design and implementation of ID projects. (Fukuda-Parr, Greenstein, & Stewart, 2013; G Hutton, 2013; Guy Hutton & Bartram, 2008; Islam & Yoshida, 2009; Lantagne, Quick,

& Mintz, 2006; Onda et al., 2012a; Unicef, 2005). Widely cited contributing factors to the status of MDG's include:

- Insufficient mobilization of investment and operation/maintenance (O&M) capital (Guy Hutton & Bartram, 2008);
- Unsustainable cost recovery models at entry; (World Bank, 2015);
- Weak sustainability arrangements (World Bank, 2015);
- Upstream need for behavior change and inadequate awareness raising budget and monitoring incorporated into design; (World Bank, 2015);
- Inadequate stakeholder mapping and significant institutional capacity limitations (UN-Water, 2009); and
- Insufficient strengthening of synergies with other sectors (Cooper, 1999; Hailu; Degol; and Raquel Tsukada, 2012; Unicef, 2005).

Despite the documented role of high quality upstream project preparation in the overall success of water and sanitation projects as described above, quality at entry (QAE) remains an equivocal term that generally connotes attention to detail, beneficiary participation and emphasis on long-term sustainability.

This research thus proposes that the incomplete delivery of the MDG's is one manifestation of unsatisfactory project QAE that could be rectified through the identification of specific early-stage actions that are documented to significantly influence project outcomes.

1.4 The World Bank Project Cycle and the Quality at Entry of Development Projects

The design and implementation of ID projects, including those financed by the World Bank, are typically undertaken through a series of steps defined as the "Project Cycle"

(Figure 7). The Project Cycle includes the phases of Identification, Preparation, Appraisal, Negotiation, Implementation and Evaluation.

During Identification and Preparation, World Bank projects are reviewed internally in a series of formal meetings namely: (i) the Project Concept review (PCN); (ii) the Decision meeting and (iii) Board of Directors review. A fourth review, the "Quality at Entry" (QER) review is typically conducted as a measure of good practice but is not a formal requirement[3] for internal reviews and clearances (World Bank, 2015).

The World Bank defines QAE as the need to examine: "(a) the relevance of project design (activities, components, policy areas) to the project development objectives; and (b) the quality of the results framework." (World Bank, 2014). Similarly, the European Bank for Reconstruction and Development (EBRD) defines QAE as: "a comprehensive check on all aspects of design integrity and alignment with polices and strategies" (EBRD, 2012). The African Development Bank (AfDB) further defines QAE as "the quality of a project at the time it enters the portfolio – that is at the time of Board approval, but before implementation begins" (AfDB, 2013).

At the QER meeting, project preparation is advanced, major components and activities have been identified, implementation arrangements have been outlined and preliminary budgets are available. A QER meeting typically addresses the following issues: (i) project design and choice of lending instrument; (ii) technical aspects of the project and results monitoring and evaluation; (iii) implementation requirements and institutional capacity;

[3] The design and application of QERs have evolved over time at the World Bank from a detailed technical review of large and/or complex projects to a "broad-based instrument aimed at more extensive but structured discussions/inputs into the design and implementation of investment projects". The QER has been welcomed by managers and task teams as a "safe space" outside the standard mandatory processing steps and decision meetings for detailed exchange of ideas (World Bank, 2015).

(iv) financial, procurement and safeguards requirements; (v) resource requirements; and (vi) stated risks and proposed mitigation measures (World Bank, 2015).

In 2009, the World Bank launched a "Readiness Review" (RR) tool, with the objective of supporting the QAE and results orientation of country strategies and operations. The RR focuses on generic QAE aspects, thereby complementing technical peer reviews, and provides operations Task Managers with a structured set of comments geared towards improving the conceptual quality and design of Project Appraisal Documents (PAD) and Project Concept Notes (PCN) prior to Board submission for Board review. An example of an Implementation Readiness Tool used at each of the various stages of the project preparation cycle is provided in the Appendices.

The Evaluation phase of World Bank projects is undertaken by the project team and subsequently by the World Bank's Independent Evaluation Group (IEG).

IEG is an independent unit that evaluates ongoing projects and programs, with the goal of assessing development effectiveness, capturing lessons learned and improving the overall quality of development outcomes across the World Bank portfolio (World Bank, 2016). IEG issues an Implementation Completion Report (ICR) for each project financed in whole or in part by the World Bank.

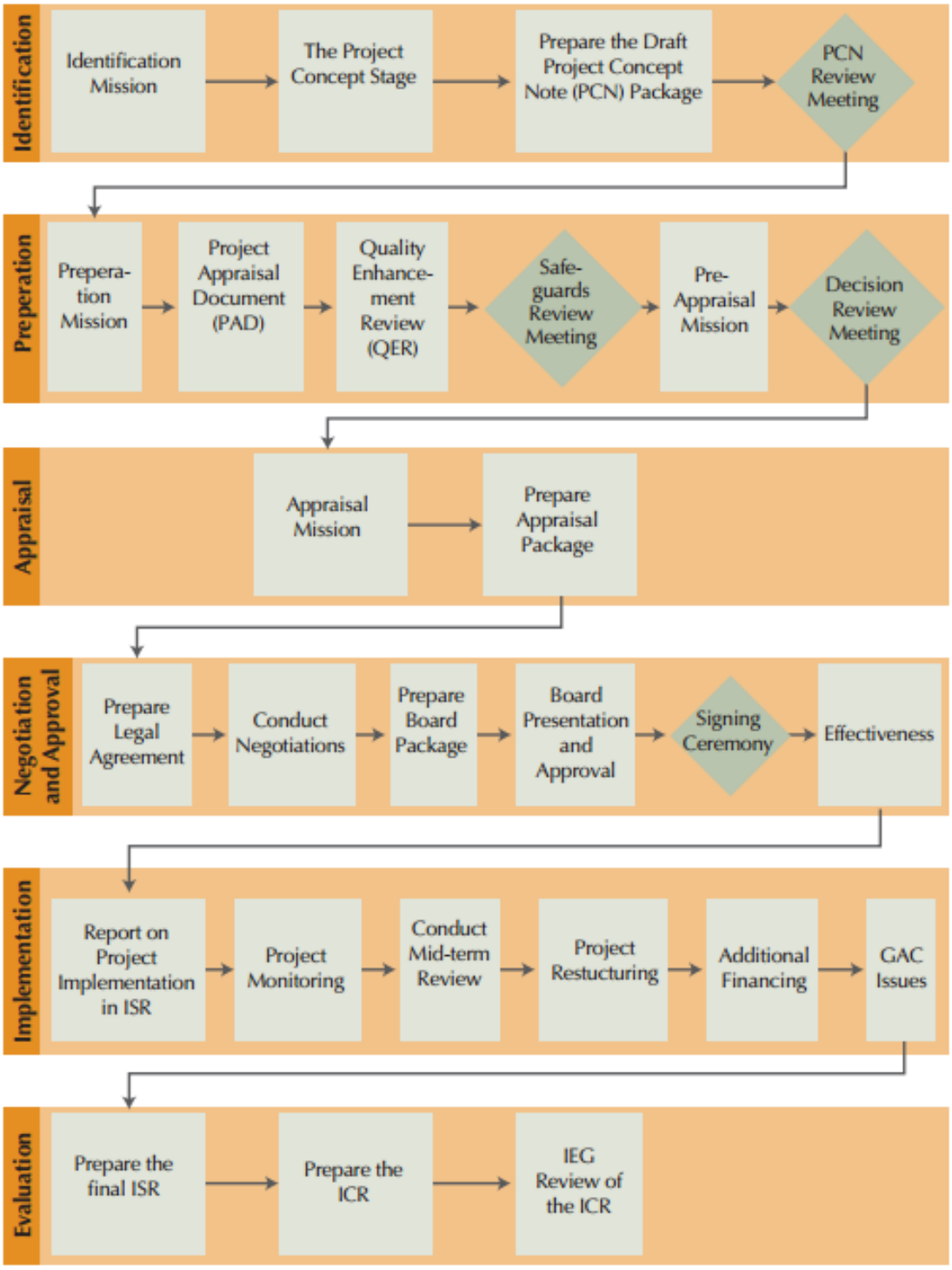


Figure 7: World Bank Project Cycle (World Bank, 2014)

Using a six-point scale ranging from “highly unsatisfactory” to “highly satisfactory”, the ICR rates: (i) overall project development outcomes (DO); (ii) risk to development objectives; (iii) quality of project supervision by the World Bank Task Team; and (iv) quality of project supervision by the Borrower and Implementing Agency respectively. These widely used terms are defined in Table 2. The Development Outcome (DO) is a critical indicator in any IEG report as it determines the final rating of project success.

Table 2: IEG Definitions of Key ICR Project Indicators including IEG Project Development Outcome* (IEG, 2016)

Project Development Outcome (DO)	"The extent to which the project’s major relevant objectives were achieved, or are expected to be achieved, efficiently. The rating has three dimensions: relevance, efficacy, and efficiency. Relevance includes relevance of objectives and relevance of design. Relevance of objectives is the extent to which the project’s objectives are consistent with the country’s current development priorities and with current World Bank country and sectoral assistance strategies and corporate goals. Relevance of design is the extent to which the project’s design is consistent with the stated objectives. Efficacy is the extent to which the project’s objectives were achieved, or are expected to be achieved, taking into account their relative importance. Efficiency is the extent to which the project achieved, or is expected to achieve, a return higher than the opportunity cost of capital and benefits at least cost compared to alternatives."
Risk to Project Development Outcome (PDO)	"The risk, at the time of evaluation, that development outcome will not be maintained or realized".
Bank Performance	"The extent to which services provided by the Bank ensured quality at entry of the operation and supported effective implementation through appropriate supervision. The rating has two dimensions: quality at entry and quality of supervision."
Borrower Performance	"The extent to which the borrower ensured quality of preparation and implementation toward the achievement of development outcomes. The rating assesses both government performance and implementing agency performance."

*The Development Outcome (DO) of projects, as rated by IEG, is a critical indicator in this research as it is the independent variable in the regression analysis that examines relationship between DO and the various Quality at Entry indicators (the dependent variables described in Chapter 3).

Since 1985 however, the number of projects ranked "Highly Satisfactory" (HS) has drastically decreased (from 1,698 to 888) and the number of projects that are ranked "Moderately Satisfactory" (MS) has increased several fold (Figure 8). Similarly, within the water sector, projects with a "Satisfactory" outcome average around 72% with likely sustainability and development impact averaging as low as 59% each (Figure 9).

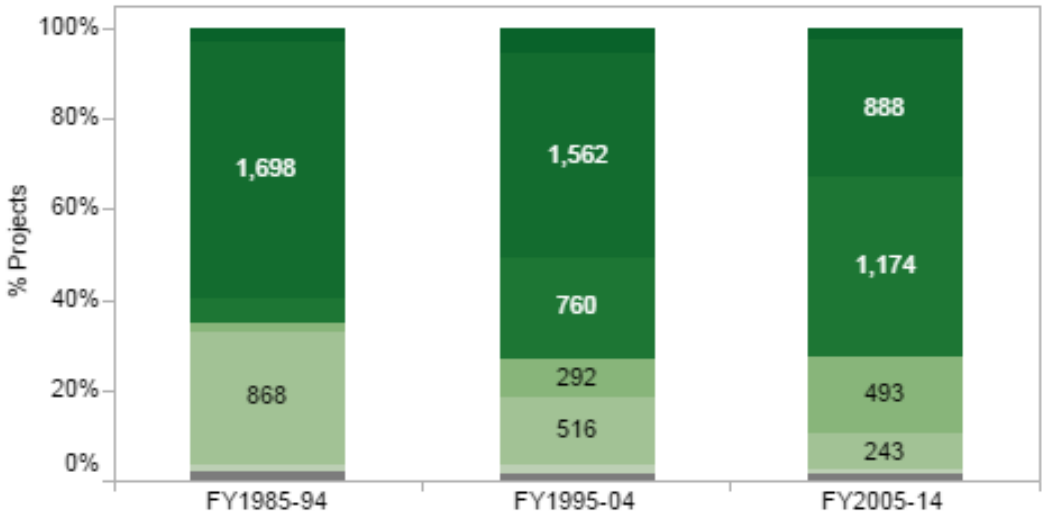


Figure 8: IEG World Bank Project Performance Ratings (Highly Satisfactory in dark green, through Highly Unsatisfactory in light green) from Fiscal Year (FY) 1985 to 2014 (World Bank, 2016)

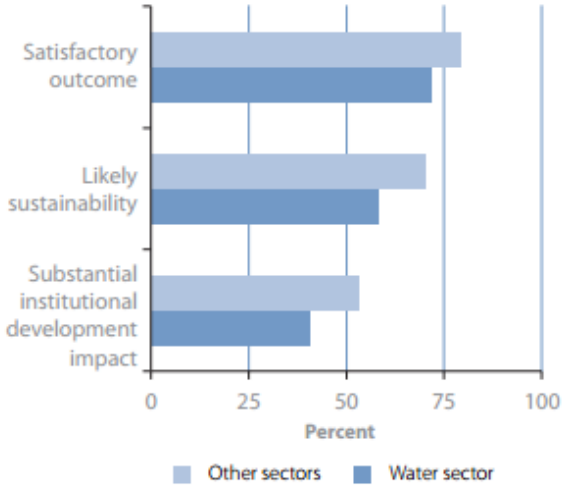


Figure 9: Outcome, Sustainability, and Institutional Development Ratings for water projects (World Bank, 2014)

In response to the increasing trend of "unsatisfactory" projects the World Bank commissioned a series of quantitative reviews. A review of these studies finds, again, that high QAE and IEG-rated project development outcomes are positively correlated (De Jong, Runhaar, Runhaar, Kolhoff, & Driessen, 2012; Kilby, 2015; Robert Lensink & White, 2000b; Verdeaux, 2006). The most frequently identified shortcomings in Bank support at entry include "deficiencies in monitoring and evaluation (M&E) design, failure to adequately consider technical aspects in project design, and poor definition of objectives and the results framework" (IEG, 2014).

Another World Bank portfolio review of 109 recently completed projects (Deli, Patricia, Aart, 2014) for example lists "the *quality and simplicity of project design"* as a key factor to improving project outcomes in the medium and long term. Drawing on past lessons at entry, effective risk mitigation, M&E and design of results frameworks were further found to be "*powerful factors both in magnitude and statistical significance in the context of strong project quality at entry*" (World Bank, 2014). Independent academic reviews also found that the QAE of projects is a "*critical factor in determining the likelihood of project success in the short and long term*." (de Carvalho et al., 2015, 2015; Voropajev, 1998; Robert Youker, 1989a).

These findings also concur with those of other development banks (including the Asian Development Bank, African Development Bank and European Bank for Reconstruction and Development) which also undertook similar studies on the role of QAE on project outcomes ((African Development Bank, 2011; Asian Development Bank, 2006, 2007; Bank, 2005; Inter-American Development Bank, 2004) and were reviewed for this study.

In each of these studies however, QAE is not defined or quantified. Rather, QAE remains an open-ended term that suggests technical rigor, attention to detail, client engagement, improved capture of results, environmental and social sustainability and/or demand driven approaches to project design.

This research thus proposes that the decline in project DO ratings is directly related to the influencing factor of poor project QAE, which was a contributing factor to the incomplete delivery of the MDG's for water and sanitation.

1.5 Statement of the Problem

The significant investments made since 2000 in water and sanitation infrastructure, coupled with the relatively high rate of failure to deliver on project outcomes and outputs as reflected in MDG and IEG data described above, signals a serious issue with the effectiveness and efficiency of ID projects in the water and sanitation sector.

This research addresses the problem that ID projects tend to fail to meet their development objectives and are plagued by systemic faults at the design stage of the project cycle. (Bakker, 2013; Boudet, Jayasundera, & Davis, 2011; Clarke, 1999; Cooke-Davies, 2002a; Cooper, 1999; L. Crawford & Pollack, 2004; Denizer et al., 2013; G Perry, 1986; Hailu; Degol; and Raquel Tsukada, 2012; Ika et al., 2011; Kenneth King, 2002; Love et al., 2012; Muriithi & Crawford, 2003; Toor & Ogunlana, 2010; Uphoff, 1990; R Youker, 1992).

Given the centrality of projects to development aid delivery mechanisms (Diallo & Thuillier, 2005; Ika et al., 2010, 2011, 2012b) and the large volumes of development aid flows that are involved, the trend of decreasing project development effectiveness, as

measured by IEG's project outcome ratings described above, is of particular interest to international development scholars and practitioners.

This research also proposes that the DO of projects is negatively impacted by the current approach to the design of water and sanitation infrastructure projects in the developing world. It tests the hypothesis that improved design-stage QAE of projects and the integration of appropriate mitigative measures to decrease the risk of project failure, are critical project management steps that should be more systematically integrated into the design and implementation of World-Bank financed ID projects in the water and sanitation sectors worldwide.

The research reviews 32 cases of large water and sanitation infrastructure projects financed by the World Bank and determines that incorporating specific QAE actions at the design stage of these projects is likely to improve the project DO. The identified design-stage QAE factors are then proposed to be incorporated into the design and implementation of new water and sanitation infrastructure projects moving forward.

1.6 Research Objectives

The objective of the research is to discover critical, predictive design-stage factors that are demonstrated to positively impact the QAE of ID projects in water and sanitation infrastructure towards improved project development outcomes and IEG DO ratings. The study undertaken intends to provide a tool for the World Bank and similar agencies to utilize in the early-stages of project design and review with a particular focus on QAE, which has been determined to be a critical factor in determining project outcomes in the medium and long terms, but remains unquantified to date.

The results of this study will inform ID project managers to: (i) better identify the vulnerabilities to inadequate project design and unsatisfactory development effectiveness of water and sanitation infrastructure projects and (ii) equip them with specific measures and indicators to inform project design, based on an assessment of previous projects.

Based on the review of 32 World Bank water and sanitation infrastructure ID projects implemented and evaluated over the MDG era (i.e. between 2000 and 2010), the research provides ID practitioners, both within donor agencies and client country stakeholders, with a basis on which to modify the way in projects are designed and implemented.

1.7 Research Hypothesis and Summary of Methodology

The research hypothesis is: **water and sanitation infrastructure projects financed by the World Bank that incorporate specific design-stage quality at entry (QAE) factors are more likely to result in a satisfactory project development outcome (DO) rating.**

To determine the design-stage factors, a Panel Interview was implemented across experienced World Bank Task Team Leaders (Subject Matter Experts – SME) with direct and longstanding experience in the design and implementation of World Bank water and sanitation infrastructure projects. Analysis of the Panel Interview results yields a list of critical design stage QAE factors, i.e. specific actions which are considered to be essential to establishing satisfactory QAE in water and sanitation infrastructure projects.

Thirty two (32) cases of World Bank-financed water and sanitation infrastructure projects were then selected for analysis based on specific selection criteria described in Chapter 3. All publically available documentation related to each of the 32 cases is then

examined to assess the presence of each of the design-stage factors identified through the Panel Interview. The ICR's of each of the 32 cases are also examined in detail to map the DO rating for each project, as determined by IEG.

Statistical and descriptive analysis of each case was undertaken to establish impact relationships between each of the QAE factors and the DO ratings for each case. Discussion and conclusions, including the proposition of a "Quality At Entry Design Toolkit" is proposed.

1.8 Research Contributions

Through analysis of 32 water and sanitation infrastructure projects, financed in whole or in part by the World Bank, the study generates a list of predictive design-stage QAE factors relevant to water and sanitation development infrastructure projects.

Establishing predictive metrics to define project QAE is important for the following principal reasons:

- The World Bank is currently in the early stages of preparation and design of 7 billion USD of water and sanitation projects (in addition to the existing portfolio of approximately 17 billion USD of active water and sanitation projects). The determination of predictive QAE metrics is thus timely as it will directly impact the QAE of these new World Bank water and sanitation projects;
- With the expiration of the MDG's in 2015, the ID community has finalized the design and launch of the subsequent SDG's including those related to water. By studying projects which were implemented over the earlier MDG era (i.e. 2000 – 2015), this research will thus contribute to the discussion on lessons learned

regarding project design and ways in which to more quantitatively target and deliver on poverty reduction mechanisms within the water and sanitation sector;

- While academic literature addresses development effectiveness of ID projects generally, QAE is not substantially quantified and no metrics exist to measure "good" quality at entry. This research proposes a set of quantifiable metrics that are based on real ID project data. The research will thus contribute to academic discussion on specific and productive ways to improve development effectiveness generally; and
- The study provides a common tool that can be simultaneously used by project managers within development agencies, as well as implementing agencies within client countries. By facilitating this "dual perspective" on project design, the proposed QAE metrics will enable critical, upstream discussion on key project design factors, thus leading to an early-stage resolution of common projects design and management challenges.

1.9 Research Limitations

The study is bound as follows:

- The research examines 32 cases of "hard" infrastructure projects[4], i.e. those related to water infrastructure including distribution, water treatment, wastewater collection and treatment infrastructure. By excluding projects which focus on policy reform, institutional strengthening, technical assistance and/or capacity strengthening, the research minimizes the impact of country-specific factors and

[4] "Hard" infrastructure projects are also referred to as "structural projects", "construction projects" or "capital projects". They refer to projects that do not include large components on policy reform, capacity building or technical assistance etc.

maintains comparability with developed-world infrastructure projects for which project management methodologies for quality assurance already exist;

- World Bank projects are selected to be representative of the ODA and donor community at large, given the significant development aid flows managed through the World Bank (see Table 1);
- The research focuses on World Bank-financed projects given: (i) the significant number of water sector projects financed by the World Bank during the period of analysis; (ii) the potential impact of findings on pipeline infrastructure investment in the water sector of developing countries; (iii) access to databases and project managers associated with individual World Bank projects; and (iv) to avoid discrepancies which may be introduced as a result of varying financing requirements among different donor agencies; and
- The research includes projects from all regions where the World Bank is active namely the Middle East and North Africa (MENA), Europe and Central Asia (ECA), Latin America and the Caribbean (LAC), East Asia Pacific (EAP), Africa and South Asia.

1.10 Summary of the Dissertation

The quality of projects at the design and preparation stage is widely recognized as a critical determinant in delivering intended project outputs and outcomes. The quality of projects at early stage of design, widely referred to as "quality at entry" (QAE), however remains unquantified, largely subjective and is influenced by individual knowledge, perceptions and local experience.

This study analyzes 32 cases of water and sanitation infrastructure projects implemented with partial or full World Bank financing globally between 2000 – 2010, i.e. the MDG era during which time heightened attention was diverted to the effectiveness of ID projects in the water and sanitation sectors. The research uses categorical data analysis and statistical regression to: (i) examine perceived linkages between project QAE and IEG project development outcomes and (ii) determine which upstream project design factors are likely to impact QAE of ID projects in the water and sanitation sectors.

The research proposes a list of critical predictive design-stage QAE factors to improve project design and increase the likelihood of project success and subsequent development effectiveness in the short and long terms.

The research is organized as follows:

Chapter 1 – Introduction: A summary of general information regarding financing and evaluation mechanisms of ID projects is presented. A description of impacts on development effectiveness and global development targets is also described. Further, the research hypotheses and objectives are presented.

Chapter 2 –Literature Review – The chapter presents a historical overview of global emphasis on development effectiveness and impact measurement including specific overview of World Bank financing models project. The chapter describes classical project management approaches and compares to those applicable to ID projects.

Chapter 3 – Research Methods – This chapter provides detailed description of the methodology used in the analysis of the World Bank financed projects in this research.

Chapter 4 –Findings and Discussion – The results from statistical and descriptive analyses of research projects are presented. The potential predictive metrics that contribute

to satisfactory QAE of international development projects are documented. This chapter concludes with recommendations on how the predictive metrics can be systematically included in the design of new World-Bank financed projects moving forward.

Chapter 5 – Conclusions and Suggestions for Future Research: Conclusions derived from research findings presented in Chapter 4 are discussed. Recommendations for the design of water and sanitation ID projects are documented.

Chapter 2: Literature Review

The review of the literature is structured around: (i) historical overview of trends in international aid and the development effectiveness of aid and (ii) overview of the management of international development projects, which remain the largest conveyors of development aid to date, as portrayed in Chapter 1.

2.1 International Aid and Development Effectiveness

While international trade and humanitarian aid have been longstanding areas of study, international development (ID) is largely considered to have been launched at the post World War II Bretton Woods conference in 1944 which created the World Bank Group and the International Monetary Fund (IMF) (Carter & Barrett, 2006; A. Thomas, 2000).

Over the subsequent decades, a review of academic literature demonstrates that the study of ID spanned a variety of eras starting largely with industrialization and infrastructure in the 1960's, rural, agricultural and community development in the 1970's, market liberalization in the 1980's, governance and technology in the 1990's, the Millennium Development Goals in 2000 and the 2015 Sustainable Development Goals more recently.

The Harrod-Domar model (Domar, 1948) was one of the first economic growth models developed and used in development economics to explain an economy's growth rate[5]. Since low-income countries tend to have ample supplies of labor, this model

[5] The model assumes that growth depends on the presence of labor and capital with increased investment in each leading to capital accumulation and economic growth (Domar, 1948; Easterly, 1999).

suggested that capital investment was the limiting constraint to economic growth (Barder, 2009, Domar, 1948; Easterly, 1999). This hypothesis was the basis for the start of an era of investments in large scale infrastructure, including roads, dams, factories and other capital products, immediately after the end of World War II.

Rostow's subsequent Financing Gap Model is based on the economic premise that increased investment leads to increases in capital which in turn leads to increases in savings and cyclically to more investment (Rostow, 1998) (Corbett & Rostow, 1960). Described in five stages of economic development (Traditional Society, Transitional, Take Off, Drive to Maturity and High Mass Consumption) (Corbett & Rostow, 1960), Rostow argued that an injection of capital into investment at the infrastructure-intensive Take Off Stage, would lead to economic growth as a whole. Once the investment needs are known, then the amount of foreign aid required to finance large infrastructure projects is easily calculated (Barder, 2015).

Rostow's model was the basis for foreign aid calculations of financing gaps and according to some academics remains the basis for many of these calculations today, including within the World Bank's economic assessment of investment projects (Barder, 2009; Domar, 1948; Durlauf, Kourtellos, & Minkin, 2001; Gundlac, 2007; J. R. W. Temple, 1998).

In his Neoclassical Growth Model, Robert Solow (Solow, 1956) introduced a third component to economic growth, in addition to capital and labor above. Technological change was described as the element which explained the economic divergence between rich and poor countries. Although Solow's model fit the data better than the Harrod-Domar

and Rostow models (Dowrick & Rogers, 2002; McQuinn & Whelan, 2007; ten Raa & Shestalova, 2011), it still had several major limitations[6].

As of the early 1980's and following the 1973 Arab oil embargo which caused widespread global price escalations and subsequent increases in extreme poverty, weak government policies were subsequently considered the major factor in limiting various existing economic growth models described above i.e. the economic models were considered to be correctly calculating the *potential* for economic growth, but because of a series of failures of economic policies, countries were not living up to their theoretical potential (Barder, 2015).

Proposed in 1989 by John Williamson (Williamson, 1993), the Washington Consensus, ten policy prescriptions in areas such as market liberalization, macroeconomic stabilization, trade and investment reform, were established to bolster economic growth and lead to more robust economic development.

Literature on the Washington Consensus is strife with controversy however largely because of its widespread (but contested) association with neoliberalism (Stiglitz, 2004), including the prescriptions to completely eliminate state subsidies, privatize and liberalize trade and markets. The Argentinian Economic Crisis (1992 – 2002) and other Latin American financial crises are blamed by some (Birdsall, De la Torre, & Valencia Caicedo, 2011; Naim, 2000; Öniş & Şenses, 2005; Rodrik, 2008) on the implementation of the Washington Consensus. In several papers however, Williamson himself argued that the

[6] First, technological change was not quantified (Barder, 2015). Second, Solow used his model to explain the divergence between rich countries (for example those of East Asia) and poor countries (including those in Africa). However, Solow's model did not explain why countries in Africa would not have gained access to knowledge and technological change which had had a positive impact on richer economies, such as those in Asia (Durlauf et al., 2001; Gundlac, 2007; J. R. W. Temple, 1998; J. Temple, 1998)

intention of the Washington Consensus was never to imply widespread market liberalization and that the policy reforms and recommendations had been misinterpreted (Williamson, 1993, 2004a, 2004b).

2.2 International Development in the 1990's – lessons learned

The mid-1990's were a turning point for the development sector, given the deepening poverty of many nations despite large volumes of aid. (Collier & Dollar, 2004, World Bank, 2005).

The pivotal shift in thinking about development centered on a move away from donor conditionality characteristic of the 1980's and an embrace of demand driven aid strategies, increased benefit sharing, public consultation and community driven projects. Launched at the 1995 Organization for Economic Cooperation and Development (OECD) - Development Assistance Committee (DAC) meetings, and continuing through the Millennium Development Goals, 2005 Paris Declaration on Aid Effectiveness (OECD, 2005) and its subsequent 2008 Accra Agenda for Action, these principles were widely adopted and applied in country efforts towards aid effectiveness. The emphasis on governance in the 1990's is evidenced for example in Collier and Dollar's Poverty-Efficient Allocation Model that encourages the prioritization of aid allocation to those countries that have high rates of poverty coupled with relatively good governance/policy environments. The focus on governance and policy has recently expanded to focus on the role of political and economic institutions in development (Acemoglu & Wolitzky, 2012; Acemoglu, 2009; J. D. Sachs, 2012).

The literature review of the history of international development thus yields several critical conclusions which are addressed in this research:

- **There is a wide array of factors that impact and influence development outcomes.** Recent academic literature converges on the view that there is no simple, replicable prescription for development (Andrews, Pritchett, & Woolcock, 2013a; Caiden, 2013; Pritchett, Woolcock, & Andrews, 2012, 2013; Pritchett & Woolcock, 2004a, 2004b; Rodrik & Zeckhauser, 1988; Unsworth, 2008; Woolcock, Lant, & Andrews, 2010b). Development must instead be considered a complex adaptive system centered on making small changes, observing the results, and then adjusting (Barder, 2015). As defined by Barder (2015), adaptation must involve (i) Variation; (ii) a Fitness Function which "distinguishes good changes from bad on some implicit path to desirable outcomes" and (iii) Effective selection which causes good changes to succeed and reproduce, but which suppresses bad changes
- **Aid effectiveness must be differentiated from development effectiveness.** By definition, development targets a wide range of issues including gender, human rights, environmental protection, poverty reduction, governance and economic growth (Khagram et al., 2009). As described in the sections above, aid effectiveness on the other hand refers specifically to the impact of donor funds on a local economy, corrected to exclude the impact of remittances and/or foreign direct investment. The 2005 Paris Declaration on Aid Effectiveness defined aid effectiveness as only one of several contributors to development effectiveness and accordingly promotes five key principles for improving aid effectiveness *towards* development effectiveness (ownership, alignment, harmonization, managing for

results and mutual accountability) (Khagram et al., 2009). Most statements in literature about development effectiveness are thus actually about aid effectiveness, (Khagram, Thomas, Lucero, & Mathes, 2009 and Pitman et al, 2004). As a result, the extent of development effectiveness is measured differently by the various stakeholders involved and remains particularly elusive. This can subsequently be linked to the high rates of "project failures", since a project can be considered a failure by certain sets of stakeholders, all the while remaining relevant and replicable to others. Further, only one identified paper (Kindornay & Morton, 2009) segregated the various forms of development effectiveness into: (i) organizational effectiveness; (ii) coherence/organization; (iii) development outcomes from aid; and (iv) overall development outcomes. This paper concluded with strong recommendations to test these various categories against actual project specific data.

- **Recent literature builds consensus around the need for adaptive approaches to international development.** In their widely cited 2010 and 2012 papers, Woolcock, Lant and Andrews put forth and describe the concept of Problem Driven Iterative Adaptation (PDIA) in which efforts to challenge the status quo of development mechanisms (Table 3) and "escape the capability trap" through 5 core concepts: (1) finding problem-driven solutions in which a problem is broken down to ensure that the solution is demand and not supply driven – which draws on similar scholarly work including the need to "crawl the design space" (Mair & Marti, 2009) ie. allow specific design elements to emerge as a result of practical exploration for best-fit solutions within the range of possible options; (2) aim to

solve particular problems in local contexts, (3) creation of an 'authorizing environment' for decision-making that allows 'positive deviation' and experimentation, (4) involve the iterative feedback of lessons into new solutions, doing so by (5) "engage broad sets of agents to ensure that reforms are viable, legitimate and relevant—i.e., politically supportable and practically implementable" (Andrews, Pritchett, & Woolcock, 2013b; Woolcock, Lant, & Andrews, 2010a).

Table 3: Contrasting current approaches to development and PDIA (Woolcock et al., 2010a)

Elements of approach	**Mainstream Development Projects/Policies/Programs**	**Problem Driven Iterative Adaptation**
What drives action?	Externally nominated problems or 'solutions' in which deviation from 'best practice' forms is itself defined as the problem	Locally Problem Driven—looking to solve particular problems
Planning for action	Lots of advance planning, articulating a plan of action, with implementation regarded as following the planned script.	'Muddling through' with the authorization of positive deviance and a purposive crawl of the available design space
Feedback loops	Monitoring (short loops, focused on disbursement and process compliance) and Evaluation (long feedback loop on outputs, maybe outcomes)	Tight feedback loops based on the problem and on experimentation with information loops integrated with decisions.
Plans for scaling up and diffusion of learning	Top-down—the head learns and leads, the rest listen and follow.	Diffusion of feasible practice across organizations and communities of practitioners

2.3 Managing International Development Projects

Literature on the theory and methodologies of successfully managing infrastructure projects is comprehensive and widespread. One the guiding documents of the project management (PM) practice, the Project Management Body of Knowledge (PMBOK) (Project Management Institute, 2013), defines a project as a "temporary endeavor

undertaken to create a unique product or service". Projects are designed around specific project objectives which define the expected results of the activities to be undertaken or items purchased. PMBOK also defines the various stages of a project cycle[7] (Figure 10) and the overlapping project processes. Associated literature on project management covers a range of other topics including: (i) **Sustainability of projects and programs** at large and the prerequisite role that effective project management plays to this end (Clarke, 1999; Cooke-Davies, 2002b; Jugdev & Muller, 2005; Mir & Pinnington, 2014; Munns & Bjeirmi, 1996a); (ii) **Project financing mechanisms** and associated impacts on budgets and schedule (Ben-Akiva, Moshe, 1993; Dailami & Leipziger, 1998; Jimenez & Pagano, 2012; Rwelamila, 2007; Zhang, Hill, Schroeder, & Linderman, 2008); (iii) **Project risks** and experience/lessons learned in the application and sustainability of various risk management strategies (Blanc-Brude & Makovsek, 2013; G Perry, 1986; Hillson, 2009a; Patanakul & Shenhar, 2012; Pich, Loch, & Meyer, 2002); (iv) **Cultural, personal and social aspects of project management** including stakeholder management, project manager capacity, team harmonization and the enabling environment within project implementation (Kärnä, Junnonen, Manninen, & Julin, 2013; Rwelamila, 2007; Toor & Ogunlana, 2010; Zwikael, Shimizu, & Globerson, 2005); as well as (v) **Characteristics and critical success factors of international development projects** (Avots, 1972; Bardhan & Mookherjee, 2006;

[7] The project management cycle that comprises five phases: Initiation, Planning, Execution, Monitoring and Control, and Closeout (Project Management Institute, 2013). The Initiation phase identifies the requirements, problems and project constraints and criteria. In the Planning phase the project management plan is developed and the project scope is defined. The project cost is determined and activities are scheduled. During the Execution phase, project implementation occurs and the project management cycle is implemented. In the Monitoring and Control phase the project execution is observed so potential problems can be identified in a timely manner and a corrective action can be taken to control the execution of the project. The Close-out phase includes the processes used to formally terminate all activities of a project, hand-off the project to the owner or close a cancelled project.

Boudet et al., 2011; Cooke-Davies, 2002b; Dailami & Leipziger, 1998; Doh & Ramamurti, 2003; Freeman & Pflug, 2003; Munns & Bjeirmi, 1996a; Ramamurti & Doh, 2004; Yanwen, 2012; Zwikael et al., 2005), the subject of this study.

As depicted in Figure 11, managing ID projects tends to be more iterative and layered than the cycle portrayed in PMBOK (Ahsan & Gunawan, 2010a).

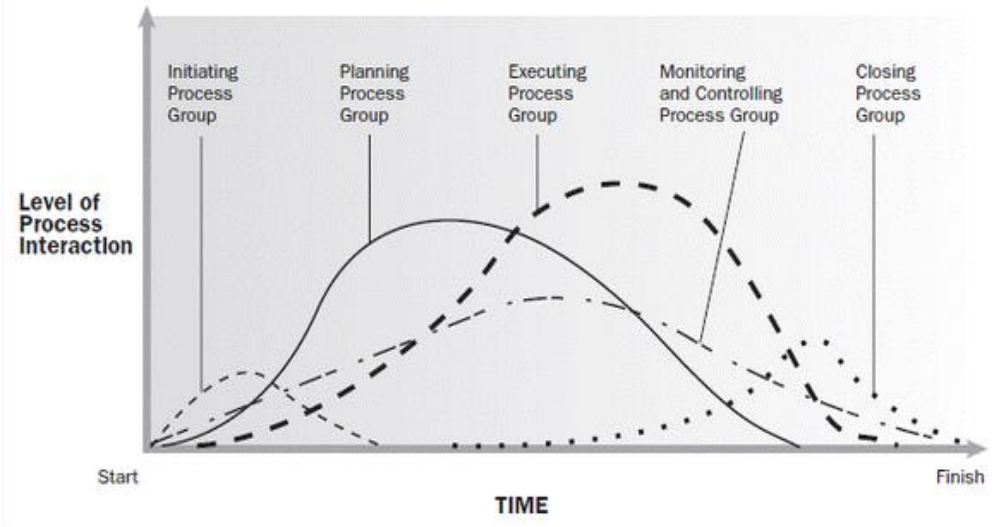


Figure 10: PMBOK Project Cycle and Levels of Interaction (PMBOK, 2015)

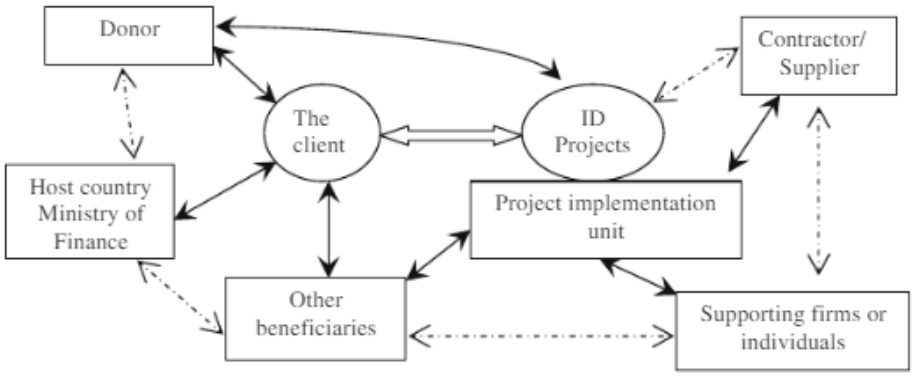


Figure 11: Project Cycle of International Development Projects (Ahsan & Gunawan, 2010a)

ID Project Bodies of Knowledge

A number of bodies of knowledge have been developed for ID projects including: the Logical Framework Analysis (Baccarini, 1999), Logical Framework Methodology (P. Crawford & Bryce, 2003), the Project Management for Development (PMD) Pro Guide 1 (Hermano, López-Paredes, Martín-Cruz, & Pajares, 2013), Life-Cycle Based framework (Khang, Do Ba; Moe, 2008) and a series of proposed indicators and critical success factors (CSF) including efficiency, performance, quality and client satisfaction indicators and Novelty, Technology, Complexity and Pace factors (Shenhar & Dvir, 2007).

A review of literature finds that these various methodologies however have not been tested on ID projects and remain largely theoretical in nature[8], with several concluding that these models should to be tested on actual project data (Ahsan & Gunawan, 2010a; Bond & Hulme, 1999; Brinkerhoff & Goldsmith, 1992; P Clements, 1995; Paul Clements, 1993; Firestone & McElroy, 2005; Gow & Morss, 1988; Hermano et al., 2013; Ika et al., 2012a; Ika & Hodgson, 2014; Khang, Do Ba; Moe, 2008; Kwak, D, & Hall, 2002; Landoni & Corti, 2011; Leseure & Brookes, 2004a; Moreno Pires, Fidélis, & Ramos, 2014; Müller, 2012; Ringel-Bickelmaier & Ringel, 2010; Uphoff, 1990; World Bank, 2007; Robert Youker, 1989b).

The review identified a sizeable literature on the evaluation of ID projects with one main line of inquiry seeking to understand the factors that influence project outcomes over the entire course of a project, also referred to as critical success factors (CSF) (Ahsan & Gunawan, 2010b; Belassi & Tukel, 1996; Hillson, 2009b, 2009b; Ika, 2009; Inter-

[8] The review of literature found one study that assessed the role and impact of various forms of conflict in the design and implementation of development projects through an analysis of 23 water and gas infrastructure projects, concluding that public consultation does not necessarily displace project conflict (Boudet et al., 2011).

American Development Bank, 2004; Khang & Moe, 2008; Munns & Bjeirmi, 1996b; A. Thomas, 2000; Ward & Chapman, 2003). The second line of inquiry seeks to develop methods to evaluate the outcomes of projects. Key reasons for project failure and/or poor management in development countries are generally attributed to the design of projects outside of appropriate country contexts ((Milosevic & Patanakul, 2005; Muriithi & Crawford, 2003; J. Thomas & Mengel, 2008), slow pace of policy reform (Frimpong, Oluwoye, & Crawford, 2003; Hillson, 2009b; Saad, Cicmil, & Greenwood, 2002), number of stakeholders involved in the implementation of ID projects (Ahsan & Gunawan, 2010b; Bradshaw, 2007; Carter & Barrett, 2006) and the capacity of the project manager and client to successfully lead the project (Muriithi & Crawford, 2003; Robinson, 2005; J. Thomas & Mengel, 2008)[i].

Thus while project management and development effectiveness, as standalone independent topics, have been studied in detail, this study identifies that the management of ID infrastructure projects is less widely quantified and centers on the themes of the role of conflict management, governance and decentralization (Ahsan & Gunawan, 2010a; Bond & Hulme, 1999; Cole & Hirschman, 1969; Cooke-Davies, 2002a; Diallo & Thuillier, 2005; Gow & Morss, 1988; Hermano et al., 2013; Honadle & Rosengard, 1983; Howsawi, Eager, & Bagia, 2011; Ika et al., 2011, 2012a, 2010; Jugdev & Moller, 2006; Kilby, 2000b; Leseure & Brookes, 2004b; Matsumoto, Stapleton, Glass, & Thorpe, 2005; Müller, 2012; Pinto & Mantel, 1990; Prokopy, 2005).

Chapter 3: Research Method

This research examines 32 cases of water and sanitation infrastructure projects financed in whole or in part by the World Bank and implemented over the period spanning 2000 – 2010. The research objective is to establish a list of predictive design factors to characterize satisfactory quality at entry (QAE) and establish that satisfactory Project Development Outcome (DO) ratings are impacted by the presence of these design stage factors on water and sanitation projects in the developing world. As described in Chapter 1, the World Bank's Independent Evaluation Group (IEG) assesses the DO of each project. The research focuses on confirming the presumed positive correlation between the QAE and DO of international development projects.

The research follows the following steps as shown in Figure 12: (1) Establish Research Hypothesis; (2) Establish Research Sample; (3) Design / Conduct Subject Matter Expert (SME) Panel Interviews; (4) Establish QAE Indicators; (5) Documentation Review and Data Collection; (6) Descriptive Analysis and Statistical Regression; and (7) Establish QAE at Entry Toolkit. The steps are described in the sections below.

3.1 Establish Research Hypothesis

The research hypothesis is: water and sanitation infrastructure projects financed by the World Bank that incorporate specific design-stage quality at entry (QAE) factors are more likely to result in a satisfactory development outcome (DO) rating.

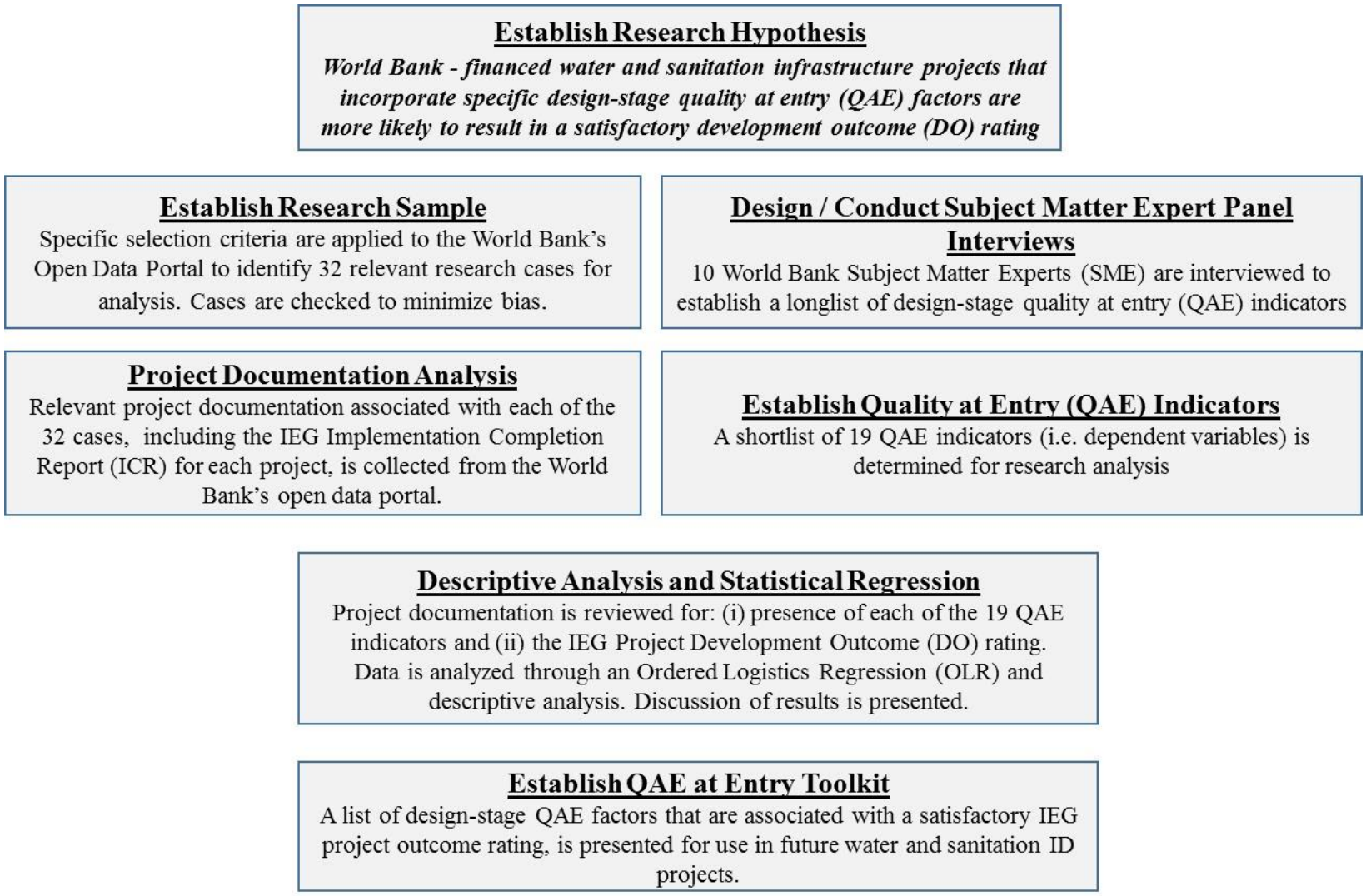


Figure 12: Research Steps

3.2 Establish Research Cases

The objective of this research step is to determine the sample of cases to be analyzed as part of this study. To this end, specific criteria are established for the selection of cases, namely: (i) projects that are "hard" infrastructure/construction projects that do not comprise large components on policy reform, capacity building or technical assistance; (ii) projects that are relatively large in size; (iii) projects that were financed in whole or in part by the World Bank and (iv) projects that were implemented over the period spanning the implementation of the MDG's i.e. 2000 – 2012, which is widely recognized as the first time that specific targets for water and sanitation were established and monitored on a global scale (Fukuda-Parr et al., 2013; Hailu; Degol; and Raquel Tsukada, 2012; Harttgen & Klasen, 2013; G Hutton, 2013; Islam & Yoshida, 2009; Leo & Barmeier, 2010; Onda et al., 2012b, 2012b; J. Sachs, 2010; Unicef, 2005).

Sources of Data

To establish the research cases, two principal sources of data are accessed: (1) the World Bank's Open Data Portal[9] for Projects and Operations; and (2) Portfolio Data from the World Bank Water Global Practice Operations and Quality Assurance Team. A description of the filters applied to these open-access sources of data is described below. A table of the 32 cases that are generated for analysis is included, as well as a discussion of data bias, geographic and sectoral coverage.

[9] The World Bank Open Data portal lists all details of projects financed by the World Bank - see data.worldbank.org

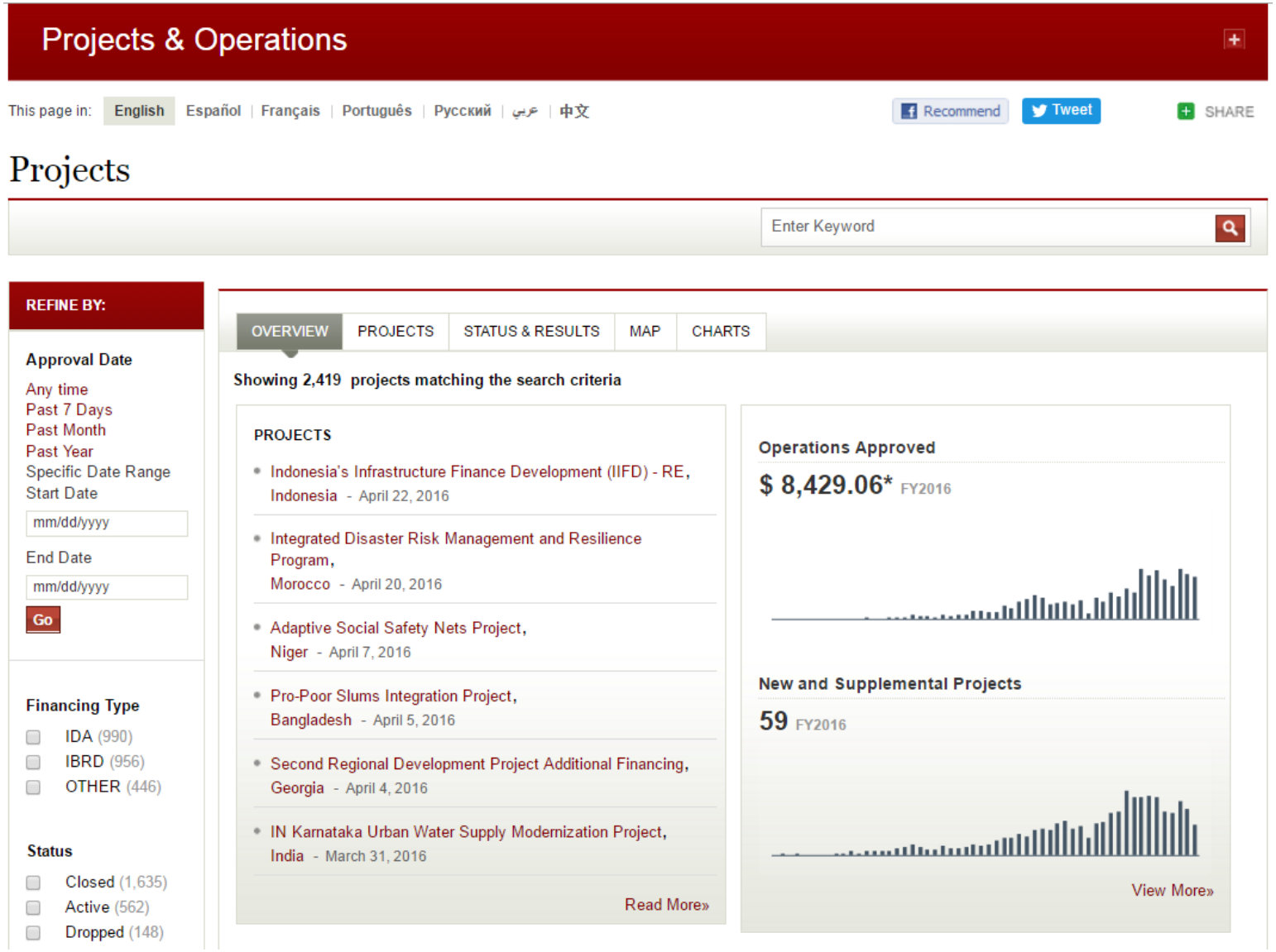


Figure 13: Example of Data Filter 1

Data Filter 1: World Bank Open Data Portal

Under the Open Data Portal, a total of 2,419 projects are listed under the "Water, Sanitation and flood protection" sector category (Figure 13). A list of 416 projects are generated from these according to the following filters:

1. Projects must have been approved between 2000 and 2010, i.e. the MDG era as described above;
2. Projects must have closed and been evaluated by 2012;
3. Projects must be categorized as either "rural services and infrastructure", "infrastructure services for private sector development", "pollution management and environmental health", "water resources management" or "urban services and housing for the poor";
4. Projects must incorporate Specific Investment Loans (SIL) i.e. they must not include budget-support type financial instruments on which actual construction and works activities are not implemented by the World Bank. Other types of World Bank financial instruments that are excluded from this research include: Adaptable Program Loans, Emergency Recovery Loans, Sector Investment and Maintenance Loans, Learning and Innovation Loans, Technical Assistance Loans, Debt and Debt Service Loans, Rehabilitation Loans, Sector Adjustment Loans, Development Policy Loans, Poverty Reduction Support Credits or any trust-funded activities[10].

[10] The World Bank offers flexible loans with maturities as long as 30 years, custom-tailored repayment scheduling and loans in local currencies. The World Bank also offers financing to subnational entities either with or without sovereign guarantees. The World Bank offers policy-based guarantees to cover countries' sovereign default risk, partial credit guarantees to cover the credit risk of a sovereign government or subnational entity, and partial risk guarantees to private projects to cover a government's failure to meet its contractual obligations. Further, the World Bank provides financial risk management products including foreign exchange swaps, currency conversions, interest rate swaps, interest rate caps and floors, and commodity swaps (World Bank, 2016)

Lending Instrument	*Project Lending*	*Programmatic Lending*
Investment Project Instruments		
Adaptable Program Loans	136	2
Financial Intermediary Loans	21	0
Emergency Recovery Loans	55	13
Sector Investment and Maintenance Loans	51	0
Specific Investment Loans	969	7
Learning and Innovation Loans	110	0
Technical Assistance Loans	145	0
Programmatic Instruments		
Debt and Debt Service Loans	1	3
Rehabilitation Loans	0	4
Sector Adjustment Loans	3	87
Structural Adjustment Loans	11	183
Programmatic Structural Adjustment Loans	4	17
Poverty Reduction Support Credits	0	7
Total	1,506	323

Figure 14: Number of various lending instruments made available by the World Bank to various Borrowers and Recipients between 1996 – 2002 (Winters, 2010)

Data Filter 2: World Bank Water Global Practice Portfolio Data

Since the filters applied to generate the 416 projects (i.e. rural series and infrastructure, pollution management and environmental health etc.) are not specifically limited to water and sanitation infrastructure, the subject of this research, the 416 projects are cross-referenced against the Water Global Practice Portfolio Data[11] in order to establish

[11] The Water Global Practice Portfolio Data is a repository of all the projects mapped to the Water Global Practice across its six active regions (Middle East and North Africa (MENA), Eastern Europe and Central Asia (ECA), Africa (AFR), South Asia (SAR) and East Asia Pacific (EAP). See askwater.worldbank.org

those projects that are specifically related to water and sanitation infrastructure. This further reduces the sample to 195 projects.

Data Filter 3: Finance, Environment and Structural Project Filters

The sample of 195 projects is further filtered as follows:

5. Projects with over 30% of the total cost financing ""capacity building", "institutional reform", "technical assistance", "training", "operation and maintenance" and/or "policy reform" activities as an explicit means to study ""hard infrastructure" projects for which inputs and expected outputs can be more clearly controlled and measured.
6. Projects with a total cost of less than 10 million USD are excluded;
7. Projects that are of Category C environmental classification (i.e. with minor anticipated environmental impact) are excluded;
8. Projects that were subject to additional financing or project restructurings are excluded.

Following data cleanup (removing projects that had been dropped, or for which there was insufficient/unavailable data) and controlling for geographic coverage, a total of 32 cases are identified as the research sample for this sample (Table 6 and Table 7).

3.2.1 Analysis of Research Cases

Number of Case Studies

The process of establishing a sample enables the selection of data points from within the larger data set to estimate the characteristics of a particular entire population (R.M. Groves, 2009; Robert M Groves et al., 2004). In the case of this study, the 32 projects are established through deliberate selection criteria and not through random sampling techniques. Each case is further studied in detail and assessed against 15 dependent QAE

design stage factors. Over 500 documents (i.e. on average 15 documents per project) were reviewed to establish the Boolean indicators presented in Table 13. As such, the sample size of 32 cases reviewed in this study, is considered sufficient for this study.

Geographic Distribution

The projects are distributed across the six regions where the World Bank is currently active. There are seven projects in Sub-Saharan Africa (AFR), nine Projects in Europe and Central Asia (ECA), five projects in Latin America and the Caribbean (LAC) and East Asia Pacific (EAP) each, four projects in the Middle East and North Africa (MENA) and 2 projects in South Asia.

The relatively larger number of projects in Sub-Saharan Africa (7 of 32) conforms to the significant MDG emphasis on the sub-Saharan continent (and associated primary selection criteria for projects to fall within this time period). Equally, the relatively small number of projects in South Asia reflects the growth of the community driven development (CDD) approaches to development (Chambers, 2009; Robinson, 2006; Sigler, Mahmoudi, & Graham, 2015) including the community-led total sanitation (CLTS) movement which provided smaller loans/grants to communities to reduce open defecation as of the late 1990's (Kar & Chambers, 2008; Kar, 2012; Papafilippou, Templeton, & Ali, 2011; Robinson, 2005). These smaller projects would therefore be likely excluded from the more construction works-focused sample described above

Publically available data

The research only uses data accessed through the World Bank's Open Data Initiative and thus does not utilize any data that is classified or otherwise publically

unavailable. This contributes to the replicability of this research and builds on the World Bank's Open Data objectives.

Table 4: List of Projects Selected for Analysis

	Project Name	Country
1	Burkina Faso Ouagaga Wastewater Project	Burkina Faso
2	Hungary Municipal Wastewater Project	Hungary
3	Municipal Water and Wastewater Project	Russian Federation
4	Lviv Water and Wastewater Project	Ukraine
5	Rural Water Supply and Sanitation	Kyrgyz Republic
6	Senegal Long Term Water Sector Program	Senegal
7	Cartagena Water Supply and Sewerage Project	Colombia
8	Rwanda Rural Water Supply and Sanitation Project	Rwanda
9	Hebei Urban Environment Project	China
10	Huai River Pollution Control Project	China
11	Tanzania Rural Water Supply Project	Tanzania
12	Chongqing Urban Environment Project	China
13	Ecuador Water Supply and Sanitation Project	Ecuador
14	Ghana Community Water Project II	Ghana
15	Kerala Rural Water Suppl y and Sanitation Project	India
16	Mostar Water and Sanitation Project	Bosnia and Herz
17	Wastewater Dispotal in Town Centers Project	Dominican Republic
18	Water Sector Project Project	Niger
19	Small Towns Water Project	Nigeria
20	Croatia Pollution Cities Control Project	Croatia
21	West Bank and Gaza Emergency Rehabilitation Project	West Bank Gaza
22	Water Supply Urgent Rehabilitation Project	Albania
23	Urban Water Project	Philippines
24	Tehran Sewerage I Project	Iran
25	Shanghai Urban Environment Project	China
26	Ahwaz & Shiraz Water Supply & Sanitation Project	Iran
27	Moldova Water Supply and Sanitation Project	Moldova
28	Montenegro Environmental Infrastructure Project	Serbia
29	Northern Cities Water Supply & Sanitation Project	Iran
30	Emergency Infrastructure Reconstruction Project	Afghanistan
31	Lima Water Rehabilitation Project	Peru
32	Small Towns Water Supply Improvement Project	St. Lucia

Table 5: Details of Research Cases selected for Analysis

	Project Name	Country	Total cost (Million USD)	WB finance (Million USD)	Env Cat	Start Date	End Date	Date of IEG Evaluation
1	Burkina Faso Ouagaga Wastewater Project	Burkina Faso	206	70	A	3/20/2001	12/31/2007	7/17/2004
2	Hungary Municipal Wastewater Project	Hungary	89	32	B	9/16/1999	12/1/2008	4/19/2010
3	Municipal Water and Wastewater Project	Russian Federation	169	123	B	12/21/2000	12/31/2008	4/15/2010
4	Lviv Water and Wastewater Project	Ukraine	41	24	B	6/5/2001	12/31/2007	1/16/2009
5	Rural Water Supply and Sanitation	Kyrgyz Republic	25	15	B	12/4/2001	10/31/2008	3/29/2010
6	Senegal Long Term Water Sector Program	Senegal	248	125	A	3/6/2001	6/30/2009	2/10/2011
7	Cartagena Water Supply and Sewerage Project	Colombia	117.2	85	A	7/20/1999	6/27/2005	11/22/2011
8	Rwanda Rural Water Supply and Sanitation Project	Rwanda	21	20	B	6/6/2000	12/31/2007	10/24/2008
9	Hebei Urban Environment Project	China	293	150	B	6/27/2000	6/30/2008	3/26/2009
10	Huai River Pollution Control Project	China	227	106	B	3/22/2001	6/29/2004	10/15/2009
11	Tanzania Rural Water Supply Project	Tanzania	28	26	B	3/26/2002	6/29/2004	3/16/2010
12	Chongqing Urban Environment Project	China	536	200	A	6/15/2000	3/31/2009	11/29/2010
13	Ecuador Water Supply and Sanitation Project	Ecuador	50	32	B	10/17/2000	9/20/2006	6/28/2011
14	Ghana Community Water Project II	Ghana	28	25	B	8/31/1999	12/30/2004	8/11/2005
15	Kerala Rural Water Suppl y and Sanitation Project	India	90	66	B	11/7/2000	9/30/2008	4/1/2010
16	Mostar Water and Sanitation Project	Bosnia and Herz	13	12	B	6/30/2000	6/302005	3/29/2006
17	Wastewater Dispotal in Town Centers Project	Dominican Republic	15	15	A	4/19/2000	6/15/2005	1/30/2006
18	Water Sector Project Project	Niger	79	48	B	5/3/2001	7/31/2010	7/25/2011
19	Small Towns Water Project	Nigeria	18	15	B	5/18/2000	6/30/2004	3/14/2005
20	Croatia Pollution Cities Control Project	Croatia	95	48	A	6/1/2004	11/30/2009	1/24/2011
21	West Bank and Gaza Emergency Rehabilitation Project	West Bank Gaza	13	13	B	7/29/2003	9/30/2008	4/13/2010
22	Water Supply Urgent Rehabilitation Project	Albania	15	10	B	2/24/2000	3/1/2004	2/14/2005
23	Urban Water Project	Philippines	35	30	B	10/18/2001	11/30/2008	12/15/2009
24	Tehran Sewerage I Project	Iran	340	145	A	5/18/2000	6/30/2008	2/25/2011
25	Shanghai Urban Environment Project	China	512	200	A	6/17/2003	3/31/2010	6/30/2011
26	Ahwaz & Shiraz Water Supply & Sanitation Project	Iran	470	279	A	5/25/2004	9/30/2009	9/22/2010
27	Moldova Water Supply and Sanitation Project	Moldova	14	12	B	5/20/2003	6/302008	5/13/2009
28	Montenegro Environmental Infrastructure Project	Serbia	13	12	B	11/28/2001	7/14/2004	5/18/2005
29	Northern Cities Water Supply & Sanitation Project	Iran	344	224	A	5/26/2005	12/31/2010	6/27/2013
30	Emergency Infrastructure Reconstruction Project	Afghanistan	33	33	B	6/6/2002	6/30/2006	6/27/2007
31	Lima Water Rehabilitation Project	Peru	29	20	B	2/25/2003	3/31/2009	1/25/2011
32	Small Towns Water Supply Improvement Project	St. Lucia	18	18	B	5/19/2005	1/15/2009	4/29/2011

Project Cost Distribution

Across the sample of 32 cases, the total project cost ranged from 536 MUSD (China – Chongqing Urban Environment Project) to 13 MUSD (Bosnia and Herzegovina – Mostar Water and Sanitation Project). World Bank financing of total project cost averages at 69%.

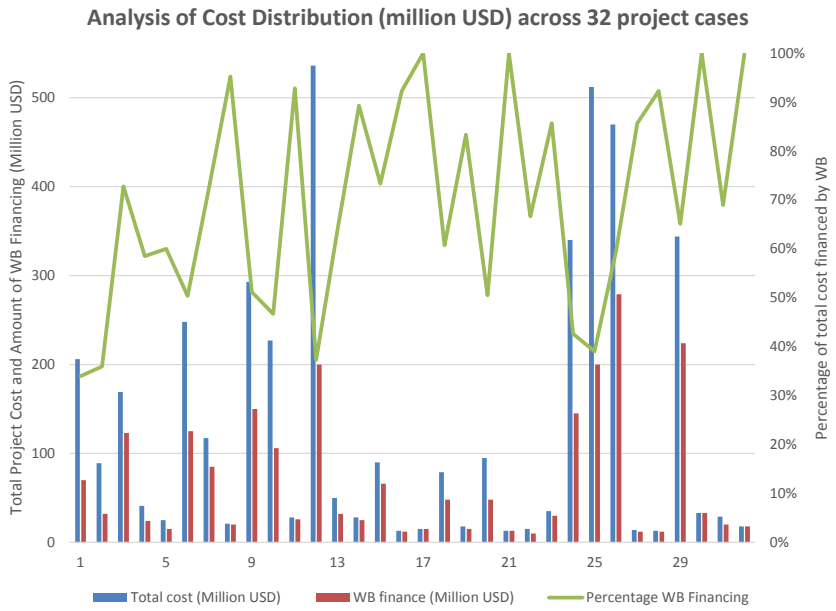


Figure 15: Cost Distribution Analysis (Author's Calculation)

Distribution across Income Groups

Economies at the World Bank are divided into four income groupings: low, lower-middle, upper-middle, and high. Income is measured using gross national income (GNI)[12] per capita, in U.S. dollars, converted from local currency using the World Bank Atlas method[13].

[12] Estimates of GNI are obtained from economists in World Bank country units; and the size of the population is estimated by World Bank demographers from a variety of sources, including the UN's biennial World Population Prospects (World Bank, 2016).

[13] A country's GNI in local (national) currency is converted into U.S. dollars using the Atlas conversion factor, which uses a three-year average of exchange rates adjusted for the difference between the rate of inflation in the country and that in a number of countries. The resulting GNI in U.S. dollars is divided by the country's midyear population to obtain the GNI per capita (World Bank, 2015).

The World Bank makes available two primary types of financing mechanisms, IDA credits and IBRD loans. IDA credits are highly concessional and thus carry little or no interest and are made available to low-income countries with high calculated risk of debt distress, the level of GNI per capita, and creditworthiness for IBRD borrowing (World Bank, 2014). IDA-financed operations address primary education, basic health services, clean water and sanitation, environmental safeguards, business climate improvements, infrastructure and institutional reforms. These projects pave the way toward economic growth, job creation, higher incomes and better living conditions.

IBRD Loans are made to eligible countries and are usually IBRD pricing is based on a floating reference rate, usually six- month LIBOR[14], plus a spread that is either fixed over the life of the loan or variable from one semester to another. Some countries also qualify for blend loans which are a mix of IDA and IBRD terms.

The research cases are found to be divided between IDA, IBRD, and/or Blend financing instruments with 8 projects financed by an IDA credit, 22 projects financing by an IBRD loan and 2 projects representing an IDA/IBRD blend.

Project Duration

The average project implementation duration across the research sample was 5.6 years (Figure 16) with the shortest project implementation period at 2 years (Tanzania – Rural Water Supply Project) and the two longest running for 9 years each (Hungary – Municipal Wastewater Project and Niger – Water Sector Project).

[14] London Interbank Offered Rate (LIBOR) is a floating interest rate. It is the rate at which banks can borrow unsecured funds from other banks in the London wholesale money market. IBRD loans denominated in Euros will have the Euro Interbank Offered Rate, Euribor, as the base lending rate (World Bank, 2015)

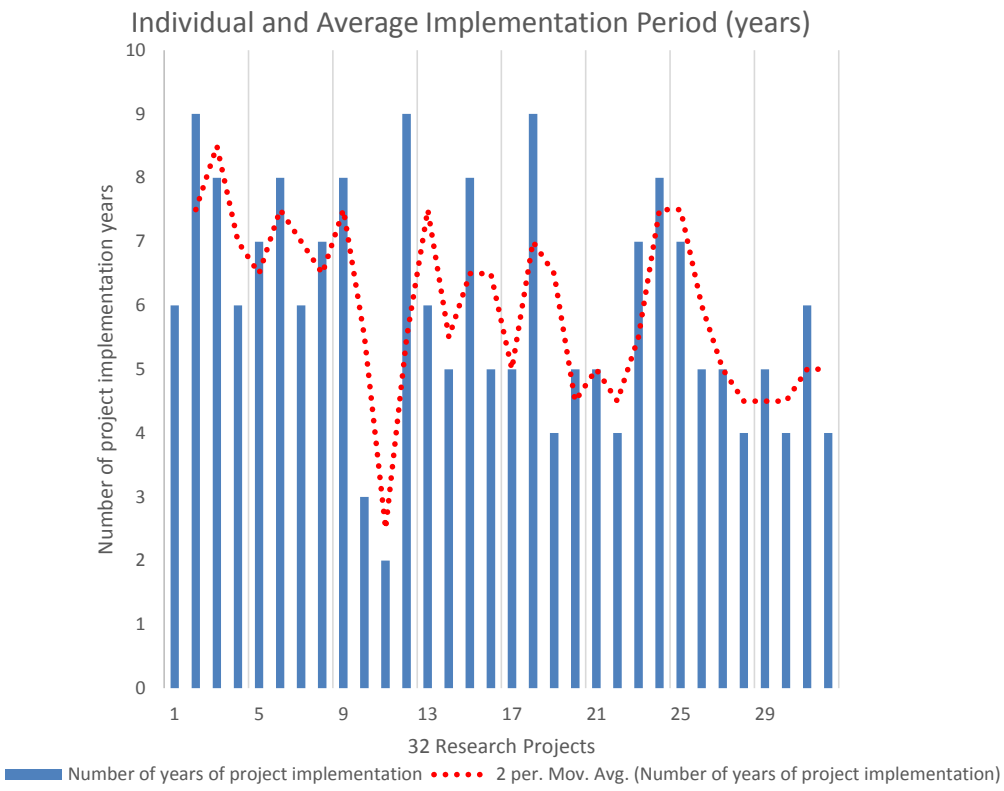


Figure 16: Average Project Duration for 32 research cases (Author's calculation)

Environmental Category

World Bank financed projects that involve financing of infrastructure components are generally categorized along 3 environmental categories: Category A projects are likely to have "significant adverse environmental impacts that are sensitive, diverse, or unprecedented". These impacts may affect an area broader than the sites or facilities subject to physical works. Category B projects have potential adverse environmental impacts on human populations or environmentally important areas - including wetlands, forests, grasslands, and other natural habitats - which are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigation measures can be designed more readily than for Category A projects. A

Category C project is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required (World Bank, 2015).

Across the sample of cases, a total of 10 projects are rated as Environmental Category A (equivalent to approximately 31% of the sample), while the remainder of projects are rated Category B i.e. having a smaller anticipated environmental impact. No Category C projects were found in the sample. This is anticipated given the focus on "hard" infrastructure projects included in the selection criteria which will have moderate to significant environmental impacts and are thus likely to lead to the inclusion of Category A and/or Category B projects in the sample only.

3.3 Design / Conduct Subject Matter Expert Panel Interviews

The objective of this research step is to determine the critical QAE design factors that are perceived by subject matter experts (SME) to be the most influential in the final outcome of World Bank financed water and sanitation projects. These design factors are then tested for significance in impacting the DO rating of each of the 32 research cases.

3.3.1 Subject Matter Expert (SME) Selection

The Panel of SME is selected by convening 10 senior and/or lead water and sanitation infrastructure project managers at the World Bank (also called Task Team Leaders) with: (1) significant experience in the design and implementation of World Bank water projects and/or water sector in an international development context generally; (2) work experience in at least two regions where the World Bank is active in the water sector and (3) hold position of Senior or Lead Water and Sanitation specialists[15].

[15] An email seeking interest in participation was sent to 33 World Bank Task Team Leaders mapped to the Water Global Practice. Of these the 10 SME's included in this research responded positively and participated in the Panel Interview.

SME's had between 4 and 17 years of experience at the Bank (mean: 11.13, median 10, standard deviation: 3.63). The SME's also had between 3 and 25 years of experience in the water sector generally (mean: 14.5, median 17, standard deviation: 8.86). Details relating to experience, gender and paygrade of the SME's are presented in Figures 17, 18 and 19.

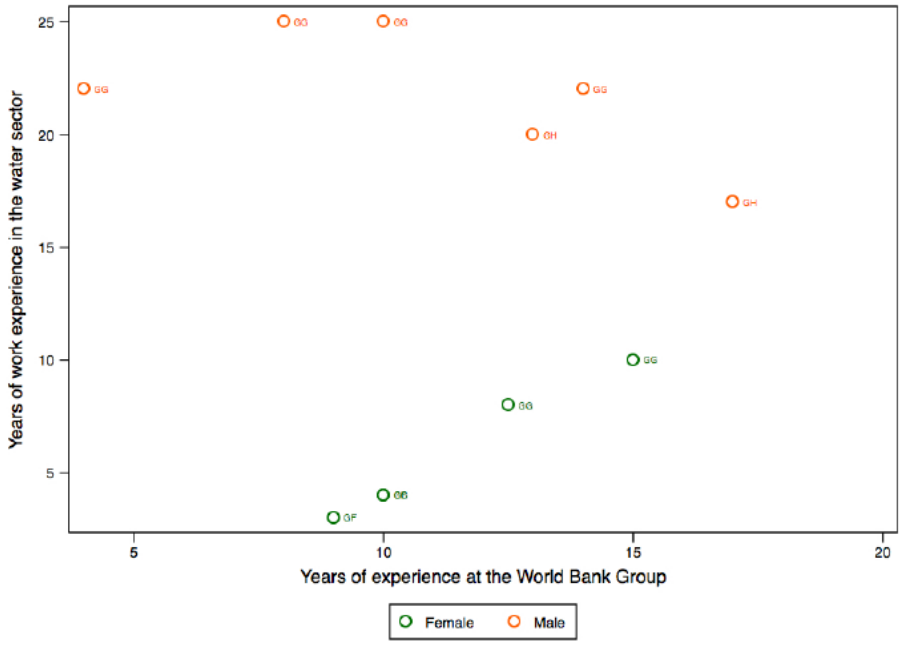


Figure 17: SME Distribution

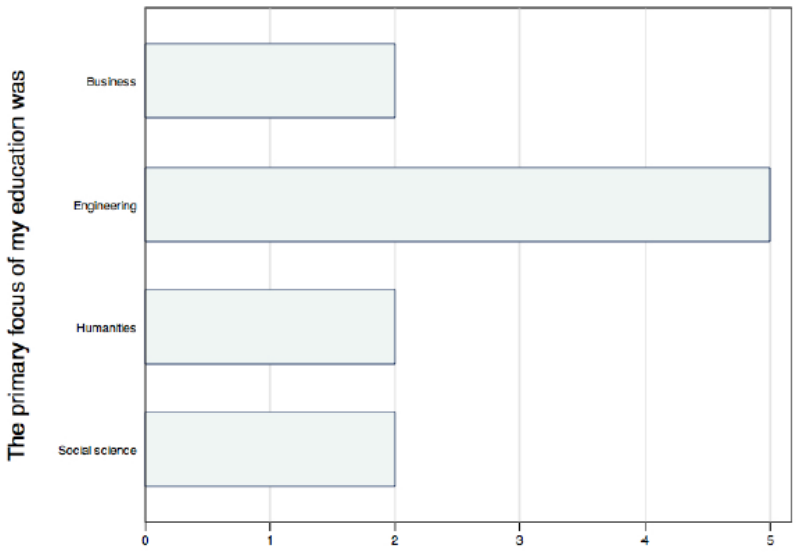


Figure 18: SME Education Profile

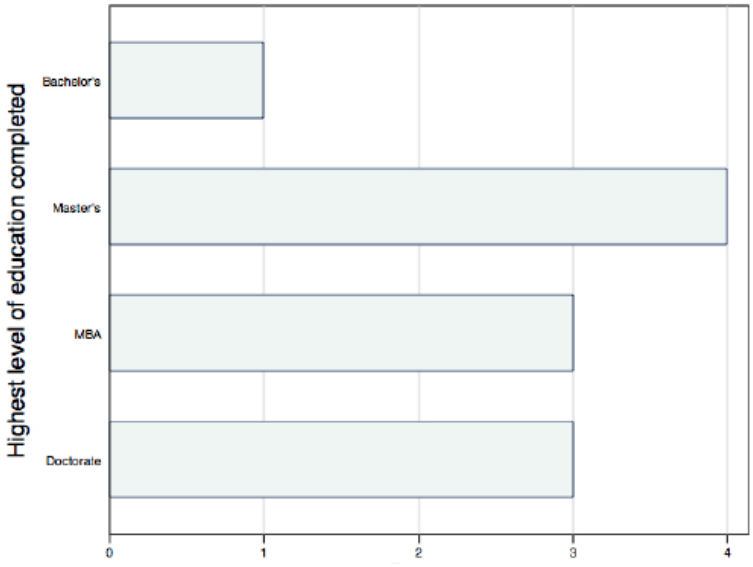


Figure 19: SME Degrees of Education and Experience

3.3.2 Panel Interview General Findings

A web-based Panel Interview of the SME's was developed to ascertain which design stage QAE factors are considered to be influential in impacting project outcomes on water and sanitation infrastructure projects. The interview instrument is provided in

Appendix 1. The web-based interview was complemented with a series of face-to-face discussions with 7 of the 10 SME's.

The Panel Interview had two primary objectives. First, to collect data on how World Bank SME's perceive projects as succeeding or failing and how frequently this occurs. The second objective is to assess the factors of project design and preparation that influence project outcomes.

Overall, SME's were found to have negative perceptions of the effectiveness of design and implementation practices of World Bank water and sanitation projects.

On every project management factor investigated (i.e. Project Management and Engineering Experience, Financing, Client/Bank Leadership, Sustainability and Risk Management and Beneficiary Engagement and Consultations), SME's expressed the need for improvement in the way that projects are designed to address and mitigate risks associated with each of these actors. These are presented in Table 6.

Table 6: Extent to which each design factor meets or exceed expectations

	Needs improvement	Ok as is	Exceeds expectations
Project Management and Engineering Experience			
Contract design	1	0	0
Incorporation of expertise from other sectors/regions	1	0	0
Timeliness of procurement processes	8	2	0
Consideration of alternative solutions	8	2	0
Contract strategy	8	2	0
Quality of procurement processes	8	2	0
Quality of technical project designs	8	2	0
Use of untested or innovative technologies	7	3	0
Project technology reflects local operating capacity	7	3	0
Implementing agency's level of readiness	9	1	0
Incorporation of security requirements into project design	6	4	0
Revision of development objectives during preparation	6	4	0
Frequency of project restructurings	5	4	1
Composition of the PMU	6	4	0
Financing			
Feasibility of plans for long-term financing of O&M	9	1	0
Quality of disbursement estimates	9	1	0
Adequacy of cost recovery mechanisms	7	2	1
Contribution of fiscal resources to a project by the client	7	3	0
Existence of gaps in financing at after board approval	5	5	0
Client/Bank Leadership			
Proactiveness of the implementing agency	9	1	0
Frequency of changes in TTL-ship	8	1	1
Proactiveness of the government	8	2	0
Assessment of Willingness to Pay for proposed services	7	3	0
Proactiveness of the Bank	7	3	0
Government's commitment to projects	7	3	0
Implementing agency's commitment to projects	7	3	0
Revision of proj. design following consultations	7	3	0
Coordination with concurrent Bank projects	6	4	0
Leadership of the national project coordinator	5	5	0
National project coordinator's knowledge of the project	5	5	0
Contractor performance	1	0	0
Quality of engineering and construction supervision	6	4	0
Sustainability and Risk Management			
Sustainability of project effects	9	1	0
Handling of uncertainty or unforeseen events	8	2	0
Delivery of mitigation measures	8	2	0
Evaluation of project outcomes	6	4	0
Quality of results frameworks	6	4	0
Monitoring of results	5	5	0
Beneficiary Engagement and Consultations			
Project objectives based on understanding of local context	6	4	0
Quality of consultations with stakeholders	6	4	0
Adequacy of consultations with stakeholders	4	6	0
Assessment of social and environmental externalities	3	7	0
Mitigation measures for project affected people	3	6	1
Mitigation of environmental or social externalities	3	6	1

Summary of Panel Findings

With regards to the importance of ensuring high project QAE, 7 of 10 SME's found that "quality of project design" requires improvement, along with "completion of projects on time" and "sustainability of projects effects over time" (Figure 20). Project design, completion of projects on time and on budget and sustainability of project effects were also identified as requiring improvement. The quality of goods, works and services procured under Bank financing as well as financing mechanisms and sustainabilities were further considered not to have sufficient perceived attention from World Bank management.

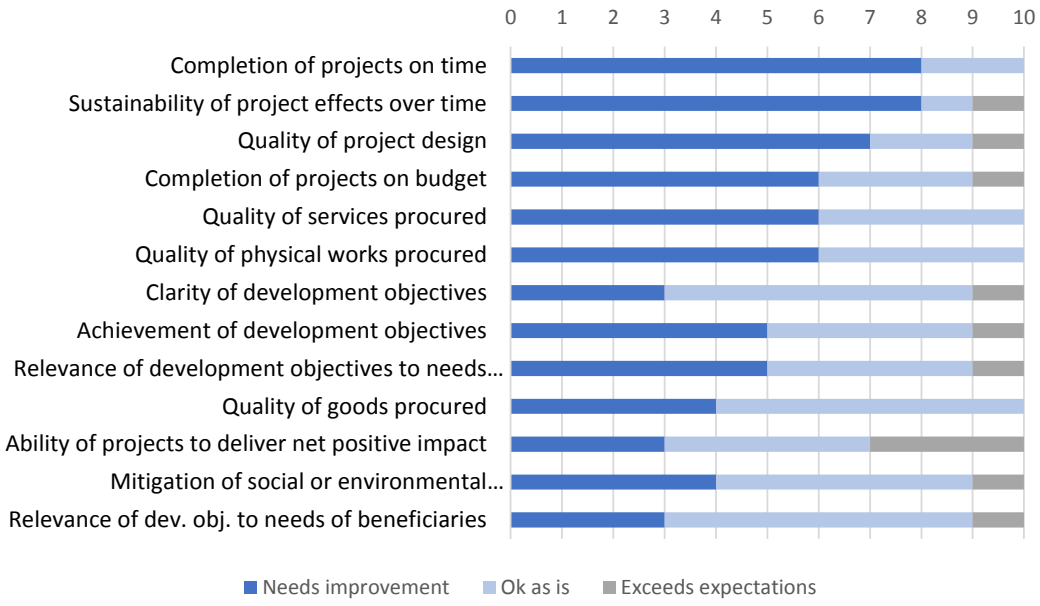


Figure 20: Panel Responses on Project Outcomes Needing Improvement

Panelists further perceived that project evaluations overstate the frequency of project success in self-assessments conducted by the project team at completion. 8 of 10 SME's perceive that the most frequent DO rating is "moderately satisfactory" in ICRs. However, only half think this is the most frequent *actual* outcome. Further, when compared

to actual IEG data, only one third believe that projects are actually rated "moderately satisfactory".

In addition, SME's highlighted the importance of several project design elements including: (i) establishment of a Project Management Unit (PMU) by effectiveness; (ii) delineation of responsibilities for operation and maintenance (O&M) into long-term financing plans; (iii) leadership capacity of both the PMU and the TTL; and (iv) avoiding private land expropriation as possible (Table 7).

Table 7: How much value do each of the following contribute to successful projects?

Project element	No/limited value	Average value	Much/extreme value
PMU established by effectiveness	10	10	80
Clarity of responsibility for O&M	10	10	80
OPEX incorporated in to long-term financing	11	11	78
NPC shows leadership	20	10	70
TTL shows leadership	20	10	70
TTL has necessary interpersonal skills	20	10	70
TTL remains the same during prep	20	10	70
NPC has technical knowledge	10	30	60
NPC has necessary interpersonal skills	20	20	60
NPC understands Bank procurement processes/rules	20	20	60
TTL has technical knowledge	20	20	60
TTL remains same during prep & implementation	20	20	60
Success of previous projects in same country	10	40	50
No exercise of eminent domain required	10	40	50
TTL has worked in country	30	20	50
NPC has contract for duration	20	40	40
Involve responsible agencies in design of E/S mitigation	22	33	44
Project is multi-sectoral	40	20	40
NPC hired by appraisal	10	70	20

Factors that were seen as less valuable but could still be relevant depending on the project context include: (i) Success of previous projects in the same country; (ii) TTL having previous experience in the country; (iii) PMU having a contract for the duration of the project; (iv) Involvement of agencies responsible for environmental and social

mitigation in the design of mitigation measures; (v) whether a project is multi-sectoral and (vi) whether the PMU is hired by appraisal.

The mitigation of environmental and social impacts, the relevance of development objectives to the needs of beneficiaries, and the ability of projects to deliver net positive impacts were considered to be “ok as is” on average.

3.4 Establish QAE Indicators

Based on analysis of the SME findings presented above, and following the removal of subjective factors that cannot be accurately quantified (including TTL interpersonal skills, PMU leadership skills etc.) or factors for which data is not readily accessible (whether TTL has worked previously on the project country etc.), the following QAE factors were selected for analysis in the case studies. Each factor is defined and described in detail in Chapter 4.

Table 8: List of Research Design Stage Factors

ind1	Disbursement projects in "S" curve
ind2	Parliamentary Effectiveness Approval required
ind3	Retroactive financing allowed
ind4	Requirement for PMU to be established by effectiveness
ind5	Cost recovery dependent on increase in tariff
ind6	Local financing provided
ind7	Major infrastructure prequalification completed prior to appraisal
ind8	PMU includes a water/sanitation engineer
ind9	PMU has experience with World Bank procurement
ind10	Previous/ongoing projects are rated Satisfactory
ind11	No land expropriation required
ind12	PMU Director seconded from stakeholder government agency
ind13	Responsible agencies involved in design of environment and social mitigation plans
ind14	Environment and Social mitigation financed by the project
ind15	Project links water and sanitation/hygiene

3.5 Documentation Review and Data Collection

In order to analyze the 32 cases of water and sanitation infrastructure projects implemented with partial or full World Bank financing and examine perceived linkages between project QAE and IEG DO ratings of each of these cases, this research step involves the collection of DO ratings for each of the 32 cases, as well as assessment of presence of each of the QAE design factors for each of the 32 cases.

3.5.1 QAE Indicator Ratings

For each of the 32 cases, documentation is retrieved from the World Bank Open Data site including the project appraisal document (PAD), technical annexes, implementation support reports (ISR) and ICR's. A total of approximately 575 project-related documents are reviewed in detail. The documents are accessed through the World Bank Open Knowledge Repository (OKR), an official open access repository for its research outputs, knowledge products and project operations documents.

A. Basic Information

Country:	India	Project Name:	IN- Uttarakhand Water Supply and Sanitation Project
Project ID:	P083187 P148009	L/C/TF Number(s):	IDA-42320 IDA-53720
ICR Date:	02/09/2016	ICR Type:	Core ICR
Lending Instrument:	SIL; IPF (AF)	Borrower:	GOVERNMENT OF INDIA
Original Total Commitment:	SDR 83.50M	Disbursed Amount:	SDR 87.83M
Revised Amount:	SDR 99.10M		

Environmental Category: B

Implementing Agencies: Government of Uttarakhand, Department of Drinking Water & Sanitation

Cofinanciers and Other External Partners: Not applicable

B. Key Dates

Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	02/03/2004	Effectiveness:	11/30/2006	11/30/2006
Appraisal:	02/20/2006	Restructuring(s):		03/06/2010 08/23/2011 12/14/2014
Approval:	09/05/2006	Mid-term Review:	10/08/2009	10/08/2009
		Closing:	06/30/2012	12/31/2015

C. Ratings Summary

C.1 Performance Rating by ICR

Outcomes:	Satisfactory
Risk to Development Outcome:	Moderate
Bank Performance:	Satisfactory
Borrower Performance:	Satisfactory

Figure 21: Example of ICR document reviewed and Ratings Summary

Each project is evaluated for the presence of design stage QAE indicators identified by the SME Panel Interview (Table 10). The review of project data first ranked the presence of QAE indicators from 1 – 5 with 1 representing an indicator not being present and 5 representing a high perceived rate of presence.

Given the particular context of each project and the inherent subjectivity of some of the assessments, and in order to facilitate subsequent analysis, the data was then aggregated into Boolean representations, with rankings of 1, 2 or 3 re-categorized as 0 and rankings of 4 and 5 re-categorized as 1. This Boolean categorization (i.e. 0 or 1) of the indicators, presented in Table 12, rendered the data more open to analysis and also ensured conservatism in ratings and a control of potential bias, particularly on the more subjective indicators, largely by including the frequent "3" ranking into the "0" binomial.

3.5.2 IEG Project DO ratings

To determine the IEG rating for each of the sample projects, IEG's World Bank Project Performance Rating Dataset[16] is accessed. The IEG Dataset is a repository of each of IEG's ratings for individual projects over the past 30 years and is available through the World Bank Open-Data portal. The individual Implementation Completion Reports (ICR) for each sample project is also accessed to determine IEG's "project outcomes rating" for each project (Figure 21)[17]. The Development Outcome rating (Table 9) is collected for each case project.

[16] see http://data.worldbank.org/data-catalog/IEG

[17] A historical overview of IEG's rating protocols shows that the system used by IEG has evolved from a "single dichotomous outcome rating into multiple, polychotomous ratings" (Kilby, 2015). Studies examining ratings in both forms generally do not find compelling reasons to use the more fine-grained version (Denizer et al., 2013).

Table 9: IEG development Outcome Ratings for the 32 Research Cases

	Name	Country	IEG DO Rating
1	BF-Ouaga Water Suply	Burkina Faso	HS
2	MUNICIPAL WASTEWATER	Hungary	S
3	MUN WATER & WW	Russian Federation	MS
4	LVIV WATER/WW	Ukraine	S
5	RURAL WS & SAN	Kyrgyz Republic	MS
6	Long Term Water Sec SIL	Senegal	S
7	CARTAGENA VVTR SUPPLY & SEWERAGE	Colombia	MU
8	Rural Water Sply & Sani	Rwanda	S
9	HEBEI URBAN ENVIRONMENT	China	MS
10	HUAI RIVER POLLUTION CONTROL	China	S
11	Rural Water Supply	Tanzania	MS
12	CHONGQING URBAN ENVMT	China	MS
13	Rural Water Supply & Sanitation	Ecuador	S
14	COMMUNITY WATER II	Ghana	S
15	KERALA RWSS	India	S
16	MOSTAR WS & SAN	Bosnia and Herzegovin	S
17	WASTEWTR DISPOSAL IN TSM CNTERS	Dominican Republic	S
18	Water Sector	Niger	S
19	SMALL TOWNS WATER	Nigeria	U
20	COASTAL CITIES POLLUTION CONTROL	Croatia	MS
21	EMERGENCY WATER	West Bank and Gaza	MU
22	WS URG REHAB	Albania	S
23	LGU URBAN WATER	Philippines	MU
24	Tehran Sewerage I	Iran, Islamic Rep.	MS
25	SHANGHAI URB ENVMT	China	MS
26	Ahwaz & Shiraz Water Supply & Sanit	Iran, Islamic Rep.	U
27	WS & SAN	Moldova	S
28	MONTENEGRO ENV INFRA	Serbia	MS
29	Northern Cities Water Supply & Sani	Iran, Islamic Rep.	U
30	Emergency Infrastructure Reconstruction	Afghanistan	S
31	Lima Water Rehabilitation	Peru	S
32	Water Supply Infrastr. Improvement	St. Lucia	MS

The table below summarizes IEG_DO distribution across the 32 cases.

Table 10: Frequency of IEG DO Distribution

IEG DO	Frequency	Percentage
Unsatisfactory	3	9
Moderately Unsatisfactory	3	9
Moderately Satisfactory	10	31
Satisfactory	15	47
highly Satisfactory	1	3
Total	32	100

Table 11: Summary of QAE Variables Presence for each Research Case

		ind1	ind2	ind3	ind4	ind5	ind6	ind7	ind8	ind9	ind10	ind11	ind12	ind13	ind14	ind15
		Disbursement projects in S curve	Parliamentary Effectiveness Approval required	Retroactive financing allowed	PMU to be established by effectiveness	Cost recovery dependent on increase in tariff	Local financing provided	Infrastructure prequalification completed by appraisal	PMU includes a water/sanitation engineer	PMU has experience with World Bank procurement	Previous/ongoing projects are rated Satisfactory	No land expropriation required	PMU Director seconded from stakeholder agency	Responsible agencies involved in Env/Soc plans	Env/Social mitigation financed by the project	Project links water and sanitation/hygiene
Burkina Faso Ouagaga Wastewater Project	Burkina Faso	1	0	1	1	1	0	0	1	0	1	1	0	0	1	0
RY-RURAL WATER SUPPLY & SANITATION	Hungary	0	1	0	0	0	0	1	1	0	0	1	0	1	0	0
Hungary Municipal Wastewater Project	Russian Federation	1	0	1	1	1	0	0	0	0	0	1	1	1	0	0
Municipal Water and Wastewater Project	Ukraine	1	0	0	0	1	0	0	0	0	0	1	0	0	0	0
Lviv Water and Wastewater Project	Kyrgyz Republic	0	0	1	0	1	1	0	0	0	0	1	0	0	0	1
Rural Water Supply and Sanitation	Senegal	0	0	0	0	1	0	0	0	0	0	0	0	1	1	1
WATER UTIL IMPV	Colombia	0	0	1	0	0	1	0	0	1	1	1	1	0	1	1
PROSANEAR 2	Rwanda	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0
MUN WATER/WW	China	0	0	1	1	1	0	1	1	1	0	0	1	1	1	1
Senegal Long Term Water Sector Program	China	0	0	1	0	1	1	1	1	1	1	0	1	0	0	1
Cartagena Water Supply and Sewerage Project	Tanzania	0	0	0	0	1	0	0	0	0	0	1	0	0	0	1
Rwanda Rural Water Supply and Sanitation Project	China	0	0	1	1	1	1	1	1	1	0	0	1	1	0	1
Hebei Urban Environment Project	Ecuador	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0
Huai River Pollution Control Project	Ghana	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0
Tanzania Rural Water Supply Project	India	1	0	0	0	1	1	0	0	0	0	1	0	0	0	0
Chongqing Urban Environment Project	Bosnia and Herzegovina	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1
Nairobi Wtr & Swg Inst Rst	Dominican Republic	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
BUKHARA/SAMARKAND WS	Niger	1	0	0	0	1	0	0	0	0	0	0	0	0	1	1
Ecuador Water Supply and Sanitation Project	Nigeria	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0
Ghana Community Water Project II	Croatia	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
VN-HCMC ENVMTL SANIT.	West Bank and Gaza	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Kerala Rural Water Suppl y and Sanitation Project	Albania	1	0	1	1	0	0	0	0	1	0	1	0	0	0	0
RY URBAN VVTR SUPPLY & SANITATION AP	Philippines	0	0	1	0	1	0	0	0	1	1	0	0	0	0	0
DUSHANBE WS	Iran, Islamic Rep.	1	1	1	0	1	1	0	1	0	1	1	0	0	0	0
CN-TAI BASIN URBAN ENVMT	China	1	0	1	1	1	1	1	1	0	0	1	1	1	0	0
Mostar Water and Sanitation Project	Iran, Islamic Rep.	1	1	1	0	1	1	0	0	1	1	0	0	0	0	0
LK: Second Community Water	Moldova	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0
TZ-Dar Water Supply & Sanitation (FY03)	Serbia	1	1	1	0	0	0	0	1	0	0	1	0	0	1	0
Wastewater Dispotal in Town Centers Project	Iran, Islamic Rep.	1	1	1	0	1	1	0	1	1	0	0	1	0	0	1
Water Sector Project Project	Afghanistan	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
MUN WATER & WW	Peru	0	0	0	0	0	0	1	0	1	1	0	0	1	1	1
Small Towns Water Project	St. Lucia	0	0	1	1	0	1	0	1	1	1	0	1	1	1	0

3.6 Statistical Regression and Descriptive Analysis

To determine the impact of QAE design stage factors on the overall DO rating of the selected project, regression analysis is conducted across the data. The dependent, independent and dummy variables used in the applied regression analysis are described in the sections below.

3.6.1 Regression Analysis – Independent Variables, Dependent Variable and Ordered Logistics Regression

The research is based on two sets of data: (i) the dependent variable: IEG_DO which is the development outcome of each project as rated by IEG and (ii) the 15 dependent variables as determined through the Panel Interview described above and in Table 10. Both are further elaborated below:

Dependent Variable: IEG_DO

IEG_DO is the IEG rating of each project DO in the sample which captures IEG's rating of project's effectiveness. It is a non-continuous ordinal variable with values 1, 2, 3, 4, 5. The higher number represents the better rating with 1 standing for Unsatisfactory, 2 for Moderately Unsatisfactory (MU), 3 for Moderately Satisfactory (MS), 4 for Satisfactory and 5 for Highly Satisfactory (HS)[18].

IEG_DO is an ordinal variable i.e. a variable that consists of numerical scores on an arbitrary numerical scale where the exact numerical quantity of a particular value has no significance beyond its ability to establish a ranking over a set of data points (J. S. Long & Freese, 2001; S. Long & Freese, 2006; Menard, 2002).

[18] A review of the data found that as only one project in the sample had been rated Highly Satisfactory, this project (Ouaga Water Supply Project in Burkina Faso) was included in the projects with Satisfactory (S) rating and categorized as having a rating of 4.

Independent Variables - QAE design factors

The independent variables are the QAE Design factors for the 32 research cases.

Dummy Variables

In addition to the dependent and independent variables described above, several "dummy variables" are also introduced to the regression. A dummy variable is one that takes the value 0 or 1 to indicate the absence or presence of some categorical effect that may be expected to shift the outcome (Hardy, 1993). The dummy variables used in the regression of this study are:

- **RegDum** is the dummy variable for Region which captures the different regions in which the specific project case in located;
- **IncomeDum** is the dummy variable for Income Group which clusters countries based on their income level, low income, lower middle income and upper middle income;
- **LendDum** is the dummy variable that identifies whether a project is financed by an IDA credit, an IBRD loan or a blend financing instrument;
- **Partialfin** is a calculated categorical variable identifying projects for which the Bank was the sole financier of the project (partialfin=0) versus projects for which the Bank provided a partial contribution to the overall expected project cost (partialfin=1). This dummy variable was introduced to capture whether the Bank financed the total cost of the project or instead provided partial financing towards the total cost. This dummy variable aims to identify possible variations in project outcome ratings and design/implementation modifications that may result from the introduction of local counterpart financing, or alternatively, financing from partner donor agencies;

EnvDum is the environment category dummy variable which clusters projects by environmental classification (i.e. Category A, B or C) wherein Category A projects are those that have the most significant anticipated environmental impacts and require the most mitigative upstream action, usually incorporated at project design.

Ordered Logistics Regression

The ordered logit model (also ordered logistic regression or proportional odds model), is a regression model for ordinal dependent variables (McCullagh, 1980). Given the non-continuous ordinal nature of the dependent variable in this research (i.e. IEG_DO), an Ordered Logistics Regression (OLR) model is considered appropriate[19]. (Baum, 2006; Boso, 2006; Gelman & Hill, 2007; H. Stock & W. Watson, 2010; Tarrow, 1995, 1995).

In the ordered logit model, there is an observed ordinal variable, Y which is a function of another variable, Y*, that is not measured[20]. The continuous latent variable Y* has various threshold points, κ. The value on the observed variable, Y, depends on whether or not a particular threshold has been crossed (Agresti, 2007; Draper & Smith, 1998; Robert M Groves et al., 2004; Kleinbaum & Klein, 2010).

For example[21], when M = 3:

$$\begin{aligned} Y_i = 1 \; if \; Y^*_i \; is \; \leq \kappa_1 \\ Y_i = 2 \; if \; \kappa 1 \; \leq Y^*_i \; \leq \kappa_2 \\ Y_i = 3 \; if \; Y^*_i \; \geq \; \kappa_2 \end{aligned}$$

Equation 1

[19] For example, if one question on a survey is to be answered by a choice among "poor", "fair", "good", "very good", and "excellent", and the purpose of the analysis is to see how well that response can be predicted by the responses to other questions, some of which may be quantitative, then ordered logistic regression may be used (Greene, 2012).

[20] Equally, in the ordered logit model, there is a continuous, unmeasured latent variable Y*, whose values determine what the observed ordinal variable Y equals.

[21] See Richard Williams, 2015 - https://www3.nd.edu/~rwilliam/stats3/L11.pdf

The continuous latent variable Y* is equal to:

$$Y^{*}_{i} = \sum_{k=1}^{k} \beta_k X_{ki} + \varepsilon_i = Z_i + \varepsilon_i$$

Equation 2

Note that there is a random disturbance term, which, in this case, has a standard logistic distribution which reflects the fact that relevant variables may be left out of the equation, or variables may not be perfectly measured. Because of the random disturbance term, the unmeasured latent variable Y* can be either higher or lower than Z. The Ordered Logit Model estimates part of the above:

$$Z_i = \sum_{k=1}^{k} \beta_k X_{ki} = E(Y^{*}_{i})$$

Equation 3

The K's and β's are parameters that are estimated through the regression and then used to compute Z_i for each case:

$$Z_i = \sum_{k=1}^{k} \beta_k X_{ki}$$

In the case of M = 3, the probability equations to be used become:

$$P(Y = 1) = \frac{1}{1 + \exp(Z_i - k_i)}$$

$$P(Y = 2) = \frac{1}{1 + \exp(Z_i - k_2)} - \frac{1}{1 + \exp(Z_i - k_i)}$$

$$P(Y = 3) = 1 - \frac{1}{1 + \exp(Z_i - k_2)}$$

Equation 4

3.6.2 Descriptive Analysis

Descriptive statistics provide inferential analysis of data and typically includes presentations of the mean, standard deviation and average of data collections.

This research undertakes univariable descriptive analysis and examines for trends across regions, project category with a specific focus on the relationship between the various QAE indicators and the project DO indicators. Findings are cross-compared to those of the regression analysis and presented in detail in Chapter 4.

3.7 Establish QAE at Entry Checklist

Based on the findings of the research and the conclusions accordingly drawn on the level of association between various QAE design factors and project DO outcomes, as well as the positive or negative correlation of any significance, a checklist of QAE design factors that should be considered at the Quality at Entry review meeting of every new water and sanitation infrastructure projects is proposed.

Chapter 4: Results and Discussion

The objective of this research is to determine which Quality at Entry (QAE) design factors of water and sanitation infrastructure projects in the developing world influence project development outcome (DO) ratings as determined by the Independent Evaluation Group (IEG). As described in Chapter 3, the QAE design factors are established through a Panel Interview of Subject Matter Experts (SME) and the IEG-rated project DO is established from a detailed review of each of the 32 project cases. Determination of the relationship between the various QAE design factors and IEG project DO ratings for each project is established through statistical regression analysis (using an Ordered Logistics Model) and descriptive analysis.

This chapter presents findings and analysis of the regression analysis and is followed by discussion of significance and impact of various dependent QAE variables on the design of new water and sanitation projects.

4.1 Statistical Regression - Results, t-tests and Interpretation

The results of the Ordered Logit Regression are presented in Table 14. After a series of iterations, several of the QAE dependent variables, depicted in the model, proved to better explain the dependent variable IEG_DO[22]. These are summarized in Table 15:

The results indicate that the overall model is statistically significant ($p < .0000$)[23], confirming the hypothesis that certain QAE design factors contribute to the overall DO rating of projects as determined by IEG.

[22] Logit coefficients are in log-odds units and cannot be read as regular coefficients to estimate predicted probabilities.

[23] There are four cut-points for this model because there are five levels of the outcome variable IEG_Out.

Table 12: Results of Ordered Logistics Regression

Ordered logistic regression — Number of obs = 32; LR chi2(14) = 56.10; Prob > chi2 = 0.0000; Log likelihood = -12.612834; Pseudo R2 = 0.6898

IEG_Out	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
ind1	11.87667	4.236648	2.80	0.005	3.572995	20.18035
ind2	-20.54605	7.193204	-2.86	0.004	-34.64447	-6.44763
ind5	.6209356	1.999009	0.31	0.756	-3.29705	4.538921
ind7	11.81488	4.543313	2.60	0.009	2.910147	20.7196
ind8	10.58727	3.889204	2.72	0.006	2.964571	18.20997
ind10	12.91363	4.613057	2.80	0.005	3.872203	21.95505
ind12	-17.1672	5.874666	-2.92	0.003	-28.68134	-5.65307
ind13	3.89855	2.363437	1.65	0.099	-.7337021	8.530802
ind15	5.859741	2.495219	2.35	0.019	.9692011	10.75028
RegDum1	-18.28042	6.55602	-2.79	0.005	-31.12999	-5.43086
RegDum3	-7.377403	3.696051	-2.00	0.046	-14.62153	-.1332758
RegDum4	-16.78338	6.078245	-2.76	0.006	-28.69652	-4.870241
RegDum5	3.746767	247.1253	0.02	0.988	-480.61	488.1035
RegDum6	-6.326544	3.207348	-1.97	0.049	-12.61283	-.0402577
/cut1	-6.657174	3.041589			-12.61858	-.6957686
/cut2	-3.661005	2.752568			-9.055938	1.733929
/cut3	3.483869	2.531346			-1.477477	8.445216
/cut4	28.3907	9.800921			9.181249	47.60015

Note: 1 observation completely determined. Standard errors questionable.

***: p < 0.01 **: p < 0.05 *: p < 0.1

Significance Tests

The T-test tests the hypothesis that each coefficient is different from 1. To reject this, the t-value has to be higher than 1.96 (for a 95% confidence), in which case the variable can be considered to have a significant influence on the dependent variable IEG_DO.

P>z: Two-tail p-values test the hypothesis that each coefficient is different from 0. To reject this, the p-value has to be lower than 0.05 in which case then variable has a significant influence on the dependent variable IEG_DO.

Prob > chi2: is a test to see whether all the coefficients in the model are different than zero. If this value is less than 0.05 then the model can be considered acceptable.

Table 13: Significance and Direction of QAE Independent Variables

	QAE Independent Variable	Significant	Direction
ind1	Disbursement projects in "S" curve	yes	+
ind2	Parliamentary Effectiveness Approval required	yes	-
ind3	Retroactive financing allowed	no	
ind4	Requirement for PMU to be established by effectiveness	no	
ind5	Cost recovery dependent on increase in tariff	yes	+
ind6	Local financing provided	no	
ind7	Major infrastructure prequalification completed prior to appraisal	yes	+
ind8	PMU includes a water/sanitation engineer	yes	+
ind9	PMU has experience with World Bank procurement	no	
ind10	Previous/ongoing projects are rated Satisfactory	yes	+
ind11	No land expropriation required	no	
ind12	PMU Director seconded from stakeholder government agency	yes	-
ind13	Responsible agencies involved in design of environment/social mitigation plans	yes	+
ind14	Environment and Social mitigation financed by the project	no	
ind15	Project links water, sanitation and hygiene	yes	+

The significance and direction of each relevant variable is discussed in the sections below. A discussion of the regression analysis results, coupled with descriptive analyses are also included to enhance interpretation of the results.

4.2 Significant QAE Variables – Findings and Discussion

4.2.1 Disbursement projects in S curve (Ind1)

This variable addresses the observed practice of proportionally allocating disbursement estimates of World Bank financed infrastructure projects over the project implementation period instead of designing project disbursements according to a project management S curve. Thus under current practice, disbursement estimates do not typically incorporate more accurate methods of disbursement estimating, such as the S curve method or Earned Value Method (EVM)[24] and a typical five year investment project would be generally assumed to disburse 20% of the total loan/grant amount per year for example.

[24] An example of EVM is: "Project A has been approved for a duration of 1 year and with the budget of X with 50% to be spent in the first 6 months. If now 6 months after the start of the project a Project Manager would report that he/she has spent 50% of the budget, one can initially think, that the project is perfectly on plan. However, in reality the provided information is not sufficient to come to such a conclusion. The project can spend 50% of the budget, whilst finishing only 25% of the work, which would mean the project is not

Background Literature

The disbursement of World Bank loans and grants is the subject of significant attention, both in academic literature on the effectiveness and management of ID projects, as well as internally within the World Bank project preparation and implementation cycle. Notwithstanding high management attention, slow disbursements may not necessarily represent issues with project implementation and may instead "signal careful project implementation with strict fiduciary safeguards, which may lead to better project outcomes (Denizer et al., 2013). Cost underruns are also documented and can be the result of several factors including: "depreciation/devaluation of local currency, competitive international bidding, reduced use of contingency funds, project design change and change to local taxes and interest policy" (Ahsan & Gunawan, 2010a). Alternatively, disbursement delays may signal projects that were prepared and approved too quickly, and were unprepared for timely implementation.

A recent academic review of financial management systems of World Bank projects for the past 25 years found for example that there is a "*systematic and persistent discrepancy between original and revised disbursement estimates on infrastructure projects, due to optimistic disbursement projections based on unrealistic implementation and procurement plans, as well as relatively large margins of error or contingency in initial cost estimates*" (Dener, Watkins, & Dorotinsky, 2011).

Kilby et al (2000 and 2013) also extensively reference the "disbursement culture" that prevails within aid agencies and focuses on bureaucratic incentives to "reward

doing well; or the project can spend 50% of the budget, whilst completing 75% of the work, which would mean that project is doing better than planned. EVM is meant to address such and similar issues" (Wikipedia, 2016)

complete disbursement of available budgets rather than the design of effective programs" (Alesina & Dollar, 2000; Askarov & Doucouliagos, 2013; Carothers, 2010; Cooper, 2008; Djankov, Montalvo, & Reynal-Querol, 2008; Dollar & Kraay, 2001; Easterly, Levine, & Roodman, 2004; Easterly, 2003; Fields, 2015; Hariri, 2013; Kosack, 2003; Wade, 2007).

Disbursement is closely monitored within the World Bank's internal supervision mechanisms of project implementation and is used as a proxy for a project management tool. This research argues however that given the lack of inclusion of classical project management tools and instruments (such as the EVM among others), disbursement on World Bank projects is more of a financial metric relating to the flow of funds as opposed to budget and schedule management. In fact, in their paper, Denizer, Kaufmann, and Kraay (2011) found no evidence that disbursement delays correlated with outcomes.

Notably, disbursement rates are reported as part of implementation review documentations (Figure 22) submitted at least every two quarters, are formally assessed as part of the post-implementation ICR and contribute to IEG's project development outcome rating.

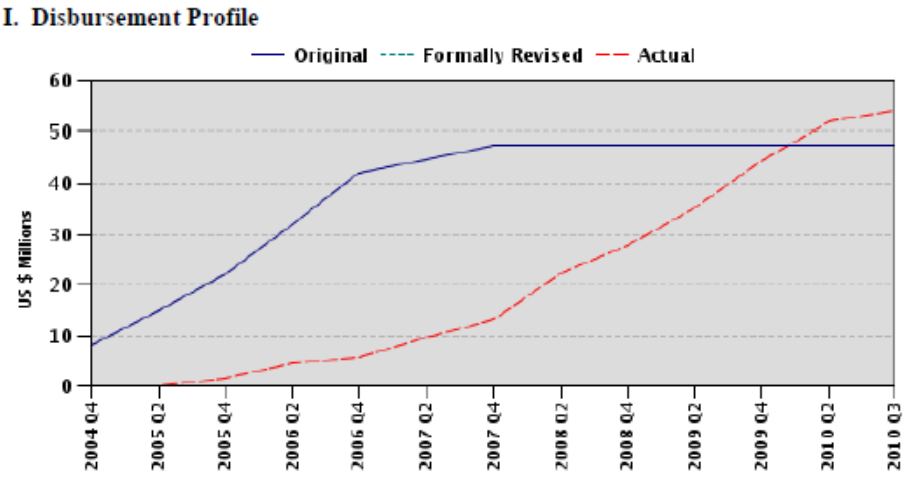


Figure 22: Example of Progress Reporting in World Bank financed project

Disbursement S Curve

The S-Curve is a form of mathematical theory, which aims to represent the utilization of resources over the proposed time of the project (Globerson & Zwikael, 2002; Hoffman, Ziebell, Fiore, & Becerra-Fernandez, 2008; Willis, 1995; R Youker, 1992). The curvature illustrates the side by side comparisons of the actual time and expenditure components vs. the proposed time and costs allocations of specific resources (PMBOK, 2010).

S-curves are an important project management tool. They allow the progress of a project to be tracked visually over time, and form a historical record of what has happened to date (Figure 23). Coupled with Earned Value analysis, S-curves allow project managers to quickly identify project growth, slippage, and potential problems that could adversely impact the project if no remedial action is taken (Garland, 2010). There are a variety of S-curves that are applicable to project management applications, including: Man Hours versus Time S-curve, Costs versus Time S-curve, Baseline S-curve, Actual S-curve, Target S-curve and Value and Percentage S-curves (PMBOK, 2010).

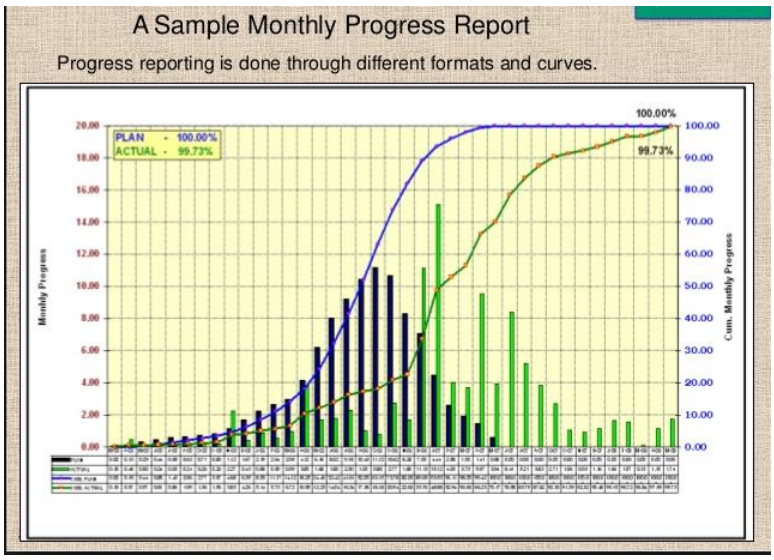


Figure 23: Example of S curve in Progress Report for typical project (Yadavalli, 2013).

Results

The review of documentation for each of the 32 cases considered as part of this study, included a detailed analysis of disbursement estimates produced at project preparation. On each project, the projected disbursement curve was examined to check for adherence to S curve methodology and/or inclusion of EVM estimation tools as part of project implementation. As shown in Table 14, projects are distributed approximately equally among those that have disbursements in an S curve in comparison with those that do not display this characteristic.

Table 14: Disbursement Projects in S Curve - Frequency and Distribution

ind1: Project disbursement in S curve	Freq.	Percent
0	17	53.13
1	15	46.88
Total	32	100

The regression found Ind1 to be significant at 99% significance level with a positive coefficient. This suggests that projects for which the disbursement schedule follows the S curve are expected to result in higher and more effective IEG outcome rating. The data further indicates that as project outcomes improve, projects tend to slightly include more disbursements in an S curve than those without disbursements in S curve (Figure 24). This is in line with the positions described above as well as perceptions of the SME's, traditional project management approaches and best practice in infrastructure and construction projects that incorporate disbursement estimates across the project life cycle to follow the S curve.

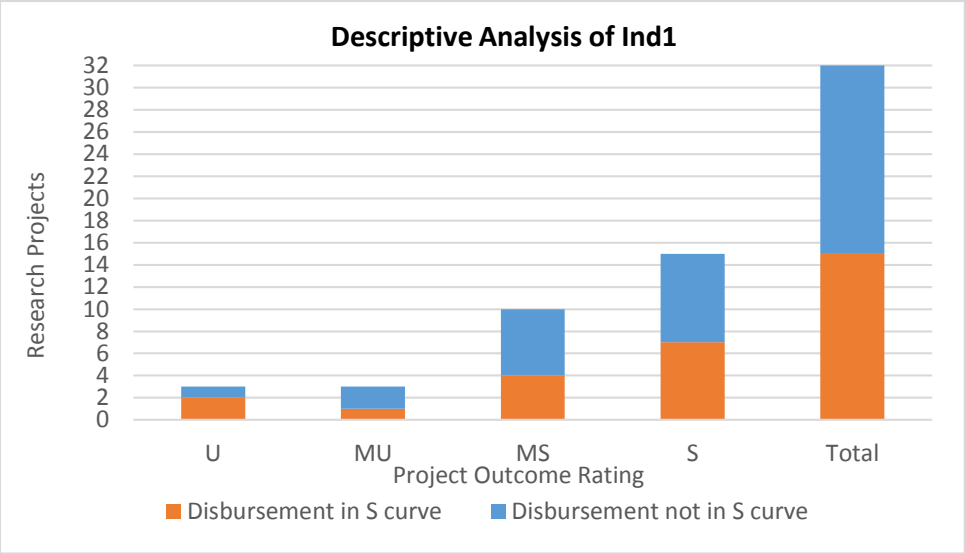


Figure 24: Descriptive Analysis of Ind1: "Disbursement in an S curve" Results (Author's calculation)

Consequently, we can conclude that projects at the design stage of preparation must prepare an implementation budget and schedule that reflects a realistic S curve and that formal project scheduling and budgeting processes be applied to World Bank project design.

4.2.2 Parliamentary Effectiveness Approval required (Ind2)

After a project is presented to the World Bank Board for approval, the loan documents are signed by the Borrowing country representative (usually the Ministry of Finance). In some countries, the legislative requirement is for the signed loan documents to also be submitted to Parliament for final approval, also called the requirement of project "Effectiveness".

Ind2 establishes whether approval by a country's parliamentary (or equivalent) legislative body of loan documentation is required ahead of the start of project implementation and what the impact is on the development outcome of the infrastructure project under study.

Background Literature

A review of widely cited academic literature on the topic of aid effectiveness and governance (Agénor, Bayraktar, & El Aynaoui, 2008; Alesina & Dollar, 2000; Brumm, 2003; Carothers, 2010; Cooper, 2008; Dollar & Kraay, 2001; Hariri, 2013; Hermes & Lensink, 2001; Hoeven, 2001; R. Lensink & White, 2001; Robert Lensink & White, 2000a, 2000b; Meyers, 2009; Woods, 2009) indicates that the origins of this effectiveness requirement most likely stems from donor tendency to allocate aid to those countries that have a certain set of "allegedly beneficial institutions and policies" (Winters, 2011). These beneficial institutions are likely to be rooted in principles of democracy and representative governance of which Parliamentary approval of projects can be considered a proxy.

The requirement to await Parliamentary effectiveness typically significantly delays the launch of project activities, particularly in countries where political environments impede the effectiveness process [25]. "Ind 2: Parliamentary Effectiveness Approval Required" thus tests the impact of this condition on the overall project outcome.

Results

Across the 32 projects reviewed as part of this research, the frequency and distribution of ind2 variable are presented in Figure 25 and Table 15 below.

Table 15: Requirement of Parliamentary Effectiveness - Frequency and Distribution

ind2: Parliamentary Effectiveness Approval required	Freq.	Percent
0	27	84.38
1	5	15.63
Total	32	100

[25] In Lebanon for example, Parliament has not met for over 2 years and thus many World Bank financed projects, several of which address the urgent issue of fiscal support to manage the large influx of Syrian refugees, cannot proceed without ratification by the Parliament.

The regression found Ind2 to be significant at 99% significance level with a negative coefficient, suggesting that projects for which the Parliamentary Effectiveness Approval is required are less likely to deliver satisfactory outcome.

As shown in Figure 25, the overwhelming majority of projects with MS, S or HS rating did not require parliamentary effectiveness and approvals prior to the launch of project implementation. This is in line with the perception that projects that require this additional layer of clearance from inherently political counterparts will have a net negative effect on project outcomes.

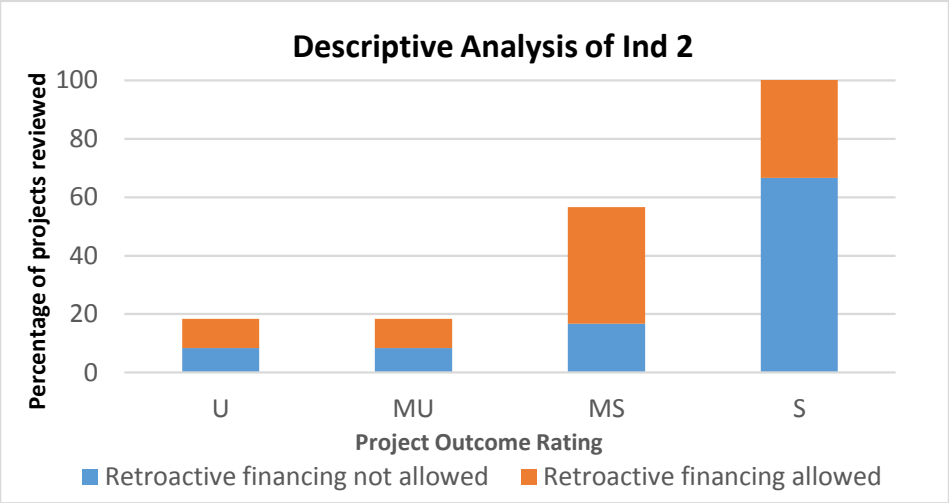


Figure 25: Descriptive Analysis of Ind2: Requirement of Parliamentary Effectiveness

This result suggests that notwithstanding any other factors, when a project is being implemented in a country where Parliamentary effectiveness of loan documents is required, the project outcome is less likely to be satisfactory.

This could be caused by the inherent delays to project implementation schedules when effectiveness requirements are not met as scheduled. The involvement of political bodies in the decision making process also inherently allows more interference into project planning and implementation by local counterparts and stakeholders, potentially enabling more scope creep and deviation from the project development objectives. Finally, the

requirement for effectiveness and potential negative impacts to the project schedule, also infers negative implications to the project budgeting requirements.

While the inclusion of an effectiveness condition based on Parliamentary approval was likely established as a proxy for ensuring stakeholder engagement and to confirm beneficiary demand for the proposed project, we can conclude that in reality project implementation and, accordingly, project results, are less likely to be delivered on time and or on schedule when Parliamentary approval is required ahead of the launch of project implementation. This suggests that projects at preparation stage should reconsider the option of including a Parliamentary effectiveness condition for project implementation and seek alternative methods of ensuring stakeholder and counterpart buy in to the project that do not impede project outcomes as demonstrated.

4.2.3 Major infrastructure pre-qualification completed prior to appraisal (Ind7)

"Ind7: Major Infrastructure Prequalification completed prior to appraisal" determines whether critical procurement phases (namely prequalification and shortlisting of eligible contractors) was undertaken ahead of project appraisal, i.e. the stage at which project costing and all associated procurement plans are finalized.

Advancement in the procurement and prequalification of large contracts is a commonly-used measure of project implementation "readiness" (Appendix 2) in that infrastructure on which prequalification of contactors has already taken place, will lead to a more swift and effective mechanism to progress to subsequent stages of procurement and contracting, thus leading to reduced delays in project implementation and/or changes in cost estimates of major infrastructure.

Background Literature

Contractor prequalification is one of the first steps of the procurement of infrastructure works and involves the screening of contractors who express interest in performing the works, according to experience, financial viability and previous references, in order to compile a short list of qualified contractors to whom the final set of bidding documents are circulated for competitive bidding procedures. Contractor prequalification is a major milestone of the procurement plan of large works infrastructure and has a high perceived value in positively impacting the development outcomes of projects (Figure 26)

Question	Average	Proc Staff	Bank TTLs	Country Clients
In terms of project preparation, how effective is the Bank's procurement design/ planning process at contributing to overall project outcomes?	3.4	3.2	3.4	3.5
With respect to the Bank's requirement that the borrower prepare a procurement plan that is updated regularly throughout the project, to what extent does this requirement contribute to procurement outcomes?	3.6	3.4	3.8	3.6

SOURCE: IEG questionnaire.
NOTE: 1 = negligible; 2 = modest; 3 = substantial; 4 = high. TTL = task team leader.

Figure 26: Bank support during procurement design and planning - findings of an IEG survey (World Bank, 2014)

Though not a technical financing requirement in most cases, finalizing works pre-qualification at an early stage of project preparation is good practice for several reasons including: (i) pre-qualification is an effective means to "test the market" for the works to be undertaken and to ensure competitiveness and a high number of bidders for the work; (ii) the pre-qualification process for large works contracts in particular can entail shortlisting between hundreds of potential interested contractors, which is both time

consuming and sensitive to governance and transparency risks in selection and (iii) through the pre-qualification process, interested works contractors have the opportunity to point to issues in the design and/or works methods or other important issues, which may require additional attention and can also positively impact the rate of project implementation. Thus an upstream completion of the pre-qualification process will generally positively affect the rate of project implementation in subsequent stages.

The author's experience however is that counterpart agencies tend to resist moving forward with pre-qualification of works before the loan agreements are signed and financing arrangements are confirmed, for several key reasons:

- Concern over public awareness raising of World Bank financing of works infrastructure particularly when these works invoke land expropriation and/or resettlement wherein counterparts fear that the announcement of World Bank financing (and by association, World Bank environmental and social safeguards application), would prompt a reactive move of people and property onto the associated land, thereby driving up the overall cost of the project; and
- Concern that the procurement process, once launched, cannot be closed in a timely manner (by contract award), as a result of other project launch impediments (such as the requirement for effectiveness declaration, mobilization of funds, upstream safeguards requirements etc.) which would ultimately lead to the failure of that procurement process. Works contractors for example would only submit a bid validity form for a pre-specific period of months and this cannot be extended indefinitely without significant financial consequence and is thus an important concern.

On large infrastructure works, contract prequalification can be particularly time consuming and is one of the leading causes of schedule delays on projects. In addition, procurement, governance and anti-corruption practices remain closely monitored issues particularly in infrastructure sectors such as water, energy and transportation (Figure 27). Between 2012 and 2015 for example, the water sector had some of the highest numbers of new corruption cases filed by the World Bank's Integrity Unit (INT)[26].

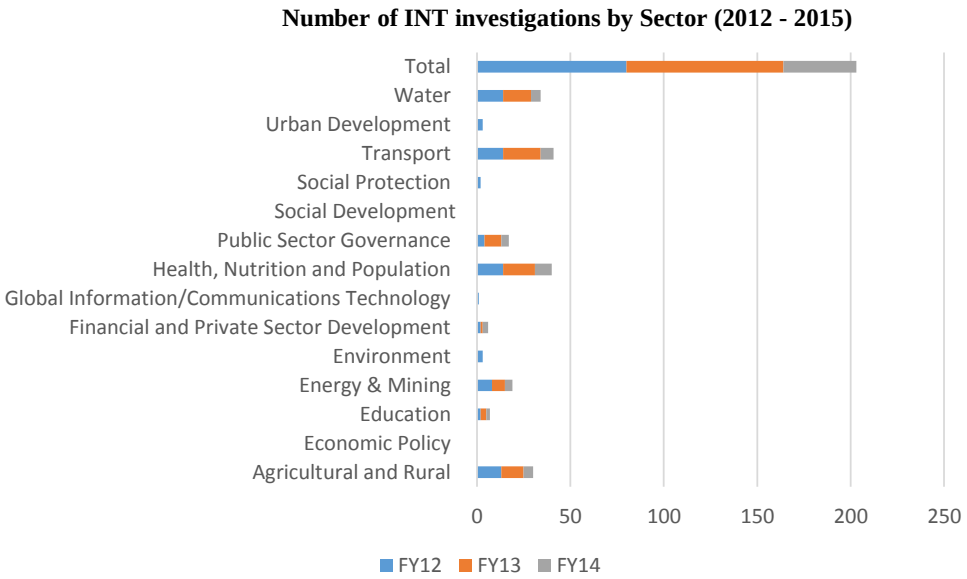


Figure 27: Number of INT cases by sector between 2012 - 2015

Results

Interestingly, despite strong arguments for finalizing project prequalification ahead of appraisal and strong positive correlation on the Panel Interview, of the 32 cases reviewed, only 6 incorporated a requirement for infrastructure pre-qualification to be complete prior to appraisal (Table 16). This is a particularly relevant finding given that the 32 cases were selected specifically to be infrastructure-intensive and to be over a minimum

[26] INT uses the "delays to procurement" metric, as a proxy to potential governance/corruption issues and monitors this indicator closely, particularly on large works contracts.

cost threshold, thereby ensuring that the large majority of project components were large construction/infrastructure components.

Table 16: Major Infrastructure Prequalification completed prior to Appraisal - Frequency and Distribution

Ind7: major infrastructure prequalification completed prior to appraisal	Freq.	Percent
0	26	81.25
1	6	18.75
Total	32	100

Analysis of data demonstrates however that 78% of projects that incorporated the requirement to complete contract prequalification prior to appraisal, had a project outcome rating of MS, S or HS.

The regression further found Ind7 to be significant at 99% significance level with a positive coefficient. This suggests that projects for which the major infrastructure pre-qualification requirements are completed prior to appraisal are more likely to generate higher IEG_DO ratings.

Despite the fact that advancing in prequalification of large works is currently only a recommended best practice (and not a requirement within the World Bank project preparation cycle), what is particularly relevant about this finding is the requirement to complete pre-qualification prior to project *appraisal*, i.e. the stage at which project arrangements, including financing and contracting arrangements, are finalized and recorded in the financing agreement with the World Bank, but prior to loan/grant negotiations and/or launch of project implementation.

This allows the project scope to reconfirm the estimated costs and to determine availability of competitive interest in the implementation of works, thus leading to fewer issues relating to governance and transparency during project implementation. It also

allows the World Bank task team closer control in monitoring the process and outcomes of the pre-qualification process, including adherence to the World Bank Procurement Guidelines and Procedures.

Through this finding, we can thus conclude that while the procurement process as a whole (i.e. ending in contract award) does not need to be finalized prior to the finalization of project and financing arrangements, it is important nonetheless for the pre-qualification process to be completed prior to appraisal.

The study suggests that projects under preparation should incorporate a parallel preparation stream that focuses on the upstream finalization of the procurement plan and the advancement in pre-qualification as part of the preparation timeline. Projects up for discussion at a QER review would thus present the preparation timeline which incorporates specific allowances for the finalization of procurement plan generally and the pre-qualification of large works contracts in particular.

4.2.4 PMU includes a Water/Sanitation Engineer (Ind8)

Ind8 determines whether the Project Management Unit (PMU), i.e. the entity established to management project implementation on a daily basis, comprised a water and sanitation engineer responsible for the oversight of technical issues involved in project implementation.

This variable is intended to establish the level of technical expertise within the PMU and possible impact on project outcomes, particularly as it relates to oversight of construction management consultants and works contractors, processing of variation orders, orders to commence and other important contracting milestones that directly impact

the rate of project implementation and disbursement, and for which experience in works contracting would be highly valuable.

Results

Of the 32 cases examined, approximately 30% included a water and sanitation engineer (Table 17).

Table 17: PMU includes a Water and Sanitation Engineer - Frequency and Distribution

Ind8: PMU includes a water and sanitation engineer	Freq.	Percent
0	22	68.75
1	10	31.25
Total	32	100

Further, 90% of projects that included a water and sanitation engineer had a project outcome rating of MS, S or HS (Figure 28) which confirms the Panel Interview assessment on the importance of technical leadership within the PMU, in order to deliver on more successful project outcomes.

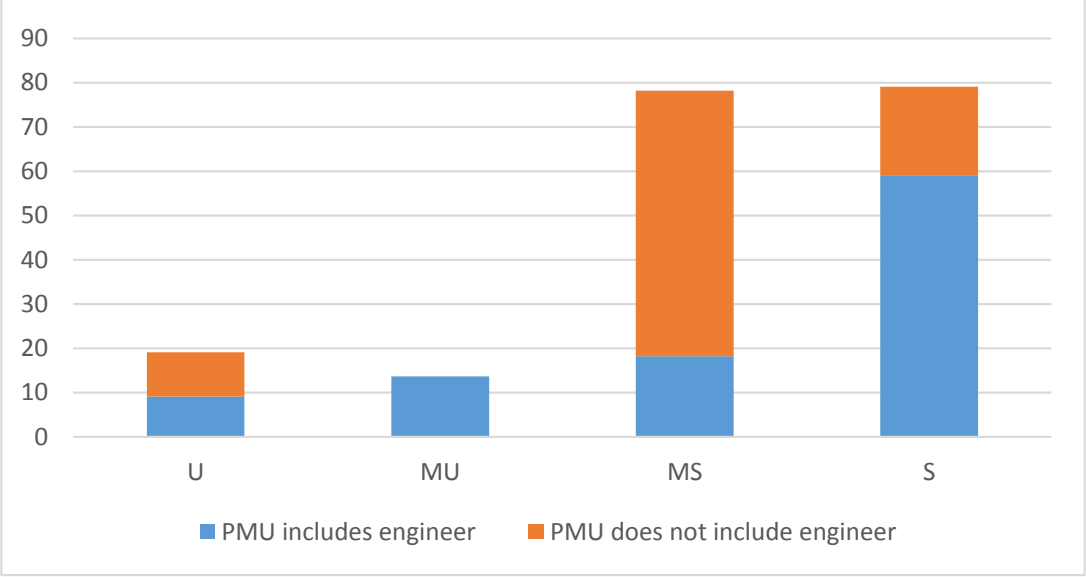


Figure 28: Descriptive Analysis Ind8

The regression found variable ind8 to be significant at 99% significance level with a positive coefficient, suggesting that the projects for which the PMU includes a water/sanitation engineer are expected to result in higher and more effective outcome.

This finding is particularly important given that PMU's are not necessarily technically staffed with engineering experience on large infrastructure projects. This is for several key reasons which include:

- large infrastructure projects typically incorporate construction supervision consultants to oversee the implementation of the works contracts. These supervising engineering entities form the mechanism for the reviews of invoices, variation orders and other project management documentation which are endorsed by the PMU on behalf of the client. This then establishes an environment that suggests that the PMU needs not to highly technical given the presence of the construction supervision engineers;
- as a temporary unit established for the period of project implementation, the PMU is co-dependent on the project's beneficiary agency or stakeholder, which itself can be staffed by technical experts and
- regular requirements related to fiduciary, safeguards and financial monitoring and controls of the project, as imposed by the donor agencies including the World Bank, tend to take center stage as they are often a condition of financing and/or reimbursement.

This finding is thus particularly important because it re-emphasizes the need for a water and sanitation engineer to participate in project supervision in order to increase the likelihood of project effectiveness. Projects at the design stage of preparation that are

considering the composition and qualifications of various PMU members, should thus be requested to incorporate a specific position for a water and sanitation engineer, as part of the PMU structure.

4.2.5 Previous/Ongoing Projects are rated "Satisfactory" over past Fiscal Year (Ind10)

Twice per year, World Bank task teams produce an Implementation Status Report (ISR) for each project under implementation that summarizes the status of the project from a financial, technical, safeguards and fiduciary perspective. The implementation status of the project is rated relative to the ultimate project development objective, and if this rating is unsatisfactory, the project is flagged as a "problem project". In addition, task team leaders indicate with a series of flags whether there are concerns about specific dimensions of project performance, including problems with financial management, compliance with safeguard, quality of monitoring and evaluation, legal issues, etc. If three or more of these flags are raised at any one point in time, the project is identified as a "potential problem project".

Ind10 determines whether previous or ongoing projects in the water sector of the country in question had been rated as having "satisfactory" outcomes and establishes the impact on subsequent projects under implementation.

Background Literature

Several recent studies have found that country context and the local strength of institutions and capacity for implementation have a strong positive correlation with project outcomes (Denizer et al., 2013). These studies have however also identified the importance of establishing potential within-country variations based on "project-level factors"

including project size, project manager capacity, and early warning signs such as those identified in ISR ratings and associated flags described above (Dekom & Profit Management, 1986; Deli, Patricia, Aart, 2014; Denizer et al., 2013; Devereux, 2005).

Results

Across the 32 cases reviewed in this study, approximately 30% were associated with other water-sector projects that had been rated as satisfactory in implementation over the past year (Table 18)

Table 18: Previous/ongoing projects are rated satisfactory in past FY - Frequency and Distribution

ind10: Previous/ongoing projects are rated satisfactorily in past FY	Freq.	Percent
0	22	68.75
1	10	31.25
Total	32	100

The Regression found variable Ind10 to be significant at 99% significance level with a positive coefficient. This suggests that projects that are implemented in parallel to an on-going project or follow a previous project that was rated as having "satisfactory" implementation over the past Fiscal Year are more likely to result in satisfactory outcome. Relevant to the design and preparation phase of new projects, this finding thus suggests that new projects being implemented in an environment that has enabled "satisfactory" implementation performance will therefore also be likely to obtain positive results in satisfactory performance in the future.

This finding can be attributed to the existence of established working relationships with borrowers and implementing agencies within the same sector, established capacity for implementation and a general sense of momentum surrounding the water and sanitation

sector, perhaps due to political, social, climactic (severe drought for example) or other extraneous factors.

These same-sector projects may also benefit from the experience and expertise of established PMU's and beneficiary government agencies, and will thus face a less-steep learning curve, particularly as they relate to World Bank –specific procedures, such as those related to procurement, financial management and or environmental and social safeguards.

Notwithstanding, it is important to note that this finding also therefore suggests that those projects being proposed in an operating environment that has not yielded satisfactory implementation ratings are thus also at a disadvantage from the onset. Projects at the design stage that fall in this category should therefore ensure very close monitoring of country-context factors that may influence project implementation (upcoming elections, significant changes to sector-wide water tariffs, large scale transboundary negotiations, fiduciary management of previous projects etc) and design responsive and flexible project components, based on upstream informed risk management.

4.2.6 PMU Director seconded from Stakeholder Government Agency (Ind12)

Ind12 determined whether the Director of the PMU, responsible for the implementation of all aspects of project activities, was seconded from a government agency (versus being retained as an independent consultant or advisor).

This indicator reflects the practice that PMU's tend to recruit independent local/international experts (often in a consulting capacity) to manage project implementation, as opposed to embedding a government official as PMU director

(Organisation for Economic Co-operation and Development, 2008; Stern, E.D; Altinger, L.; Feinstein, O.; Marahon, M.; Schultz, N.-S. and Steen Nielsen, 2008).

This practice is common for several key reasons including: (i) the need to ensure full-time availability of the PMU director to manage the project without distraction from a parallel function; (ii) the requirement to meet specific World Bank guidelines on safeguards and procurement implementation, which a local staff may not have experience in handling and (iii) fiduciary limitations to financing local staff salaries, as per World Bank guidelines, as a measure of governance and fiduciary management. An independent consultant hired to act as the PMU Director would most typically be eligible for Bank financing of the contract, on the other hand.

Results

The 32 cases examined as part of this research included 8 projects from which the PMU Director had been seconded from a government agency, representing 25% of the total sample. The remainder of the projects involved a PMU Director that was not a government official and was likely an independent consultant hired to oversee project implementation exclusively.

Table 19: PMU Director Seconded from Government Agency - Frequency and Distribution

ind12: PMU Director seconded from Government stakeholder agency	Freq.	Percent
No	24	75
Yes	8	25
Total	32	100

The regression found variable Ind12 to be significant at 99% significance level with a negative coefficient. This suggests that the projects for which the director of the Project

Management Unit is seconded from the stakeholder government agency will not necessarily perform more positively than other projects.

In a first instance, this can be considered as counterintuitive since the recruitment of a PMU Director from a counterpart agency is widely thought to be best practice in ensuring client ownership, reducing possibilities for fraud and corruption and also providing less incentive for project extensions which would de facto also extend the term of PMU contracts. Notably, PMU members are often paid several times more than public sector employees of the same qualifications and experience and is a large source of friction on development projects.

The findings of this indicator suggest however that the opposite scenario is actually true i.e. PMU Directors seconded from government agencies were associated with less successful projects. Several reasons for this could be considered:

- Government official's potential for reduced neutrality vis a vis the beneficiary agency: If a PMU Director is seconded from a previous position at the local Ministry of Water for example, he/she is more likely to be influenced by the internal motivations, policies and directions of that Ministry. This may lead to a reduction in net neutrality and objectivity in terms of project implementation;
- Potential tendency to avoid taking informed risks: The management of project implementation involves risk management in various forms. One hypothesis is that a PMU Director seconded from a government agency (to which he/she would likely return after the close of the project or after a pre-determined amount of time), may be less likely to take on informed risk management to avoid association with medium or long term impacts.

- Issues with compensation: ID projects are often challenged with the issue of large variations in the compensations provided to local staff verses that provided to consultants (a large majority of whom may also be local). This is largely attributed to the fiduciary controls that are put in place as part of implementation arrangements and flow of funds controls to curb corruption on large scale projects. PMU staff seconded from a government agency may thus be subject to lower relative compensation (as they would be restricted to government salaries for example) and thus may exhibit lower motivation to actively oversee project implementation as compared to an independent consultant.

4.2.7 Responsible agencies involved in the design of Environment/Social mitigation plans (Ind13) and Environment/Social mitigation plans financed by the project (Ind14)

Infrastructure projects are typically categorized as being under Safeguards Category A or B indicating that they will entail significant environmental and/or social impacts. An environmental/social mitigation plan is consequently developed (including a budget and timeline) and agreed with the implementing agency as part of loan documents, to mitigate these impacts. The design of an Environment and Social Management Plan (ESMP) is a high priority activity in the preparation of World Bank financed projects particularly as it requires full adherence with the World Bank Environment and Social Safeguards (Appendix 2 and 3). The mitigation measures described in the ESMP are budgeted and responsibilities associated accordingly for monitoring through project implementation. The ESMP is also publically disclosed at least 120 days prior to

presentation to the World Bank Board of Directors (adhering to the Pelosi Amendment requirement for disclosure for example[27]).

The World Bank requires significant amounts of public consultations with beneficiaries, communities, NGO's and other non-government stakeholders on project design throughout the preparation and implementation phase. The Bank also ensures that citizen engagement feedback loops and grievance redressal mechanisms are incorporated into project design to mitigate impacts and monitor the implementation of environment and social management plans. In contrast, this variable focuses on the consultation with and incorporation of feedback from the *government agencies* themselves responsible for the financing, implementation and/or monitoring of the ESMP.

Ind13 thus determines whether the agencies involved in the design and implementation of environment and social mitigation measures were consulted during project design and if a sustainable mechanism for project control was incorporated at project design and throughout implementation. This indicator assesses the level of involvement of specialist environment and/or social agencies in the design and implementation of these mitigation measures, as a proxy for involvement and ownership of these important preventive measures.

Ind14 on the other hand determined whether the environmental and social mitigation measures identified in the ESMP are clearly *financed* by the project.

[27] As per McElhinny and Schwartz (2014): "The Pelosi Amendment requires the public disclosure of environmental impact assessments of individual Bank projects that pose significant potential impacts on people or the environment 120 days before the U.S. Executive Director of any MDB can vote to support a proposed project that is presented to the Board"

Background Literature

The World Bank's environmental requirements are described in Operational Policy OP 4.01 on Environment Assessment (see Appendix 3). Other policies relating to environmental management include those relating to pest management, forests, dam safety, natural habitats, indigenous people, projects in international waterways and projects in disputed areas. There is no specific policy on social safeguards although these issues are covered piecemeal across a variety of policies and guidelines.

In 2003, the Equator Principles (Figure 29) were adopted to "determine, assess and manage environmental and social risk in project finance". The Equator Principles are primarily intended to provide a "minimum standard for due diligence to support responsible risk decision-making and are applicable to projects over 10 MUSD[28]". The 32 cases selected for this study were filtered as being larger than 10 MUSD, as a proxy for the threshold set by the Equator Principles.

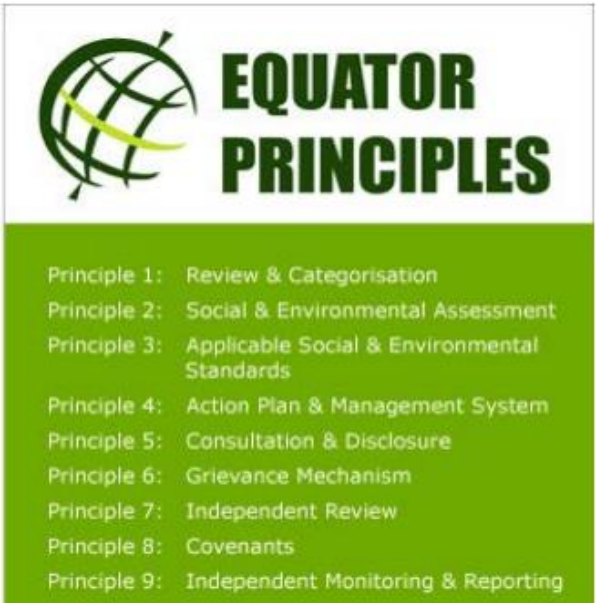


Figure 29: Equator Principles

[28] See www.equator-principles.com – accessed on May 14, 2016

Results

Only 25% of the projects reviewed involved responsible agencies in the design or environmental and social mitigation measures (Table 20). Similarly, only 28% of projects reviewed included ESMP actions financed by the project. This assumes that the cost of ESMP implementation is borne by funds outside of the project and/or are not clearly defined and agreed as part of project documentation (Table 21).

Table 20: Responsible agencies involved in the design of environment/social mitigation plans - Frequency and Distribution

ind13: Responsible agencies involved in the design of environment and social mitigation plans	Freq.	Percent
0	24	75
1	8	25
Total	32	100

Table 21: Environment/social mitigation plans financed by the project - Frequency and Distribution

ind14: Environment/Social mitigation plans financed by the project	Freq.	Percent
0	23	71.88
1	9	28.13
Total	32	100

The regression found Ind13 to be significant at 90% significance level with a positive coefficient, suggesting that projects for which the responsible agencies are involved in the design of ESMP are expected to result in higher and more effective outcome. Ind14 on the other hand was not found to have statistical significance in terms of impact on IEG_DO outcomes.

It is important to note that the relative lack of inclusion of agencies responsible for the design and implementation of environment and social mitigation plans does not necessarily signal that these plans were not developed and implemented. In fact, a minimum threshold of public consultations and consultations with expert agencies is typically required on large infrastructure projects[29]. It is instead, the feedback loop from these engagements and the issue of inclusion and participation by expert technical agencies, as opposed to for example the PMU (which may be less technically engaged and/or influential in the reform of environment and social protection policy in a particular country), which are suggested to be more critical in the overall development effectiveness of projects under consideration.

While engaging actively with the institutions responsible for the implementation of environmental and social mitigation plans may require additional upstream preparation time, budget and effort, the results confirm the importance of upstream engagement and participation as a means of positively impacting project development outcomes in the medium and long term.

Thus, while the project preparation team, both at the World Bank and in-country, involves environment and social specialists, it is critical that the responsible agencies, i.e. the Ministry of Environment, the Ministry of Social Affairs, Ministries of Culture, Ministry of Cultural Heritage and/or other associated stakeholder organizations, be included in preparatory discussions and confirms arrangements for monitoring and implementation of environmental and safeguards issues.

[29] The Bank requires consultations with civil society organizations (CSO's) which it defines as "the wide array of nongovernmental and not-for-profit organizations that have a presence in public life and express the interests and values of their members or others, based on ethical, cultural, political, scientific, religious or philanthropic considerations" (World Bank, 2007)

4.2.8 Project links Water, Sanitation and Hygiene (Ind15)

This variable determined whether the project incorporated a focus on hygiene as part of water and sanitation components. This is considered highly relevant in the context of projects that focus on increasing the number of household connections to wastewater collection and treatment infrastructure for example, and assessed whether the positive anticipated impact on hygiene was incorporated into project outcomes.

As shown in Figure 30[30], water, sanitation and hygiene are very closely inter-connected in the design of the MDG's for water and sanitation, but also in the reduction of infant and child mortality, which are closely interlinked with waterborne diseases and diarrhea (UNICEF, 2015).

[30] Data for these indicators are collected in the standardized Demographic and Health Surveys (DHS) conducted in over 100 countries around the world. (http://www.measuredhs.com) A second source of these data are the Multiple Indicator Cluster Surveys (MICS) and modules supported by UNICEF, and used in 100 countries since 1998 (full information and MICS data available at www.unicef.org, search for MICS). Indicators for other water and sanitation interventions are described in "Water and Sanitation Indicators Measurement Guide", Billig et al 1999.

Millennium Development Goal	Intermediate mechanism	Target Group	Indicator
Reduce infant and child mortality by 2/3 by the year 2015	Reduce diarrhea morbidity and mortality	Children under 5	% children under 5 with diarrhea in the past 2 weeks (diarrhea is defined as more than 3 loose stools in 24 hours)
Key behaviors	**Interventions**	**Target Group**	**Indicator**
Hand washing with soap	Demonstrate good hand washing Educate on when to wash Hygiene education Provide soap	People caring for children and preparing food	% child caregivers and food preparers with appropriate hand washing behavior *
Sanitation	Build toilets and pit latrines Promote use of toilets and latrines Promote defacation in designated areas Promote burial of feces Clear feces from homes and yards	Population	% population who use toilet or pit latrine **

Figure 30: Handwashing behavior linkages to MDG on infant and child mortality reduction (World Bank, 2003 and UNICEF, 2015)

Results

Approximately 35% of the cases reviewed incorporated sanitation and hygiene into the design of project components. Further, the regression found a positively significant relationship between projects that incorporate hygiene and sanitation components into project design, with the overall development outcome of those projects.

Table 22: Project links water, sanitation and hygiene - Frequency and Distribution

Ind15: Project links water, sanitation and hygiene	Freq.	Percent
0	21	65.63
1	11	34.38
Total	32	100

These results thus confirm the international community's position on the critical interlinkages between water, sanitation and improved hygiene. Bank teams involved in the design of new water and sanitation infrastructure projects must therefore consider mechanisms for ensuring that water and sanitation infrastructure, in its many forms, is directly leading to improved hygiene and access to improved water sources within beneficiary communities, including through the incorporation of the World Bank's "core sector indicators" into project design and implementation (Table 23).

Table 23: Examples of World Bank Core Indicators for Water/Sanitation Projects (World Bank, 2012)

1. People in urban areas provided with access to "Improved Sanitation" under the project (number).
2. People in urban areas provided with access to regular solid waste collection under the project (number).
3. People provided with access to "improved sanitation facilities" under the project (number)
4. Improved latrines constructed under the project (number)
5. People trained to improve hygiene behavior or sanitation practices under the project (number)
6. People provided with access to "improved sanitation facilities" under the project (number)
7. New household sewer connections constructed under the project (number)

4.3 Non-Significant QAE Variables – Findings and Discussion

4.3.1 Cost Recovery Dependent on Increase in Tariff (Ind5)

"Ind5: OPEX cost recovery dependent on increase to tariff" captures the degree of reliance of a project on plans for increases to the local water/sanitation tariffs as a means to finance investment and/or operating costs.

An overview of literature pertaining to the cost recovery models of water and sanitation utilities globally concludes that sustaining the operation and maintenance (O&M/OPEX) costs of water and sanitation infrastructure generally involves: (1) the application of or increase to a local water tariff or (2) implementing a financial subsidy such as large transfers from tax revenue, underpricing of raw water inputs in water production and/or cross-subsidization with the customer base. (Holt, 2005; Hunter, Zmirou-Navier, & Hartemann, 2009; Kayaga & Franceys, 2007; Komives, Halpern, Foster, & Wodon, 2006).

During the 1990's, there was a general tendency to advocate for full-cost recovery in water services, to help reduce the need for subsidies, and to improve the financial viability of water and sanitation utilities (Harttgen & Klasen, 2013; Hunter et al., 2009; G Hutton, 2013; Islam & Yoshida, 2009; Whittington, Nauges, Fuente, & Wu, 2015; Whittington et al., 2015; Winters, 2014; Yepes & Mundial, 1998).

In practice, achievement of full-cost recovery has proven to be politically and socially difficult. In many parts of Asia and Africa for example, the tariff increases required for full cost recovery would "push about half of households in Africa and South Asia, as well as about a third of households in East Asia, to devote more than five percent of total

monthly expenditure or income to water or electricity service[31], or to reduce their consumption of those services below subsistence norms"(Komives, Halpern, Foster, Wodon, & Abdullah, 2007; Komives, Whittington, & Wu, 2001; Whittington et al., 2015; Yepes & Mundial, 1998).

Further, water utilities access such large groups of local populations, that political acceptance of increases to tariffs etc. is also not widespread. The fact that even in high-income countries, only 50 percent of water utilities charge tariffs high enough to cover more than O&M costs (Figure 31) further emphasizes the difficulty of raising water tariffs and the norm that some degree of general subsidy is thus to be anticipated (Assessment, 2012; Whittington et al., 2015; Yepes & Mundial, 1998).

Yet, despite this documented evidence, infrastructure projects continue to be typically designed to directly rely on increases to the local water tariff as a principal measure for sustaining operation and maintenance over the design life of the infrastructure.

A 2009 evaluation of water sector projects by the Independent Evaluation Group found cost recovery to be among the issues that have not yet been sufficiently tackled. The review focused on projects implemented between 1997 and 2007 in water supply and sanitation and in irrigation and drainage. For example, only 15 percent of the water supply and sanitation projects that attempted full cost recovery actually achieved this goal.
The evaluation concluded that "limited success with full cost recovery has caused the Bank to moderate its approach, but the question of who will pay for uncovered costs remains to be resolved." (IEG, 2009).

[31] The internationally accepted norm is for households to spend not more than 2% of household income on water and sanitation services.

	Developing countries	*Industrialized countries*
<US$0.20/m^3	Tariff *insufficient* to cover basic operation and maintenance (O&M) costs	Tariff *insufficient* to cover basic O&M costs
US$0.20–0.40/m^3	Tariff *sufficient* to cover operation and some maintenance costs	Tariff *insufficient* to cover basic O&M costs
US$0.40–1.00/m^3	Tariff *sufficient* to cover operation, maintenance, and most investment needs	Tariff *sufficient* to cover O&M costs
>US$1.00/m^3	Tariff *sufficient* to cover operation, maintenance, and most investment needs in the face of extreme supply shortages	Tariff *sufficient* to cover full cost of modern water systems in most high-income cities

Figure 31: Indicative Cost-Recovery Ranges for Water Services (GWI, 2004)

The fact that this key issue remains unresolved further complicates the design of new and large water and sanitation infrastructure, for which significant operation and maintenance revenue streams must be established and maintained.

Results

As shown in Table 24, approximately 60% of the projects reviewed included a direct reliance on increase to water tariffs for the medium and long term sustainability of the project-financed investments. This concurs with the academic findings described above that outlined the strong reliance on tariff increases to sustain O&M costs, despite social objections and difficulties in implementation.

Table 24: Cost recovery dependent on tariff increase - Frequency and Distribution

Ind5: Cost recovery dependent on tariff increases	Freq.	Percent
0	13	40.63
1	19	59.38
Total	32	100

Figure 32 below captures that project outcomes tend to improve when projects do not incorporate an increase in the water/sanitation tariff as a critical component of project design and sustainability.

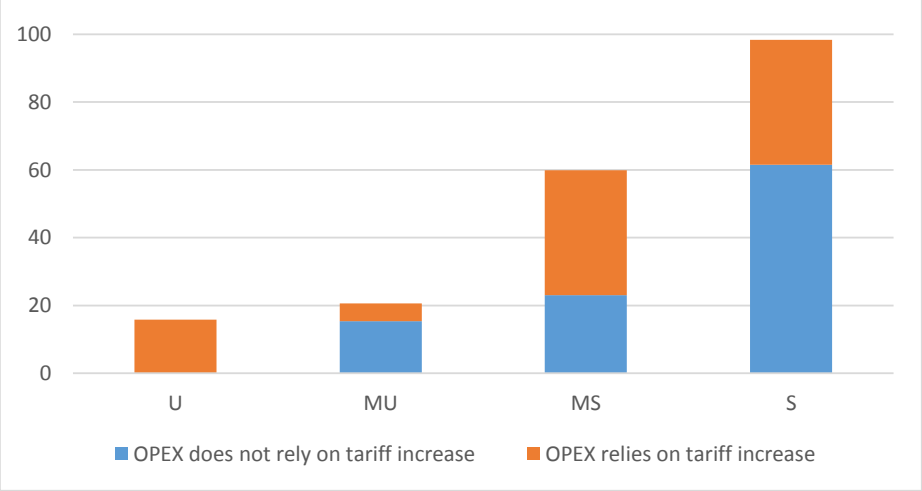


Figure 32: Descriptive Analysis Ind5: Cost recovery dependent on tariff increase

The regression did not find Ind5 to be significant. This suggests that projects for which operation and maintenance cost recovery mechanisms are clearly established to be reliant on an increase to the water tariff, are not more likely to lead to a satisfactory DO outcome. This is in line with academic positions on the issue as described above.

4.3.2 Retroactive financing allowed (Ind3)

If an implementing agency avails itself of the option to use retroactive financing, it would finance a project component from its local budget and then seek reimbursement up

to a year ahead of loan signing. “Ind3: Retroactive Financing Allowed” thus determines if a loan agreement allows the project recipient to be retroactively reimbursed prior to loan/grant approval and effectiveness declaration.

As per the World Bank Operations Manual (World Bank, 2016), the Borrower may spend the equivalent of up to 20% of the approved loan, which is then reimbursed once the project is effective. This is an important option for those countries that require effectiveness declaration by legislative bodies as described above, as it allows the country to begin implementation of project activities under local budget, to be reimbursed once the project is effective. It is also an important option for governments with other fiscal and project management challenges to be able to mobilize on project implementation.

Results

Across the 32 cases reviewed as part of this research, the frequency and distribution of Ind3 variable are presented in Table 25 and Figure 33 below.

Table 25: Retroactive Financing Allowed - Frequency and Distribution

ind3: Retroactive Financing Allowed	Freq.	Percent
0	12	37.5
1	20	62.5
Total	32	100

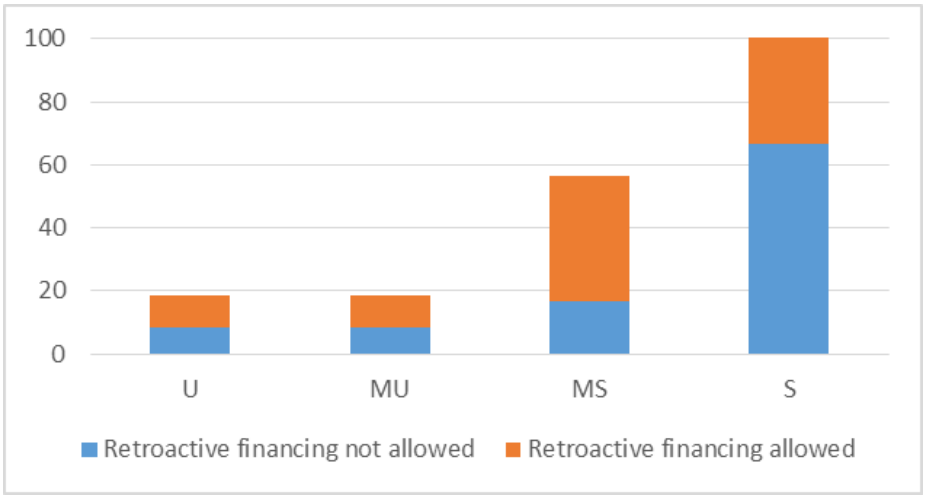


Figure 33: Descriptive Analysis Ind3: Retroactive Financing Allowed

Review of Figure 33 shows that approximately 83% of projects on which retroactive financing was *not* authorized actually had a project outcome rating of MS or above (i.e MS, S or HS). This indicates that projects on which retroactive financing was not an option seemed to have better project outcomes as compared to those that did incorporate retroactive financing. This could be considered as counter-intuitive since a common assumption would be for the inclusion of retroactive financing to expedite preparations for project implementation and to provide more project financing availability.

The regression also did not find Ind3 to be significant. Thus, whether retroactive financing was authorized was not seen to significantly impact the overall DO rating of water and sanitation projects. This is an interesting finding because the inclusion of retroactive financing arrangement in project design is largely considered to be a means to facilitate the launch of project implementation notwithstanding possible delays to effectiveness. If an implementing agency can proceed with financing project activities out of its own budget (with the promise of reimbursement later), then the assumption is that project delays should consequently be minimized and the project would record large disbursements immediately upon declaration of effectiveness.

The contradictory finding as shown above may instead be justified by the fact that implementing agencies are likely to be severely constrained in their availability of funds and even if funds are available, access to them may be seriously hampered. This is likely to be a key driver for a country or local implementing agency to approach the World Bank for financing of a particular project.

Given the complexity and additional preparation time and effort involved in the incorporation of retroactive financing into the design of World Bank projects[32] , this finding is important and would encourage project teams to reconsider the need for retroactive financing as it is not necessarily likely to play a key role in enhancing the implementation of rate of development effectiveness of a project, as shown above.

4.3.3 PMU to be established by Effectiveness (Ind 4)

PMU establishment is often incorporated as a condition of effectiveness on Bank projects, as a means of expediting preparation for project implementation once all loan documentation is approved by the recipient country. Ind4 determines whether the Project Management Unit (PMU), which oversees implementation of the project in country, has been established prior to the declaration of effectiveness of a project.

Background Literature

PMU's have a long and complex history within the development community. The common approach to managing donor-financed infrastructure projects has been to create a "cell" dedicated to implementing the project (World Bank, 2005). This frequently involves the establishment of a PMU[33] responsible for the implementation of all project activities.

[32] Additional steps include specific capacity assessments, additional financial audits requirements and retroactive monitoring and review of expenditures to ascertain eligibility.

[33] Literature also makes reference to project implementation units, project coordination units, project management offices, project management consultants and others

PMU's can be parallel, semi-integrated or fully integrated units (OECD, 2016). A parallel PMU is generally created outside the structure of an implementing agency or ministry and is responsible for all implementation in a "turnkey" fashion, handing over the completed project to the administration for operation (World Bank, 2005). Donors often establish parallel PMUs to reduce fiduciary risk particularly in response to concerns that public financial management in crisis and post-crisis situations does not correspond to fiduciary requirements (UNDP, 2011). In March 2005 however, development agencies and partners signed the Paris Declaration on Aid Effectiveness (OECD, 2005) which among other targets, committed to "reduce by two thirds the stock of parallel PMU's by 2010"[34].

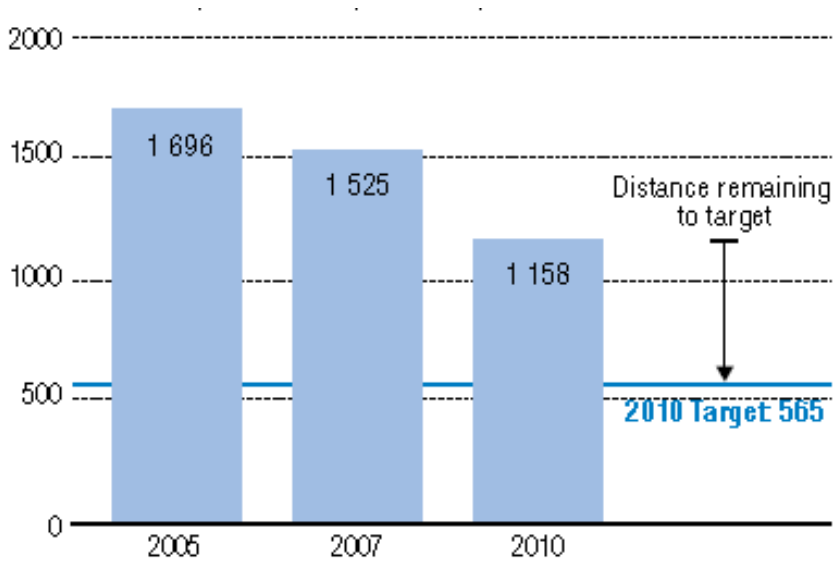


Figure 34: Total Number of Parallel PMU's (2005 to 2010) in 32 countries – OECD 2011 Report on Monitoring the Paris Declaration.

Donor partners agreed that *parallel* PMU's undermine efforts to strengthen the capacity of core government institutions, distort public sector staffing and salary levels,

[34] Partners further committed to ensuring that "50% of Technical Cooperation flows are implemented through coordinated programmes, consistent with national development strategies, by 2010". The Paris Declaration builds on the 2003 Rome Declaration on Harmonization.

and reduce the degree of control and accountability exercised by partner governments in the implementation of aid- funded activities. (OECD, 2011). This target was reconfirmed in the 2008 Accra Agenda for Action and in the 2011 Busan High Level Forum for Aid Effectiveness (Busan Declaration, 2011).

"Ind4: Requirement for PMU to be established by effectiveness" thus captures the perception among development practitioners that the establishment of *integrated* PMU's to oversee project implementation is on the critical-path to the launch of project implementation and that PMU's should be established early on in project implementation, i.e. by project effectiveness which is typically the very first milestone of project implementation.

Results

A summary of data frequency is presented in Table 26 below and demonstrates that approximately 78% of the projects studied did not require PMU's to be established by project Effectiveness. This suggests that PMU's were created/established during later phases of project implementation. The effect that this has on project outcomes is thus of particular interest.

Table 26: PMU to be established by effectiveness - Frequency and Distribution

ind4: Requirement for PMU to be established by effectiveness	Freq.	Percent
0	25	78.13
1	7	21.88
Total	32	100

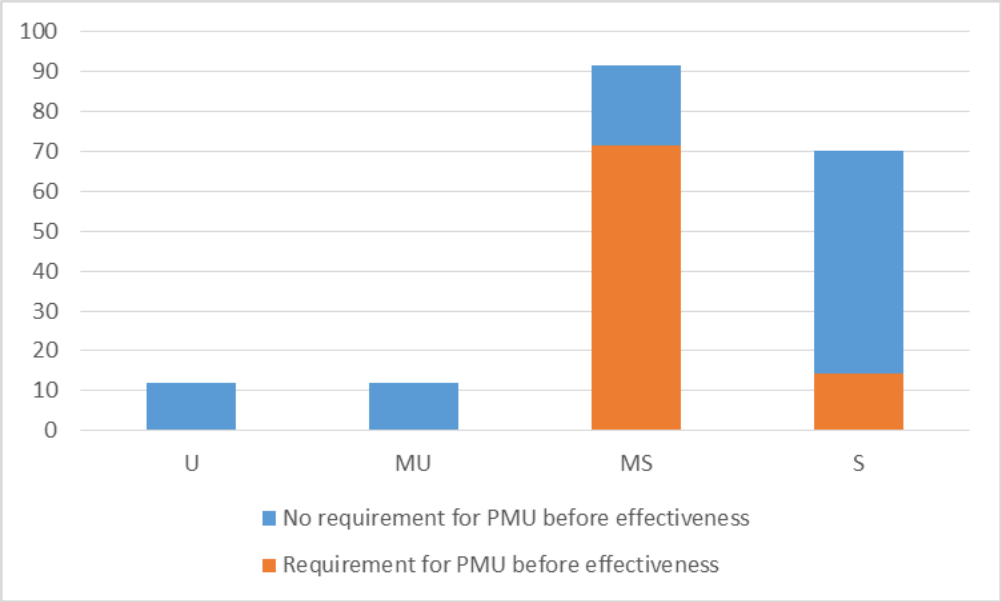


Figure 35: Descriptive Analysis – Ind4

In contrast, analysis of the relationship of project outcomes to the ind4 variable (Figure 35) demonstrates that approximately 100% of project studied that did in fact require PMU's to be established prior to effectiveness had a project outcome rating of MS or higher (ie. MS, S and HS). This confirms the perceived priority of establishing integrated PMU's ahead of effectiveness, as determined by the Panel Interview. The regression however did not yield any significance for Ind 4.

These findings suggest that, in line with academic and IO positions explained above, the most critical factor of PMU composition is whether it is integrated verses standalone, as opposed to the timing of its establishment. When a PMU is established prior to effectiveness, i.e. very early during project implementation, this also suggests that there is strong local/counterpart ownership of the project and that PMU staff are likely to be seconded from existing agencies (that can subsidize salary costs for example prior to loan effectiveness). This is in line with the rationale of the Paris Declaration on Aid

Effectiveness as it relates to the importance of integrated PMU functions that reduce incentive for project delays and/or fiduciary mismanagement.

While the descriptive analysis of the data suggests that the earlier establishment of a PMU (i.e. by declaration of project effectiveness which is when funds are made available and different PMU members can be recruited to join), will positively correlate with long term development effectiveness of the project. Nonetheless, the negative correlation in the regression also indicates that this should not be an inflexible requirement. New projects under design should carefully assess the local country context prior to including PMU Establishment as a condition of effectiveness and should ensure that the modalities for effective PMU operations enable the successful and sustainable implementation of project operations.

4.3.4 Local counterpart financing (Ind6)

Ind6 determines if the recipient government or agency is financing any aspect of the project, to complement and/or leverage World Bank financing. Recipient governments/agencies often tend to finance components relating to salaries, land acquisition and other activities. As indicated by the Panel Interview, the presence of local and/or counterpart financing is considered to be a positive indicator of government ownership and commitment to the sustainability of operations. The inclusion of counterpart financing was considered, at least inherently, to lead to more positive and sustainable results in the long-run, given the likely early-stage beneficiary engagement that would have ultimately authorized the local counterpart financing.

Background and Literature

A large majority of World Bank support to developing countries is in the form of investment projects, in which the World Bank financial contribution typically covers a percentage of total project costs, and incorporates a local contribution and/or contributions by other bilateral and multilateral donors (Baccarini, 1999; Cooke-Davies, 2002b; de Carvalho et al., 2015; Freeman & Pflug, 2003; Kilby, 2000a; Kwak et al., 2002; Moreno Pires et al., 2014; A. Thomas, 1996; Robert Youker, 1999).

Academic literature seems to concur on the view that infrastructure-heavy projects are likely to involve larger amounts of counterpart funding and that the most capital intensive projects involving World Bank financing are often majority-financed by sources within the borrowing country. (Angel-Urdinola & Wodon, 2012; Baker, 2000; Chauvet, Collier, & Fuster, 2006; Hudson & Mosley, 2008; Ika, 2015; Kilby, 2000c; Kraay, 2012; Mosley, Harrigan, & Toye, 1991; Winters, 2010, 2014).

As shown in Figure 36, for example, water/sanitation projects are among the projects with the second highest proportion of counterpart funding and also carry some of the highest percentages of project funding from borrower counterparts (Winters, 2014).

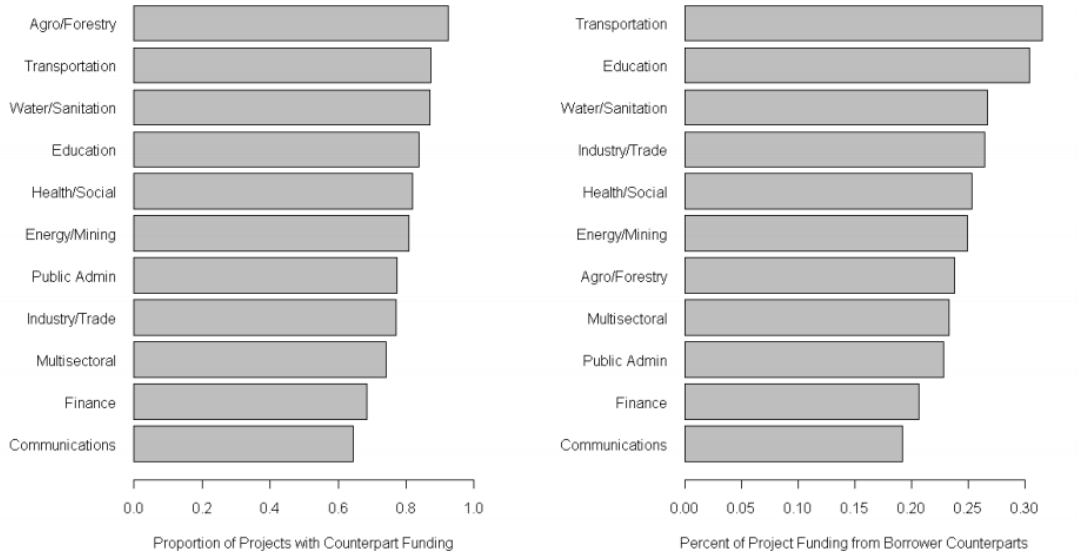


Figure 36: Project Size and Counterpart Financing

Nonetheless, trends in counterpart financing have been decreasing since 2000 (Figure 36). This finding is further in line with a frequently cited problem in World Bank implementation reports at the conclusion of its projects i.e. the "failure of governments to provide agreed-upon counterpart funding" (Winters 2011). Further reviews of World Bank projects (Chauvet et al., 2006; Kilby, 2013; Vawda, Moock, Gittinger, & Patrinos, 2003) also found that as project implementation advances, counterpart financing tends to represent a smaller proportion of total project funding or "ceases to be a component of project funding altogether" (Kilby, 2013).

Given the overall decline in net counterpart financing, the research investigates whether the decline in IEG-DO ratings can also be associated accordingly.

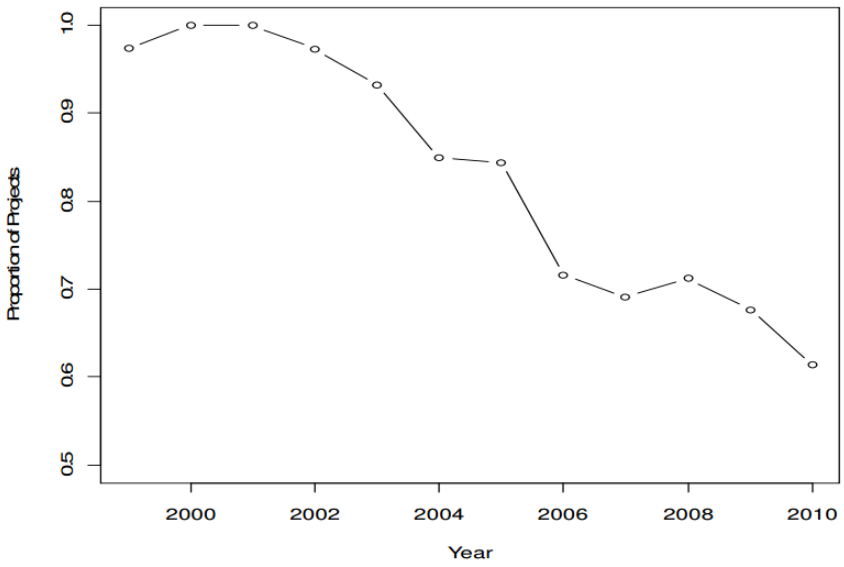


Figure 37: Proportion of WB Projects with Counterpart Financing (Winters, 2011)

Results

Approximately 35% of projects reviewed as part of this study involved local counterpart project financing (Table 27). Projects that incorporate counterpart financing tended to have higher project outcomes ratings with 72% of projects examined rated MS, S or HS when counterpart financing was incorporated into project arrangements (Figure 38).

This corroborates the Panel's assessment that counterpart financing is an important component of overall project design as a means to ensure more sustainable project outcomes.

Table 27: Local counterpart financing - Frequency and Distributions

Ind6: Local counterpart financing	Freq.	Percent
0	21	65.63
1	11	34.38
Total	32	100

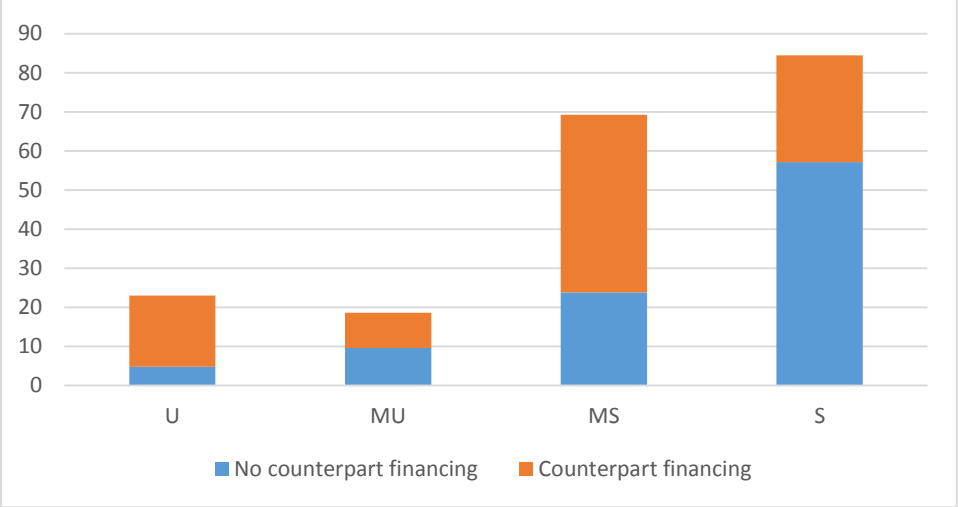


Figure 38: Descriptive Analysis – Ind6

The regression however did not associate significance to the presence of local counterpart financing in the overall development outcomes of projects reviewed. It is thus not possible to confirm whether the presence of local counterpart financing plays a direct role on development outcomes. Projects at early stage of design should thus avoid the incorporation of local financing as a proxy for local "buy-in" to the project and a subsequent means to improve development outcomes. Instead, local counterpart financing should be pursued as a means to balance project budgets, hedge implementation risks and more equally distribute limited sources of funding across a country program.

4.3.5 PMU has experience with World Bank Procurement (Ind9)

World Bank financed projects are subject to the use of World Bank Procurement Guidelines for Works and Consultants[35]. While some countries have experimented with the use of country systems for procurement[36] (see Figure 39), the vast majority of projects

[35] See World Bank Procurement Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits & Grants, January 2011 - Revised July 2014 (World Bank, 2016).
[36] Along with the commitment to move away from the use of parallel Project Management Units (PMU's) described above, the 2005 Paris Declaration of Effectiveness was also a catalyst to increase the use of country systems on procurement, in an effort to reduce burden on recipients to follow different procurement

remain subject to the World Bank Procurement Standards which heavily emphasize the principles of transparency and competition for selection and contract award.

Ind9 determined whether PMU staff had previously undertaken procurement of construction works and/or consultancy contracts using the World Bank Procurement Guidelines.

Stage Achieved	Participants (Nos.)	Participants (Countries)
Countries cleared to proceed to project phase subject to CDAPs	4	Brazil, Mauritius, Rwanda, and Senegal
Countries/Agencies that completed Stages I and II and were recommended to continue to pursue procurement reforms with support from the Bank	3	Morocco, India Powergrid, The Philippines
Other countries completing Stages I and II	2	Macedonia, Poland
Countries that had only completed Stage I at the end of the UCS pilot[a]	6	Burkina Faso, Colombia, Ghana, Indonesia, Jordan, and Panama
Countries pursuing other priorities[b]	2	Bhutan, Turkey
TOTAL	17	

Figure 39: Results of World Bank Pilot on Use of Country Systems for Procurement 2005 - 2010 (World Bank, 2014)

Though largely aligned with FIDIC RedBook Standards for Procurement[37], the World Bank's Procurement Guidelines[38] are unique in many ways and thus previous experience in the adherence to the guidelines can be regarded as beneficial to the PMU staff of new projects[39].

guidelines of different donors and to strengthen internal national capacity for procurement generally (Organisation for Economic Co-operation and Development, 2008; Stern, E.D; Altinger, L.; Feinstein, O.; Marahon, M.; Schultz, N.-S. and Steen Nielsen, 2008).

[37] See www.fidic.org

[38] See http://web.worldbank.org/exteral/procurement

[39] During project implementation, the implementing agency undertakes the procurement process according to the Bank guidelines and submits a request for "World Bank No Objection" to approve the final disbursement.

Results

As shown in Table 28 below, approximately 31% of the projects reviewed incorporated a PMU that had previous experience with World Bank Procurement Guidelines.

Table 28: PMU has experience with World Bank Procurement - Frequency and Distribution

Ind9: PMU has experience with World Bank Procurement	Freq.	Percent
0	22	68.75
1	10	31.25
Total	32	100

Further analysis of the data shows that projects that over 90% of projects that did not have a PMU experience in WB Procurement Guidelines were still rated as MS, S or HS. This suggests that upstream embedded experience in Bank procurement guidelines does not necessarily strongly influence the overall project development outcomes. Further, the regression also did not associate significance to the PMU having prior experience with World Bank procurement guidelines on the overall development outcomes of projects reviewed.

These findings can be explained by several factors: First, World Bank projects are typically launched with a series of technical training, including those relating to the World Bank's Procurement Guidelines, and thus constitutes a significant capacity building opportunity to bolster knowledge of the PMU in procurement procedures. Second, most large expenditures are subject to a World Bank "no objection" clearance ahead of reimbursement, a project supervision step which largely ensures that procurement and expenditure has been done according to Bank rules. This also minimizes the importance of

previous World Bank experience within the PMU, as the Bank itself reviews claims to ensure compliance with the guidelines. Finally, the terms of reference and technical profiles of PMU members themselves are often reviewed in detail and subject to World Bank clearance, which also ensures that PMU members, whether novice or experienced with Bank operations, meet the minimum technical criteria established in terms of reference, including those for the Procurement position.

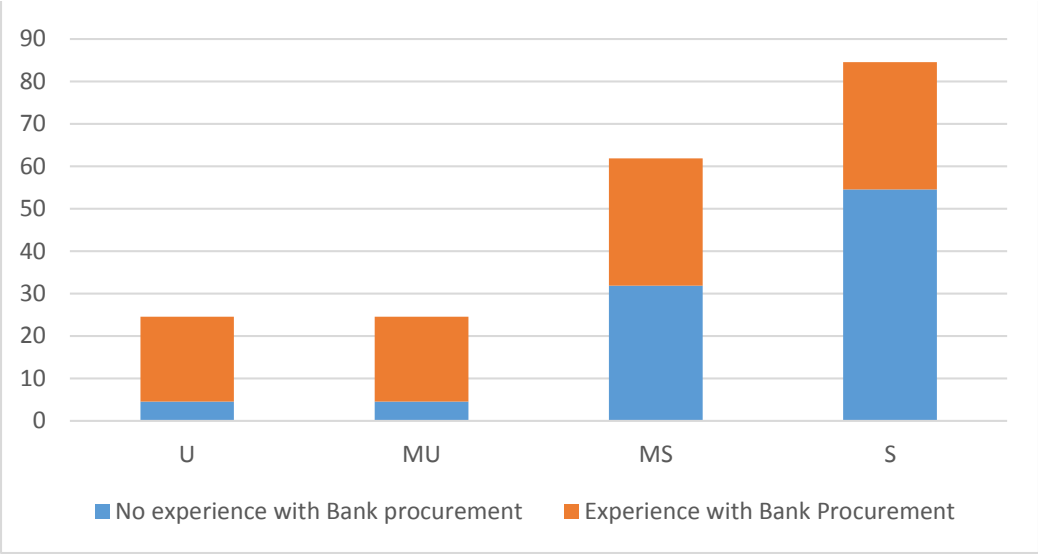


Figure 40: Experience with World Bank Procurement - Descriptive Analysis

This finding thus suggests that new projects under design for World Bank financing should not necessarily consider that continuity with a previously established PMU will directly and/or significantly impact the development outcome of projects, vis a vis procurement. A standalone assessment of PMU performance must be undertaken and extensions considered only following detailed performance reviews and analysis of deliverables met.

4.3.6 No land expropriation required (Ind11)

On large infrastructure projects, such as those considered in this study, construction often involves the expropriation of land for the common good (also called "imminent domain"). The acquisition of private land for public projects can be controversial and is subject to strict guidelines on resettlement, compensation and other factors in World Bank financed projects.

Ind11 determined whether any acquisition of land was required for the full implementation of water/sanitation infrastructure activities financed by each of the 32 cases reviewed.

Background and Literature

Infrastructure projects that incorporate large amounts of works and construction frequently include the requirement for land expropriation in which privately owned land is taken, in exchange for appropriate compensation, by the government for public use. The purchase of private land for public use (also land expropriation) is referred to as the government's "eminent domain". World Bank – financed projects are required to follow Operational Policy 4.12 on Involuntary Resettlement, for all issues pertaining to the management of land expropriation, compensation to project affected people (PAP) and grievance redressal (World Bank, 2016).

The expropriation of land is a very time consuming and sensitive issue that significantly delays project implementation. Figure 43 below lists some of the several examples of issues specific to land expropriation and resettlement that can delay projects (IEG, 2016)

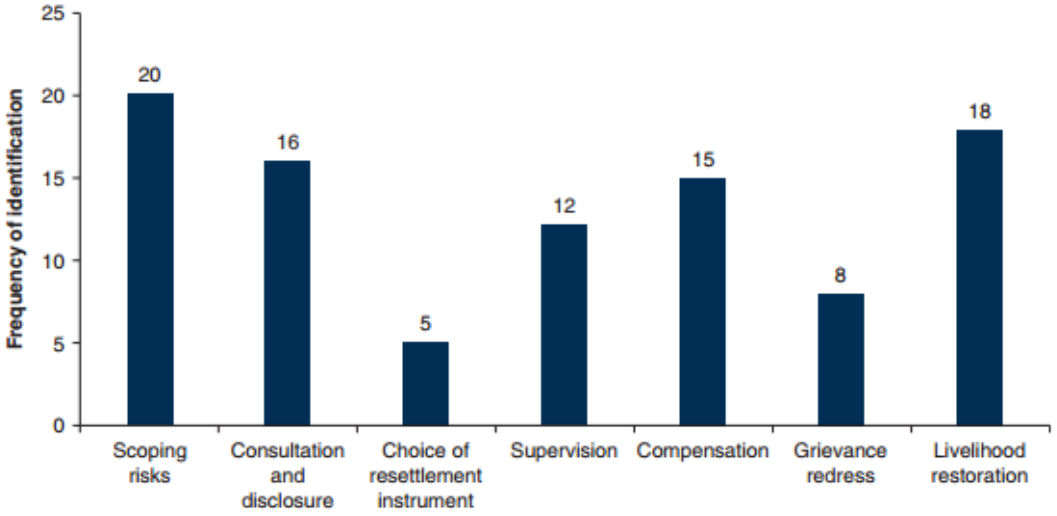


Figure 41: Issues identified in Resettlement Cases (IP, 2016)

Project preparation is also widely acknowledged to be a key phase for successful groundwork of project implementation with regards to land and resettlement issues. Figure 42 below for example demonstrates key guidelines from the World Bank's Inspection Panel (IP) regarding the key recommendations for appropriate project preparation[40]. These include, accurate scoping of risks, meaningful consultations and choice of appropriate resettlement instrument. It is thus relevant to examine the possible impact that land expropriation may have on the development outcomes of water and sanitation projects.

[40] The most recent World Bank report (April 2016) on the issue of land and involuntary resettlement identifies the specific issues that are most often not properly captured during preparation as: "(i) accurately determining the project's impact areas (both in physical and livelihood terms); (ii) carrying out thorough baseline studies of affected populations; and (iii) understanding the existence of long-standing legacy issues. Furthermore, specifically in land administration and management projects, the Panel has found inadequate assessment of social, political, institutional, and legal risks" (IP, 2016).

Stage in the project cycle	Emerging lessons	Specific issues
Project preparation	Lesson 1: Accurate scoping of risks is the foundation of successful resettlement programs	Determining the project's impact area
		Addressing legacy issues
		Understanding legal frameworks and institutional capacity
		Addressing unique risks with land administration and management activities
		Carrying out meaningful baseline studies
	Lesson 2: Meaningful consultation and participation are essential elements of involuntary resettlement programs	Participation and meaningful consultations
		Adequate and timely disclosure of information
	Lesson 3: Choice of the appropriate resettlement instrument is the cornerstone of effective resettlement	Choosing the instrument
Project implementation	Lesson 4: Active supervision is necessary to effectively identify and resolve problems	Supervising the implementation of resettlement instruments
	Lesson 5: Compensation for PAPs needs to be timely and based on sound valuation methodologies	Proper Valuation
		Timely compensation
	Lesson 6: To be effective, a grievance redress mechanism needs to be accessible, reliable, and transparent	
Long-term impacts	Lesson 7: Livelihood restoration works best when transitional support, development assistance, and culturally appropriate resettlement alternatives are provided	Development assistance and transitional support
		Cultural factors
		Impact monitoring and evaluation

Figure 42: Lessons learned for project preparation and implementation regarding land expropriation and resettlement (IP, 2016)

Results

All project documentation, include Resettlement Action Plants (RAP), Resettlement Frameworks (RPF) and Environmental and Social Impact Assessments (ESIA) for each project were reviewed in detail for each of the 32 cases reviewed under this study. Of these, and as shown in Table 29, approximately 46% of projects incorporated some requirement for land.

The regression did not assign significance to the variable although the descriptive analysis (Figure 43) found that projects were more likely to have an MS, S or HS project outcome rating, when land expropriation was not involved in project design.

Table 29: No land expropriation required - Frequency and Distribution

ind11: No land expropriation required	Freq.	Percent
0	17	53.13
1	15	46.88
Total	32	100

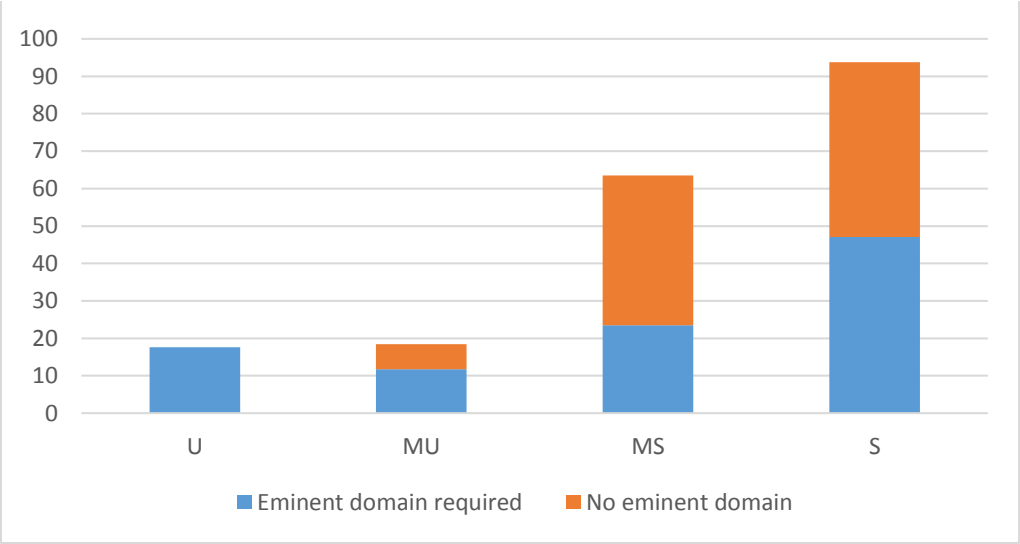


Figure 43: Descriptive Analysis – Ind 11

These findings thus suggest that while land expropriation is complex and requires significant upstream attention to issues of social impact mitigation, this high-occurrence feature of large scale infrastructure projects does not necessarily negatively impact project outcomes on its own. Teams involved in the preparation of projects that involve large expropriation of land should instead ensure that adequate contingencies are provided on budget and schedule to allow for possible delays involved with the acquisition of private land for public use. Similarly, teams should ensure that the technical support on safeguards design, implementation and monitoring is also included to the supervision schedule of projects that involve large land expropriations for construction.

4.4 Proposed Quality at Entry Toolkit

Based on the findings discussed above, this study proposes that quality at entry review meetings can assess projects against a new "checklist" of actions and considerations that are derived from the data and conclusions above, and presented in Table 30.

Table 30: Quality at Entry Meeting - Proposed Toolkit

Quality at Entry Indicator	Quality at Entry Readiness Check
Disbursement projects in "S" curve	Have the disbursements estimates been made according to S curve methodology estimates for large infrastructure projects? Has a detailed Earned Value analysis been undertaken to ascertain realistic estimates for time and cost ?
Parliamentary Effectiveness Approval required	Has the team checked with the country management team on the option to remove this effectiveness condition noting that some countries do not waive this legal requirement?
Retroactive financing allowed	Has the team confirmed that the local implementing agency has the available funds to utilize a retroactive financing clause ? If the implementing agency is unlikely to have access to advance funds, then has the team considered the cost benefit of proceeding with arrangements for retroactive financing?
Requirement for PMU to be established by effectiveness	Can the team explain the status of the timeline for selection and recruitement of the PMU vis a vis the effectiveness timeline? If additional time beyond the expected date of effectiveness is required, the team is advised to proceed with full and timely selection of a qualified PMU to this end.
Cost recovery dependent on increase in tariff	Can the team provide detailed explanation on the assumptions underlying project design for the recovery of O&M costs of this infrastructure ? If an increase in tariff is incorporated, what are the alternatives that were considered and what stage of implementation are these in ?
Local financing provided	Can the team explain the rationale for including local counterpart financing in this project ? Appropriate contexts include to close a financing gap or to distribute limited pool of fundings across a national program. Local financing should not be utilized as a proxy for beneficiary ownership of the program

Quality at Entry Indicator	Quality at Entry Readiness Check
Major infrastructure prequalification completed prior to appraisal	What is the status of prequalification of major infrastructure works ? Can the team confirm that the prequalification will have been completed by appraisal ?
PMU includes a water/sanitation engineer	What is the anticipated composition of the PMU for this project ? Has a specific position for water/sanitation engineer been incorporated into plans for the PMU?
PMU has experience with World Bank procurement	How much training and capacity building is planned for the new project PMU on World Bank procurement guidelines ?
Previous/ongoing projects are rated Satisfactory	What is the status of implementation of other projects and/or programs in the same country ? Can the team provide examples of how these lessons have been incorporated into the proposed project design?
No land expropriation required	Is land expropriation required under the project implementation schedule? What efforts have been made to modify the design to exclude or modify land requirements? If land is involved, what is the status of expropriation and mitigation actions planned to avoid project implementation delays?
PMU Director seconded from stakeholder government agency	What is the background and expertise of the PMU Director ? How was he/she selected to this position ? Does he/she display strong leadership skills ?

Quality at Entry Indicator	Quality at Entry Readiness Check
Responsible agencies involved in design of environment/social mitigation plans	Can the team provide a detailed overview of the stakeholder map for social and environmental impact management on this project ? When and in which capacity were these counterparts involved in the design of mitigation plans included in the ESMP ? Do they have a liaison with the PMU, is any required work budgeted in the project budget, will they be involved in monitoring and evaluation ? What is the incentive for their long term engagement on the project ?
Environment and Social mitigation financed by the project	Can the team provide a detailed assessement of the costs of the environmnetal and social mitigation measures on this project and explain the source of funding for each of these ? Have they been included in the ESMP budget ?
Project links water, sanitation and hygiene	What are the anticipated impacts on beneficiaries in terms of improved hygiene resulting from this project ? Have the World Bank's core indicators for water and sanitation been incorporated into the results framework ?

Chapter 5 - Conclusions, Relevance and Suggestions for Future Research

This research argues that water and sanitation infrastructure projects at early stages of design are typically subjected to random and non-standardized mechanisms for assessment of project readiness. The research suggests that this widespread phenomenon in the upstream management of international development projects has negatively influenced the outcomes and overall development effectiveness of these projects, with a significant impact on the sustainability of the large investments in water and sanitation infrastructure projects globally. The research seeks to establish which design-stage factors and/or actions should be incorporated and addressed at the early-stage "Quality at Entry" project review milestone, in an effort to structurally and systematically address the recurring project implementation issues which lead to less satisfactory project outcomes.

The research examines 32 cases of World-Bank financed water and sanitation infrastructure projects, implemented between 2000 – 2010, which is the era of the Millennium Development Goals, largely considered the global community's first consolidated attempt at structurally addressing the issues of development effectiveness of key sectors including water, sanitation, health and education among other crucial areas of concern.

Through a Panel Interview of experienced World Bank Subject Matter Experts (SME) involved in the design and implementation of water and sanitation projects, the research identifies a list of design stage QAE factors that are perceived to be essential to successful project design and implementation in the water and sanitation sector of developing countries worldwide.

A review of all project documentation associated with the project sample is subsequently undertaken to assess for the existence of each design-stage factor. Descriptive analysis and statistical regression of the results is undertaken to establish potential relationships between the existence and prevalence of each design-stage QAE indicator *vis a vis* the project's development outcome (DO), as determined by the Independent Evaluation Group (IEG), the World Bank's independent evaluation body which independently determines the rate of success of each World Bank project. The major conclusions of the research, relevance and suggestions for future research are discussed below.

Through analysis of projects financed by the World Bank as well as projects that are largely limited to water and sanitation infrastructure investments, the relevant findings of this dissertation may be applied to development projects financed by the World Bank or other development donors in order to improve the quality of entry at the project design stage.

5.1 Conclusions

This study found that there are 6 QAE design factors that have been demonstrated to significantly and positively impact the development outcomes of projects and should thus be considered in detail at the design stage of new water and sanitation infrastructure projects. These 6 QAE factors are:

1. Disbursements are designed along the S curve methodology.
2. Major infrastructure prequalification is completed prior to appraisal
3. Project Management Unit includes a water and sanitation engineer

4. Previous and/or ongoing projects are being implemented in a satisfactory manner, as per the ratings of World Bank Implementation Status Reports for each project
5. Responsible agencies involved in the design of environmental and social mitigation plans and
6. Project explicitly makes linkages between water, sanitation and hygiene outcomes.

These results suggest that projects at the early stages of design should clearly and fully address each of the issues above and ensure that adequate measures are included in the project design details. Other results also include those variables which were either found to be insignificant or were significant with a negative direction.

The outcome of this research is thus a "QER toolkit" intended to guide World Bank task teams at the early stages of project design have provided substantive and evidenced-based approaches to addressing each of these issues that are shown to influence IEG's rating of development outcomes in the long term. The QER toolkit is provided in Table 35.

Table 31: QER Toolkit

Quality at Entry Indicator	Quality at Entry Readiness Check
Disbursement projects in "S" curve	Have the disbursements estimates been made according to S curve methodology estimates for large infrastructure projects? Has a detailed Earned Value analysis been undertaken to ascertain realistic estimates for time and cost ?
Parliamentary Effectiveness Approval required	Has the team checked with the country management team on the option to remove this effectiveness condition noting that some countries do not waive this legal requirement?
Retroactive financing allowed	Has the team confirmed that the local implementing agency has the available funds to utilize a retroactive financing clause ? If the implementing agency is unlikely to have access to advance funds, then has the team considered the cost benefit of proceeding with arrangements for retroactive financing?
Requirement for PMU to be established by effectiveness	Can the team explain the status of the timeline for selection and recruitement of the PMU vis a vis the effectiveness timeline? If additional time beyond the expected date of effectiveness is required, the team is advised to proceed with full and timely selection of a qualified PMU to this end.
Cost recovery dependent on increase in tariff	Can the team provide detailed explanation on the assumptions underlying project design for the recovery of O&M costs of this infrastructure ? If an increase in tariff is incorporated, what are the alternatives that were considered and what stage of implementation are these in ?
Local financing provided	Can the team explain the rationale for including local counterpart financing in this project ? Appropriate contexts include to close a financing gap or to distribute limited pool of fundings across a national program. Local financing should not be utilized as a proxy for beneficiary ownership of the program

Quality at Entry Indicator	Quality at Entry Readiness Check
Major infrastructure prequalification completed prior to appraisal	What is the status of prequalification of major infrastructure works ? Can the team confirm that the prequalification will have been completed by appraisal ?
PMU includes a water/sanitation engineer	What is the anticipated composition of the PMU for this project ? Has a specific position for water/sanitation engineer been incorporated into plans for the PMU?
PMU has experience with World Bank procurement	How much training and capacity building is planned for the new project PMU on World Bank procurement guidelines ?
Previous/ongoing projects are rated Satisfactory	What is the status of implementation of other projects and/or programs in the same country ? Can the team provide examples of how these lessons have been incorporated into the proposed project design?
No land expropriation required	Is land expropriation required under the project implementation schedule? What efforts have been made to modify the design to exclude or modify land requirements? If land is involved, what is the status of expropriation and mitigation actions planned to avoid project implementation delays?
PMU Director seconded from stakeholder government agency	What is the background and expertise of the PMU Director ? How was he/she selected to this position ? Does he/she display strong leadership skills ?

Quality at Entry Indicator	Quality at Entry Readiness Check
Responsible agencies involved in design of environment/social mitigation plans	Can the team provide a detailed overview of the stakeholder map for social and environmental impact management on this project ? When and in which capacity were these counterparts involved in the design of mitigation plans included in the ESMP ? Do they have a liaison with the PMU, is any required work budgeted in the project budget, will they be involved in monitoring and evaluation ? What is the incentive for their long term engagement on the project ?
Environment and Social mitigation financed by the project	Can the team provide a detailed assessement of the costs of the environmnetal and social mitigation measures on this project and explain the source of funding for each of these ? Have they been included in the ESMP budget ?
Project links water, sanitation and hygiene	What are the anticipated impacts on beneficiaries in terms of improved hygiene resulting from this project ? Have the World Bank's core indicators for water and sanitation been incorporated into the results framework ?

5.2 Unique Contributions of this Research

The analysis presented in this research fills select gaps in current literature on the unique features and requirements inherent to the design and management of ID projects in the water and sanitation sectors. The methodology provides a specified and tangible list of upstream design-stage actions that should be addressed in order to increase the likelihood of a satisfactory development outcome upon completion. The methodology also strengthens the monitoring of project implementation, as several of the design-stage indicators remain relevant throughout project implementation.

The design stage actions provides an accessible checklist of items that should be incorporated into project designs by the Quality At Entry Review (QER), which is typically undertaken between 4 – 6 months from the start of project preparation but remains an optional milestone in project preparation. This toolkit would thus be used as part of World Bank Management's decision process to move forward with project preparation and/or make mid-course adjustments to facilitate improved project readiness.

As a result of this research, QER meetings for water and sanitation projects should no longer rely on the opinions and views of independent peer reviewers to the project, but de facto can be designed based on the findings of a neutral and independent Panel Interview of Experts. This is highly likely to decrease bias in the assessment of project design readiness and also provides a structured framework for the review and assessment of project readiness.

In addition to providing World Bank management and task teams with specific items to monitor for inclusion at entry-stage of project design, the research constructs a consultation process with experienced subject matter experts and accordingly documents

concerns that these individuals have on the process of designing and implementing development projects in the water sector. The results of the Panel Interviews are thus valuable independently as they quantify shortcomings and opportunities in the design and implementation of water-sector projects within the World Bank, which had not been previously documented.

Finally, the research proposes a common approach to project assessment between the World Bank's (i) Task team and (ii) its independent Evaluation Group, two groups within the World Bank that classically have very restricted space for interaction. By combining analysis from IEG's project ratings with inputs from task teams involved in the design and implementation of water and sanitation infrastructure projects, this work is one of the first attempts at bridging gaps between these two separate but highly co-dependent groups of actors within the World Bank.

5.3 Future Use of this Research

This research proposes a list of design stage factors that are shown to have a significant impact on the development outcome of water and sanitation projects in the developing world. The future use of this research is thus wide ranging as described in the sections below.

5.3.1 Applications to new or ongoing World Bank projects

Based on the findings of this research, described above, the toolkit of design-stage actions should be incorporated as a standardized guidance document used in the design and implementation of QER review meetings of new projects as well as those that are being restructured to more closely align with new or revised development objectives. Task teams would be required to address whether each of the design-stage indicators have been

incorporated into the design elements and environment of each project under review. Close monitoring and/or establishment of mitigative action plans to address outstanding issues would also be agreed with World Bank management at each QER and reviewed at the subsequent milestone review meetings.

5.3.2 Applications in Alternative Infrastructure Sectors

In order to establish replicable significance levels between design-stage factors and project development outcomes on infrastructure projects in the developing world, this research examines a sample of projects that do not incorporate any policy reform, technical assistance or capacity building components.

Since these "soft" investments are typically specific in nature to the water sector, their omission leads this research to be directly applicable to other construction works-intensive infrastructure sectors including those related to transportation, energy and urban development among others. It is thus reasonable to conclude that the design-stage factors identified on water infrastructure works would thus also be applicable to those of other infrastructure-intensive sectors.

5.3.3 Applications to other Financing Sources

Further, while the projects studied in this research are limited to those receiving partial or complete World Bank financing, the toolkit of design stage factors is applicable to all water and sanitation development projects, independently of the source of financing.

Thus, this toolkit could be easily adopted by other donor agencies, including USAID, the European Investment Bank (EIB), the Inter-American Development Bank (IADB) and others, as part of their internal assessments of project readiness and associated project evaluation mechanisms. This is particularly relevant in the case of "new"

development Banks, including the recently established Asian Infrastructure Investment Bank (AIIB) which are nascent and have the opportunity to launch the implementation of new project portfolios with improved post-implementation evaluations of project and development effectiveness.

5.4 Suggestions for Future Research

This research provides baseline findings that can be applied across three principal suggestions for future research, described below.

First, the results of this research could inform the design of a large scale pilot which applies the design-stage indicators to a set of new water and sanitation projects. As part of the proposed pilot, the implementation of these projects would be monitored over several years to confirm the impact of design stage factors on the overall development and project outcome. The results of this pilot would further reconfirm the significance of incorporating the established design-stage factors into the early stages of project design. While the pilot would be a long-term activity (in light of the long average implementation period of water and sanitation development projects), there are opportunities to examine projects that have cost-overruns that are being considered for additional financing from the World Bank, as well as projects that are being drastically restructured and redesigned to respond to a shorter-term development need.

A second suggestion for future research involves the opportunity to investigate projects which finance “soft” or “non-structural” investments, largely those relating to policy reform, technical assistance, regulatory strengthening, training and capacity building. While this research specifically excluded projects that incorporated any aspects of these types of activities, it would be interesting to undertake further analysis on the

possible role that structural policy reforms and capacity building within the water and sanitation sector has on the overall development outcome of a project or series of projects in a given country. While this research focused exclusively on infrastructure projects involving the construction of hard water and sanitation infrastructure, future research could examine more closely the likely influence of policy reforms on the long term development effectiveness of projects and programs.

Finally, future research could involve expansion of projects selected for analysis to those that are financed either locally, through other bilateral and multilateral donors, as well as through the private sector. An interesting study would use the findings of this research to compare the rate of project effectiveness when the private sector is involved in project implementation and construction management in contrast to those projects which are managed exclusively by the public sector with direct implementation and supervision support from the World Bank technical teams. By studying projects that are independent of the World Bank, future research could identify whether any factors specific to World Bank engagement are at play in influencing project development effectiveness.

In general, this research opens the doors to further investigation into the means by which the World Bank and other development donors can ensure that the significant work already being carried out to improve the standards of living of millions of people worldwide, both meets its objectives and is sustainable in the long term.

Appendix 1

World Bank-funded water supply and sanitation projects

The quality of projects at the design and preparation stage is widely hypothesized to affect project outcomes. Projects with high so-called "quality at entry" are expected, for example, to have more successful outcomes. However, although the quality at entry of all Bank projects is rated during appraisal, it is not entirely clear which factors constitute quality at entry and few attempts to objectively quantify quality at entry have been made. The concept remains loosely defined and as a result, incorporating lessons learned and best practices into upstream project design is more difficult.

The objective of this survey is to identify some of the factors that contribute to high quality at entry as well as some of the reasons for underperformance. The focus is specifically on World Bank-funded water supply and sanitation projects. You have been selected to respond to this survey because of your extensive experience in this sector.

This is the first of several surveys that we will implement following the Delphi method. The surveys will iteratively collect input from Bank TTLs, aggregate and synthesize that input, and then re-circulate the synthesis among respondents for further validation. This questionnaire is anonymous and you will not be identified personally. All responses will be kept strictly confidential. It will not be possible to identify the individual respondents or the projects on which they work.

In the questionnaire that follows, you will be asked a series of questions about project outcomes, success factors, and quality at entry. Please base your responses exclusively on your personal experience with World Bank-funded water supply and sanitation projects. Although you can skip any question that you don't like, the more responses we have the better.

In an Implementation Completion Report, the World Bank rates overall project outcomes on a six-point scale ranging from highly unsatisfactory to highly satisfactory. The Impact Evaluation Group defines the overall outcome as "The extent to which the operation's major relevant objectives were achieved, or are expected to be achieved, efficiently." More specifically, this refers to the extent to which a project was (a) effective--i.e. whether it achieved its development objective--and (b) efficient--i.e. that it was delivered on time, on budget, and that the quality of goods, works, or services procured was satisfactory.

When answering the following questions, please base your responses on your direct experience with Bank-funded water supply and sanitation projects.

1. **What do you think is the most frequent rating given to project outcomes in implementation completion reports?**
   Mark only one oval.

   - ◯ Highly unsatisfactory
   - ◯ Unsatisfactory
   - ◯ Moderately unsatisfactory
   - ◯ Moderately satisfactory
   - ◯ Satisfactory
   - ◯ Highly satisfactory

2. **Based on your experience and in your own judgment, what is the most frequent actual project outcome?**
Mark only one oval.

- ◯ Highly unsatisfactory
- ◯ Unsatisfactory
- ◯ Moderately unsatisfactory
- ◯ Moderately satisfactory
- ◯ Satisfactory
- ◯ Highly satisfactory

3. **In your opinion, how useful is the rating of a project's overall outcome as currently defined?**
Mark only one oval.

- ◯ Not useful
- ◯ Somewhat useful
- ◯ Useful
- ◯ Very useful

4. **In your experience with Bank-funded water supply and/or sanitation projects, do any of the following need improvement?**
Mark only one oval per row.

	Needs significant improvement	Needs improvement	OK as is	Exceeds expectation	Significantly exceeds expectations
Completion of projects on time	◯	◯	◯	◯	◯
Completion of projects on budget	◯	◯	◯	◯	◯
Quality of physical works procured	◯	◯	◯	◯	◯
Quality of goods procured	◯	◯	◯	◯	◯
Quality of services procured	◯	◯	◯	◯	◯
Quality of project design	◯	◯	◯	◯	◯
Achievement of development objectives	◯	◯	◯	◯	◯
Relevance of development objectives to the needs of the client	◯	◯	◯	◯	◯
Relevance of development objectives to the needs of beneficiaries	◯	◯	◯	◯	◯
Clarity of development objectives	◯	◯	◯	◯	◯
Ability of projects to deliver a net positive impact	◯	◯	◯	◯	◯
Mitigation of social or environmental externalities	◯	◯	◯	◯	◯
Sustainability of project effects over time	◯	◯	◯	◯	◯

5. **How much weight do you feel that Bank management places on each of the following?**
Mark only one oval per row.

	Far too little	Too little	About the right amount	Too much	Far too much
Completion of projects on time	◯	◯	◯	◯	◯
Completion of projects on budget	◯	◯	◯	◯	◯
Satisfactory quality of physical works, good,s or services procured	◯	◯	◯	◯	◯
Achievement of development objectives	◯	◯	◯	◯	◯
Net positive impact of projects on stakeholders	◯	◯	◯	◯	◯
Relevance of development objectives to needs of the client and stakeholders	◯	◯	◯	◯	◯
Sustainability of project effects after completion	◯	◯	◯	◯	◯

6. **How much weight do you feel that clients place on each of the following?**
Mark only one oval per row.

	Far too little	Too little	About the right amount	Too much	Far too much
Completion of projects on time	◯	◯	◯	◯	◯
Completion of projects on budget	◯	◯	◯	◯	◯
Satisfactory quality of physical works, good,s or services procured	◯	◯	◯	◯	◯
Achievement of development objectives	◯	◯	◯	◯	◯
Net positive impact of projects on stakeholders	◯	◯	◯	◯	◯
Relevance of development objectives to needs of the client and stakeholders	◯	◯	◯	◯	◯
Sustainability of project effects after completion	◯	◯	◯	◯	◯

7. **How much weight do you personally believe should be placed on each of the following?**
Mark only one oval per row.

	None	Some	Quite a bit	An extreme amount
Completion of projects on time				
Completion of projects on budget				
Satisfactory quality of physical works, good,s or services procured				
Achievement of development objectives				
Net positive impact of projects on stakeholders				
Relevance of development objectives to needs of the client and stakeholders				
Sustainability of project effects after completion				

ICRs also rate the performance of the borrower and of the World Bank. On the client side, the ICR rates the performance of the government and of the implementing agency. On the Bank side, the ICR rates the quality at entry of the project and the quality of supervision.

8. **In your experience, what is the typical quality of each of the following?**
Mark only one oval per row.

	Highly unsatisfactory	Unsatisfactory	Moderately unsatisfactory	Moderately satisfactory	Satisfactory	Highly satisfactory
Bank performance in ensuring quality at entry						
Quality of Bank supervision						
Performance of the government						
Performance of the implementing agency						

9. **In your experience, how often does each of the following contribute to a project not fully achieving its development objective?**
Mark only one oval per row.

	Hardly ever	Occasionally	Sometimes	Frequently	Almost always
Poor design					
Poor implementation					
Exogenous factors					

Listed below are factors that may affect the outcome of a project.

10. **When thinking of all Bank-funded WSS projects with which you have had direct experience, do any of these factors need improvement?**
Mark only one oval per row.

	Needs significant improvement	Needs improvement	OK as is	Exceeds expectation	Significantly exceeds expectations
Contractor performance					
Quality of procurement processes					
Timeliness of procurement processes					
Government's commitment to projects					
Implementing agency's commitment to projects					
Quality of consultations with stakeholders					
Mitigation of environmental or social externalities					
Monitoring of results					
Evaluation of project outcomes					
Quality of technical project designs (e.g. engineering plans)					
Coordination with concurrent Bank projects					
Incorporation of lessons/expertise from other sectors or regions					

...continued

11. **When thinking of all Bank-funded WSS projects with which you have had direct experience, do any of these factors need improvement?**
Mark only one oval per row.

	Needs significant improvement	Needs improvement	OK as is	Exceeds expectations	Significantly exceeds expectations
Proactiveness of the implementing agency					
Proactivness of the government					

the Bank					
Contract strategy (e.g. the number of contracts and their interaction or dependencies)					
Contract design (e.g. design & build vs. conventional supply and installation)					
Implementing agency's level of readiness					
Revision of development objectives to improve relevance during preparation					
Revision of project design to improve effectiveness following consultations					
Feasibility of plans for long-term financing of operation and maintenance of infrastructure					
Use of untested or innovative technologies					
Quality of results frameworks					
Development of plans to handle uncertainty or unforseen events					
Adequacy of cost recovery mechanisms					
Adequacy of consultations with stakeholders					
Leadership of the national project coordinator					
Assessment of social and environmental externalities					
Design of mitigation measures for social or environmental externalities					
Delivery of mitigation measures					

12. **When thinking of all Bank-funded WSS projects with which you have had direct experience, do any of these factors need improvement?**
Mark only one oval per row.

	Needs significant improvement	Needs improvement	OK as is	Exceeds expectations	Significantly exceeds expectations
Delivery of mitigation measures	◯	◯	◯	◯	◯
Assessment of willingness to pay for proposed new services	◯	◯	◯	◯	◯
Project objectives based on understanding of local context	◯	◯	◯	◯	◯
Project technology reflects local operating capacity	◯	◯	◯	◯	◯
National project coordinator's knowledge of the project	◯	◯	◯	◯	◯
Consideration of alternative solutions	◯	◯	◯	◯	◯
Incorporation of engineering and construction supervision into project design and budget	◯	◯	◯	◯	◯
Sustainability of project effects	◯	◯	◯	◯	◯
Incorporation of mitigation measures for project affected people in project design and budget	◯	◯	◯	◯	◯
Incorporation of security requirements into project design	◯	◯	◯	◯	◯
Frequency of project restructurings	◯	◯	◯	◯	◯
Frequency of changes in TTL-ship	◯	◯	◯	◯	◯
Composition of the PMU (e.g. consultants vs seconded staff)	◯	◯	◯	◯	◯

disbursement estimates					
Existence of gaps in financing at after board approval					
Contribution of fiscal resources to a project by the client					

13. **When preparing a project, how much value do you find that each of the following factors contributes to project success?**
Mark only one oval per row.

	No value	Limited value	Average value	Much value	Extreme value
Project is multi-sectoral (e.g. water & wastewater or water & power)					
Agencies responsible for environmental/social mitigation involved in the design of mitigation measures					
Previous projects in same country in the same sector were successful					
Operating expenses incorporated into long term infrastructure financing plan					
Project management unit established by effectiveness					
Land required for the project does not require exercise of eminent domain					
Institutional responsibilities for operation and maintenance are clear					
National Project Coordinator has been hired by project appraisal					
National Project Coordinator has a contract for the duration of the project					
National Project Coordinator shows leadership					
National Project Coordinator has necessary interpersonal skills					
National Project Coordinator has technical knowledge relevant to the project					
National Project Coordinator understands Bank's procurement processes and rules					
Bank TTL has worked in the country					
Bank TLL shows leadership					
Bank TTL has necessary					

interpersonal skills					
Bank TTL has necessary interpersonal skills	◯	◯	◯	◯	◯
Bank TTL has technical knowledge relevant to the project	◯	◯	◯	◯	◯
Bank TTL remains the same during project preparation	◯	◯	◯	◯	◯
Bank TTL remains the same during preparation and implementation	◯	◯	◯	◯	◯

The following section collects some demographic information about you. Your responses are confidential and cannot be linked to you. Demographic information will be used for analytical purposes only.

14. **Years of experience at the World Bank Group**

_____

15. **Years of work experience in the water sector**

_____

16. **For how many water supply and sanitation projects have you served as TTL?**

_____

17. **Highest level of education completed**

Mark only one oval.

- ◯ Bachelor's
- ◯ Master's
- ◯ Doctorate
- ◯ JD
- ◯ MBA
- ◯ Other: _____

18. **I identify my gender as**

Mark only one oval.

- ◯ Female
- ◯ Male
- ◯ Other: _____

19. **The primary focus of my education was**
Mark only one oval.

- ◯ Humanities
- ◯ Social science
- ◯ Natural sciences
- ◯ Mathematics
- ◯ Computer science
- ◯ Engineering
- ◯ Business
- ◯ Education
- ◯ Law
- ◯ Medicine
- ◯ Other: _____

20. **Contract type**
Mark only one oval.

- ◯ STC
- ◯ ETC
- ◯ Staff - open-ended
- ◯ Staff - term
- ◯ Secondee
- ◯ Other: _____

21. **I am a**
Mark only one oval.

- ◯ YP
- ◯ JPO
- ◯ Neither

22. **Grade level (if not staff, then the equivalent)**
Mark only one oval.

- ◯ GE
- ◯ GF
- ◯ GG
- ◯ GH
- ◯ GI
- ◯ Other: _____

23. **What are the top three reasons that projects fail?**

24. **What are the top three reasons that projects succeed?**

25. **What are three of the most important things to do during project preparation to ensure a successful project?**

26. **What other comments/thoughts/observations do you have?**

Appendix 2

Investment Operations
Readiness for Implementation Checklist
(To be completed and attached to PCN, QER, Decision review, Negotiations and Board packages with other documents)

This checklist is intended as an aid to ensure readiness for implementation for investment operations. The 'actions required' should not be understood as an exhaustive list, as specific additional actions might be necessary in certain circumstances[41].

Steps	Actions Required	Project Phase	Completed (Yes or No)
1. Country specific requirements met (Please check with CMU and list the pertinent ones in the Actions Required column)	*First step for ensuring readiness is TTL ensuring requisite country/government specific requirements are understood and the timeline/process for meeting these is factored into the preparation process. e.g.:* - *Parliamentarians on board and ready to approve project in a timely manner* - *Project included in Govt. Public Investment Projects/Programs (PIP) list for FY* - *Other*	At project identification or soon thereafter	
2 Communications strategy developed	*TTL/Task Team conducts stakeholder mapping* *TTL/Task Team develops and starts implementing strategy for consulting with stakeholders and facilitating feedback*	At project identification or soon thereafter	

[41] In many cases, other key implementation actions or instruments may need to be put in place before Board Approval (e.g., MOUs, Protocols, and other Manuals). Also, it might be appropriate and possible to allow for retroactive financing in some cases.

Steps	Actions Required	Project Phase	Completed (Yes or No)
	TTL/task team identifies any reputational risks or areas of sensitivity with respect to stakeholder relations; develops a plan for managing/mitigating those risks and begins implementing the plan[42].		
3. Project Preparation Advance approved [As appropriate]	*TTL informs the borrower of the availability of the advance and its uses.* *Borrower requests the advance* *TTL evaluates the request to ensure it meets the criteria set out in the PPA guidance note* *TTL obtains an approval from the Country Director*	After Concept Note, but before pre-appraisal	
	Corresponding Letter of Agreement signed by both parties	Before Board review	
4. Applicability of OP 8.30 (Financial Intermediary Lending) confirmed	*TTL to confirm if OP 8.30 (Financial Intermediary Lending) is triggered[43]. If it is triggered, compliance with OP 8.30 should be met by decision meeting.*	After Concept Note, but before pre-Appraisal	
	TTL to ensure that appropriate Annex is prepared and included in PAD.	Prior to Appraisal	
5. Relevant institutional, fiduciary, social and implementation agency assessments completed and	*Task Team carries out relevant institutional assessments including fiduciary, safeguards and implementation agency assessments, and incorporates findings in project design, risk assessment/mitigation, institutional/ implementation arrangements and costing and financing*	Prior to DM/ finalized during Appraisal	

[42] Teams should identify risks and develop a plan for risk management/mitigation for all specific aspects of project preparation, e.g., fiduciary aspects, safeguards issues, land acquisition, etc.

[43] OP 8.30 A line of credit component exists whenever any Bank funds are channeled (a) to households or businesses with an obligation to repay, regardless of what entity is intermediating the funds (financial institutions, government departments, nonfinancial companies, or others) and regardless of what the sub loan is called (loan, cost recovery of grants, reimbursable assistance, or other terms); OR (b) to government entities or parastatals (e.g., utility companies), municipalities, and other subsovereign entities, when the funds are intermediated by a financial institution (public or private) that makes credit decisions and/or bears credit risk.

Steps	Actions Required	Project Phase	Completed (Yes or No)
findings reflected in project design	*TT provides for each agency a copy of its articles of associations, by-laws and organization chart (or other legal instrument governing the operations and organization of the agency).* *TT clarifies the flow of funds, ownership of the fund/accounts in which the funds flow, and the delegations of authority to request disbursements*	Prior to DM	
6. M&E system designed and in place	*Task Team (TT) and client agree on intervention logic, key objectives and relevant performance indicators, put in place data collection strategy (including costing and financing) and establish baselines and targets for all indicators. Client produces M&E manual, either as a separate manual or as a part of PIM.* *Include mandatory core sector and beneficiary indicators for IDA/IBRD (i.e. beneficiaries and applicable sector indicators)* *TT completes Annex 1 in PAD, ready to migrate to ISR*	Prior to DM/ finalized at appraisal/ confirmed at negotiations	
7. Implementation support plan agreed	*TT and client agree on a strategy and approach for implementation support with SMU and CMU and record these in the draft PAD.* *TT identifies and documents technical, fiduciary, safeguard and thematic inputs and resources required for implementation support*	Prior to DM/ finalized after Appraisal	
8. Safeguards consultations concluded; documentation disclosed	*TT concludes consultations with the relevant stakeholders. Detailed account of consultation (attendees, issues raised, means to reflect them in project design, etc.) are included in the environmental assessment report.*	Prior to Appraisal	

Steps	Actions Required	Project Phase	Completed (Yes or No)
	TT prepares and discloses approved ISDS (prior to PCN, revised at appraisal) and approved (by RSA and SM for non-transferred projects, or only by SM for transferred projects) safeguard documents (ESMF, ESIA/ESMP, RPF, RAP, IPDP, etc.) in-country and in Infoshop prior to appraisal, in English and in the local language and in an accessible form. *TT identifies the capacity of the implementing agency vis-à-vis safeguards aspects, and the necessary capacity building measures are identified.* *TT discloses the safeguards documents 120 days before Board approval for projects with significant impacts on the human environment. This addresses the Pelosi Amendment, which requires US ED to abstain from voting otherwise.* *TT sends out notification letters, e.g. for riparian countries under OP 7.50 (if 7.50 is triggered).*[44] *TT ensures that the necessary financial resources to implement the environmental and social management plan and to pay for compensation (as relevant) are identified, and their source is determined. This should be reflected in Project Documents.*		
9. Land acquisition plans prepared (If applicable)	*TT and client agree on arrangements for financing land acquisition (RPF, Process Framework, or RAP prior to appraisal). Availability of land for the first two years of program should be completed prior to Appraisal as well.*	Prior to Appraisal	

[44] The notification letters to riparians should be sent as early as possible so that the riparians have time to review and respond (typically much more than a month,) and the response is received before negotiations at the latest.

Steps	Actions Required	Project Phase	Completed (Yes or No)
	Clear land ownership confirmed *TT and client agree on arrangements for community land contributions (with RAP/RPF) or for access to resources (Process Framework)*		
10. Fiduciary arrangements agreed, and in place	*TT and client set up FM and procurement arrangements.*	Prior to Negotiations	
	Fiduciary staff assigned or recruited	As soon as possible, Prior to Negotiations	
	Team and client identify FM and procurement risks, including bottlenecks in the borrower's procedures, steps and controls[45].	Prior to Negotiations (During Appraisal)	
	Team agrees on FM and procurement risk mitigation plan (including the training plan, if necessary) with client	Prior to Negotiations (During Appraisal)	
11. Procurement plan and packages are in place, and some contracts are ready for signing	*Client develops and Bank reviews Preliminary Procurement Plan for the Project and a detailed Procurement Plan for the first 18 months*	Prior to Negotiations (During Appraisal)	
	Client develops and Bank reviews bidding documents for the 1st year implementation. and RFP for consulting contracts *For all major/critical TA packages, RFPs should be available for Bank review and clearance prior to negotiations*	Prior to negotiations	
	Client brings to point of signature contracts for works, goods and services for the first year of implementation.	By Effectiveness	

[45] Ideally, this step should be carried out in a timely manner so that a mitigation plan can be agreed upon and its implementation started as soon as possible.

Steps	Actions Required	Project Phase	Completed (Yes or No)
12. Project Implementation Plan for at least the first year agreed upon	*TTL ensures that the client prepares a realistic work program and implementation plan covering at least the first year* *Bank and client agree upon letter of sector policy (prior to Board) for APLs and SWAPs*	Prior to Negotiations	
13. Project Implementation Manual is prepared	*Client develops and Bank reviews Project Implementation Manual (covering procurement and FM)*	As soon as possible, Prior to Negotiations	
14. Counterpart funding for the first year of implementation is allocated (if required)	*TTL follows up with the client to ensure allocations are made for counterpart funding in government annual budget* *TT makes arrangements for timely release of funds (possibly in project account)*	Prior to Negotiations	
15. Concrete arrangements for co-financing in place (if applicable)	*Bank and client agree with financiers on co-financing disbursement and joint financing administration arrangements*	Prior to Negotiations	
	The complete financing plan and the procurement rules that would govern should be agreed at negotiations with letters of intent available before Board approval	Prior to Board approval	
16. Core implementation team in place	*TT ensures client has core staff in place (Coordinator, FM, Procurement, Safeguards, and M&E) in Ministries and Implementing Agencies. PPA, TFs, and/or Government funds may be used to help recruit core implementation team staff.* ***Best Practice: Core staff in place and involved in project preparation and negotiations*** *TT ensures organigram available, with agreed TORs, staff list, letters of appointment*	Latest by negotiations	
	TT shares disbursement letter and information on designated account with Borrower	Prior to Negotiations	

Steps	Actions Required	Project Phase	Completed (Yes or No)
17. Arrangements in place for the project to start disbursing	*Obtain approval of negotiated documents once minutes have been signed by a representative authority of borrower.* *Borrower representative to sign the statutory committee report*	Promptly after Negotiations	
	TT ensures that the client prepares the following for submission to the Bank: authorized signatory letter, including (a) the name(s) of the official(s) authorized to sign applications for withdrawal and applications for a special commitment (collectively, "Applications"), (b) indication of whether they sign individually or collectively (and in the latter case under which combination), and (c) the authenticated specimen signature(s) of the official(s) *Withdrawal application for the initial deposit of the Designated Account*	By Effectiveness	
18. Disclosure and Translation of PID and Safeguards documents	*TT ensures that (a) Concept and Appraisal PID are disclosed in English and translated and disclosed in the Arabic or French in country and in Infoshop (b) All required Safeguards documents are translated and disclosed in Arabic or French in country and in Infoshop.*	Before Appraisal	

Appendix 3

OP 4.01 - Environmental Assessment

These policies were prepared for use by World Bank staff and are not necessarily a complete treatment of the subject.

OP 4.01
January, 1999

Note: OP/BP 4.01 *Environmental Assessment*, were revised on April 2013 to take into account the recommendations in *"Investment Lending Reform: Modernizing and Consolidating Operational Policies and Procedures"* (R2012-0204 [IDA/R2012-0248]), which were approved by the Executive Directors on October 25, 2012. As a result of these recommendations, OP/BP 10.00, *Investment Project Financing,* have been revised, among other things, to incorporate and expand parts of OP/BP 8.00, *Rapid Response to Crises and Emergencies*, and to incorporate OP/BP 8.30, *Financial Intermediary Lending* and OP/BP 13.05*, Supervision*, (which have accordingly been retired). OP/BP 4.01 have consequently been updated to reflect these changes.

Additional information related to these statements is provided in the *Environmental Assessment Sourcebook* (Washington, D.C.: World Bank, 1991) and subsequent updates available from the Environment Sector Board, and in the *World Bank Group Environment, Health and Safety Guidelines (EHSGs)*.[1] Other Bank statements that relate to the environment include OP/BP 4.02, *Environmental Action Plans*; OP/BP 4.04, *Natural Habitats*; OP 4.07, *Water Resources Management*; OP 4.09, *Pest Management*; OP/BP4.10, *Indigenous Peoples*; OP/BP 4.11*, Physical Cultural Resources*; OP/BP 4.12, *Involuntary Resettlement*; OP/BP 4.36, *Forests*; and OP/BP 10.00, *Investment Project Financing*.

Questions may be addressed to the Safeguard Policies Helpdesk in OPCS (Safeguards@worldbank.org).

Revised April 2013

1. The Bank[2] requires environmental assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision making.

2. EA is a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the proposed project. EA evaluates a project's potential environmental risks and impacts in its area of influence;[3] examines project alternatives; identifies ways of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation. The Bank favors preventive measures over mitigatory or compensatory measures, whenever feasible.

3. EA takes into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and physical cultural resources);[4] and transboundary and global environmental aspects.[5] EA considers natural and social aspects in an integrated way. It also takes into account the variations in project and country conditions; the findings of country environmental studies; national environmental action plans; the country's overall policy framework, national legislation, and institutional capabilities related to the environment and social aspects; and obligations of the country, pertaining to project activities, under relevant international environmental treaties and agreements. The Bank does not finance project activities that would contravene such country obligations, as identified during the EA. EA is initiated as early as possible in project processing and is integrated closely with the economic, financial, institutional, social, and technical analyses of a proposed project.

4. The borrower is responsible for carrying out the EA. For Category A projects,[6] the borrower retains independent EA experts not affiliated with the project to carry out the EA.[7] For Category A projects that are highly risky or contentious or that involve serious and multidimensional environmental concerns, the borrower should normally also engage an advisory panel of independent, internationally recognized environmental specialists to advise on all aspects of the project relevant to the EA.[8] The

role of the advisory panel depends on the degree to which project preparation has progressed, and on the extent and quality of any EA work completed, at the time the Bank begins to consider the project.

5. The Bank advises the borrower on the Bank's EA requirements. The Bank reviews the findings and recommendations of the EA to determine whether they provide an adequate basis for processing the project for Bank financing. When the borrower has completed or partially completed EA work prior to the Bank's involvement in a project, the Bank reviews the EA to ensure its consistency with this policy. The Bank may, if appropriate, require additional EA work, including public consultation and disclosure.

6. The *Pollution Prevention and Abatement Handbook*[9] describes pollution prevention and abatement measures and emission levels that are normally acceptable to the Bank. However, taking into account borrower country legislation and local conditions, the EA may recommend alternative emission levels and approaches to pollution prevention and abatement for the project. The EA report must provide full and detailed justification for the levels and approaches chosen for the particular project or site.

EA Instruments

7. Depending on the project, a range of instruments can be used to satisfy the Bank's EA requirement: environmental impact assessment (EIA), regional or sectoral EA, strategic environmental and social assessment (SESA), environmental audit, hazard or risk assessment, environmental management plan (EMP) and environmental and social management framework (ESMF).[10] EA applies one or more of these instruments, or elements of them, as appropriate. When the project is likely to have sectoral or regional impacts, sectoral or regional EA is required.[11]

Environmental Screening

8. The Bank undertakes environmental screening of each proposed project to determine the appropriate extent and type of EA. The Bank classifies the proposed project into one of four categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts.
(a) *Category A*: A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive,[12] diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. EA for a Category A project examines the project's potential negative and positive environmental impacts, compares them with those of feasible alternatives (including the "without project" situation), and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. For a Category A project, the borrower is responsible for preparing a report, normally an EIA (or a suitably comprehensive regional or sectoral EA) that includes, as necessary, elements of the other instruments referred to in para. 7.

(b) *Category B*: A proposed project is classified as Category B if its potential adverse environmental impacts on human populations or environmentally important areas--including wetlands, forests, grasslands, and other natural habitats--are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigatory measures can be designed more readily than for Category A projects. The scope of EA for a Category B project may vary from project to project, but it is narrower than that of Category A EA. Like Category A EA, it examines the project's potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. The findings and results of Category B EA are described in the project documentation (Project Appraisal Document and Project Information Document).[13]
(c) *Category C*: A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a Category C project.

(d) *Category FI*: A proposed project is classified as Category FI if it involves investment of Bank funds through a financial intermediary, in subprojects that may result in adverse environmental impacts.

EA for Special Project Types

Projects Involving Subprojects

9. For projects involving the preparation and implementation of annual investment plans or subprojects, identified and developed over the course of the project period during the preparation of each proposed subproject, the project coordinating entity or implementing institution carries out appropriate EA according to country requirements and the requirements of this policy.[14] The Bank appraises and, if necessary, includes in the SIL components to strengthen, the capabilities of the coordinating entity or the implementing institution to (a) screen subprojects, (b) obtain the necessary expertise to carry out EA,

(c) review all findings and results of EA for individual subprojects, (d) ensure implementation of mitigation measures (including, where applicable, an EMP), and (e) monitor environmental conditions during project implementation.[15] If the Bank is not satisfied that adequate capacity exists for carrying out EA, all Category A subprojects and, as appropriate, Category B subprojects--including any EA reports--are subject to prior review and approval by the Bank.

Projects Involving Financial Intermediaries

10. For a project involving a financial intermediary (FI), the Bank requires that each FI screen proposed subprojects and ensure that subborrowers carry out appropriate EA for each subproject. Before approving a subproject, the FI verifies (through its own staff, outside experts, or existing environmental institutions) that the subproject meets the environmental requirements of appropriate national and local authorities and is consistent with this OP and other applicable environmental policies of the Bank.[16]

11. In appraising a proposed FI operation, the Bank reviews the adequacy of country environmental requirements relevant to the project and the proposed EA arrangements for subprojects, including the mechanisms and responsibilities for environmental screening and review of EA results. When necessary, the Bank ensures that the project includes components to strengthen such EA arrangements. For FI operations expected to have Category A subprojects, prior to the Bank's appraisal each identified participating FI provides to the Bank a written assessment of the institutional mechanisms (including, as necessary, identification of measures to strengthen capacity) for its subproject EA work.[17] If the Bank is not satisfied that adequate capacity exists for carrying out EA, all Category A subprojects and, as appropriate, Category B subprojects--including EA reports--are subject to prior review and approval by the Bank.[18]

Projects in Situations of Urgent Need of Assistance or Capacity Constraints under OP 10.00
12. The policy set out in OP 4.01 normally applies to projects processed under paragraph 11 of OP/BP 10.00, *Investment Project Financing*. However, when compliance with any requirement of this policy would prevent the effective and timely achievement of the objectives of such a project, the Bank may (subject to the limitations set forth in paragraph 11 of OP 10.00) exempt the project from such a requirement. The justification for any such exemption is recorded in the project documents. In all cases, however, the Bank requires at a minimum that (a) the extent to which the situation of urgent need of assistance or the capacity constraints were precipitated or exacerbated by inappropriate environmental practices be determined as part of the preparation of such projects, and (b) any necessary corrective measures be built into either the project or a future lending operation.

Institutional Capacity

13. When the borrower has inadequate legal or technical capacity to carry out key EA-related functions (such as review of EA, environmental monitoring, inspections, or management of mitigatory measures) for a proposed project, the project includes components to strengthen that capacity.

Public Consultation

14. For all Category A and B projects proposed for IBRD or IDA financing, during the EA process, the borrower consults project-affected groups and local nongovernmental organizations (NGOs) about the project's environmental aspects and takes their views into account. The borrower initiates such consultations as early as possible. For Category A projects, the borrower consults these groups at least twice: (a) shortly after environmental screening and before the terms of reference for the EA are finalized; and (b) once a draft EA report is prepared. In addition, the borrower consults with such groups throughout project implementation as necessary to address EA-related issues that affect them.[19]

Disclosure

15. For meaningful consultations between the borrower and project-affected groups and local NGOs on all Category A and B projects proposed for IBRD or IDA financing, the borrower provides relevant material in a timely manner prior to consultation and in a form and language that are understandable and accessible to the groups being consulted.

16. For a Category A project, the borrower provides for the initial consultation a summary of the proposed project's objectives, description, and potential impacts; for consultation after the draft EA report is prepared, the borrower provides a summary of the EA's conclusions. In addition, for a Category A project, the borrower makes the draft EA report available at a public place accessible to project-affected groups and local NGOs. For projects described in paragraph 9 above, the borrower/FI ensures that EA reports for Category A subprojects are made available in a public place accessible to affected groups and local NGOs.

17. Any separate Category B report for a project proposed for IDA financing is made available to project-affected groups and local NGOs. Public availability in the borrowing country and official receipt by the Bank of Category A reports for projects proposed for IBRD or IDA financing, and of any Category B EA report for projects proposed for IDA funding, are prerequisites to Bank appraisal of these projects.

18. Once the borrower officially transmits the Category A EA report to the Bank, the Bank distributes the summary (in English) to the executive directors (EDs) and makes the report available through its InfoShop. Once the borrower officially transmits any separate Category B EA report to the Bank, the Bank makes it available through its InfoShop.[20] If the borrower objects to the Bank's releasing an EA report through the World Bank InfoShop, Bank staff (a) do not continue processing an IDA project, or (b) for an IBRD project, submit the issue of further processing to the EDs.

Implementation

19. During project implementation, the borrower reports on (a) compliance with measures agreed with the Bank on the basis of the findings and results of the EA, including implementation of any EMP, as set out in the project documents; (b) the status of mitigatory measures; and (c) the findings of monitoring programs. The Bank bases supervision of the project's environmental aspects on the findings and recommendations of the EA, including measures set out in the legal agreements, any EMP, and other project documents.[21]

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1. World Bank Group Environment, Health and Safety Guidelines (EHSGs) have replaced the 1998 Pollution Prevention and Abatement Handbook (PPAH). Guidelines as to what constitutes acceptable pollution prevention and abatement measures and emission levels in a Bank financed project can be found in the EHSGs. For complete reference, consult the *World Bank Group Environmental Health and Safety Guidelines*. Please check the website [www1.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/IFC+Sustainability/Sustainability+Framework/Environmental,+Health,+and+Safety+Guidelines/] for the most recent version.
2. "Bank" includes IBRD and IDA; "EA" refers to the entire process set out in OP/BP 4.01; "loans" includes IDA credits and IDA grants; "borrower" includes, for guarantee operations, a private or public project sponsor receiving from another financial institution a loan guaranteed by the Bank; and "project" covers all operations financed by Investment Project Financing or Bank guarantees ("project" does not cover operations supported by Development Policy lending (for which the environmental provisions are set out in OP/BP 8.60, *Development Policy Lending*), or operations supported by Program-for-Results Financing (for which environmental provisions are set out in OP/BP 9.00,*Program-for-Results* Financing) and also includes projects and components funded under the Global Environment Facility. The project is described in the Loan/Credit/Grant Agreement. This policy applies to all components of the project, regardless of the source of financing.
3. For definitions, see Annex A. The area of influence for any project is determined with the advice of environmental specialists and set out in the EA terms of reference.
4. See OP/BP 4.12, *Involuntary Resettlement*; OP/BP 4.10, *Indigenous Peoples*; and OP/BP 4.11*, Physical Cultural Resources.*
5. Global environmental issues include climate change, ozone-depleting substances, pollution of international waters, and adverse impacts on biodiversity.
6. For screening, see para. 8.
7. EA is closely integrated with the project's economic, financial, institutional, social, and technical analyses to ensure that (a) environmental considerations are given adequate weight in project selection, siting, and design decisions; and (b) EA does not delay project processing. However, the borrower ensures that when individuals or entities are engaged to carry out EA activities, any conflict of interest is avoided. For example, when an independent EA is required, it is not carried out by the consultants hired to prepare the engineering design.
8. The panel (which is different from the dam safety panel required under OP/BP 4.37, *Safety of Dams*) advises the borrower specifically on the following aspects: (a) the terms of reference for the EA, (b) key issues and methods for preparing the EA, (c) recommendations and findings of the EA, (d) implementation of the EA's recommendations, and (e) development of environmental management capacity.
9. See footnote 1.
10. These terms are defined in Annex A.
11. Annexes Guidance on the use of sectoral and regional EA is available in EA Sourcebook Updates 4 and 15.
12. A potential impact is considered "sensitive" if it may be irreversible (e.g., lead to loss of a major natural habitat) or raise issues covered by OP 4.04, *Natural Habitats*; OP/BP4.10, *Indigenous Peoples*; OP/BP 4.11*, Physical Cultural Resources* or OP 4.12, *Involuntary Resettlement*.
13. When the screening process determines, or national legislation requires, that any of the environmental issues identified warrant special attention, the findings and results of Category B EA may be set out in a separate report. Depending on the type of project and the nature and magnitude of the impacts, this report may include, for example, a limited environmental impact assessment, an environmental mitigation or management plan, an environmental audit, or a hazard assessment. For Category B projects that are not in environmentally sensitive areas and that present well-defined and well-understood issues of narrow scope, the Bank may accept alternative approaches for meeting EA requirements: for example, environmentally sound design criteria, siting criteria, or pollution standards for small-scale industrial plants or rural works; environmentally sound siting criteria, construction standards, or inspection procedures for housing projects; or environmentally sound operating procedures for road rehabilitation projects.
14. In addition, if there are sectorwide issues that cannot be addressed through individual subproject EAs (and particularly if the project is likely to include Category A subprojects), the borrower may be required to carry out sectoral EA before the Bank appraises the project.

15. Where, pursuant to regulatory requirements or contractual arrangements acceptable to the Bank, any of these review functions are carried out by an entity other than the coordinating entity or implementing institution, the Bank appraises such alternative arrangements; however, the borrower/coordinating entity/implementing institution remains ultimately responsible for ensuring that subprojects meet Bank requirements.
16. The requirements for projects involving FI are derived from the EA process and are consistent with the provisions of para. 6 of this OP. The EA process takes into account the type of finance being considered, the nature and scale of anticipated subprojects, and the environmental requirements of the jurisdiction in which subprojects will be located.
17. Any FI included in the project after appraisal complies with the same requirement as a condition of its participation.
18. The criteria for prior review of Category B subprojects, which are based on such factors as type or size of the subproject and the EA capacity of the financial intermediary, are set out in the legal agreements for the project.
19. For projects with major social components, consultations are also required by other Bank policies--for example, OP/BP 4.10, *Indigenous Peoples*, and OP/BP 4.12, *Involuntary Resettlement.*
20. For a further discussion of the Bank's disclosure procedures, see *The World Bank Policy on Access to Information* which as of July 1, 2010, replaced *The World Bank Policy on Disclosure of Information*. Specific requirements for disclosure of resettlement plans and indigenous peoples development plans are set out in OP/BP 4.10, *Indigenous Peoples*, and OP/BP 4.12, *Involuntary Resettlement.*
21. See OP/BP 10.00, *Investment Project Financing*.

References

Acemoglu, D. (2009). *Introduction to Modern Economic Growth*. *Vasa*.

Acemoglu, D., & Wolitzky, A. (2012). Cycles of Distrust: An Economic Model. *Working Paper*. doi:10.2139/ssrn.2112262

African Development Bank. (2011). *ADF-11, Independent Evaluation of Quality at Entry for Strategies, Operations and Review, Information Note for ADF-11 Mid-Term*.

Agénor, P. R., Bayraktar, N., & El Aynaoui, K. (2008). Roads out of poverty? Assessing the links between aid, public investment, growth, and poverty reduction. *Journal of Development Economics*, *86*(2), 277–295. doi:10.1016/j.jdeveco.2007.07.001

Agresti, A. (2007). *An Introduction to Categorical Data Analysis*. *Statistics*. doi:10.1002/0471249688

Ahsan, K., & Gunawan, I. (2010a). Analysis of cost and schedule performance of international development projects. *International Journal of Project Management*, *28*, 68–78. doi:10.1016/j.ijproman.2009.03.005

Ahsan, K., & Gunawan, I. (2010b). Analysis of cost and schedule performance of international development projects. *International Journal of Project Management*, *28*(1), 68–78. doi:10.1016/j.ijproman.2009.03.005

Alesina, A., & Dollar, D. (2000). Who Gives Foreign Aid to Whom and Why? *Journal of Economic Growth*, *5*(1), 33–63. doi:10.1023/a:1009874203400

Andrews, M., Pritchett, L., & Woolcock, M. (2013a). Escaping Capability Traps Through Problem Driven Iterative Adaptation (PDIA). *World Development*, *51*, 234–244. doi:10.1016/j.worlddev.2013.05.011

Andrews, M., Pritchett, L., & Woolcock, M. (2013b). Escaping Capability Traps Through Problem Driven Iterative Adaptation (PDIA). *World Development*, *51*, 234–244. doi:10.1016/j.worlddev.2013.05.011

Angel-Urdinola, D. F., & Wodon, Q. (2012). Does increasing access to infrastructure services improve the targeting performance of water subsidies? *Journal of International Development*, *24*(1), 88–101. doi:10.1002/jid.1668

Asian Development Bank. (2006). *Report to Management on the Quality-at-Entry of Asian Development Bank Projects and Country Strategies Approved 2004–2005. Manila. Asian Development Bank.*

Asian Development Bank. (2007). *Managing for Development Results in the Asian Development Bank: A Preliminary Assessment. Manila: Asian Development Bank.*

Askarov, Z., & Doucouliagos, H. (2013). Does aid improve democracy and governance? A meta-regression analysis. *Public Choice*, *157*(3-4), 601–628. doi:10.1007/s11127-013-0081-y

Assessment, I. C. (2012). Global Water Security. *Intelligence*, (February).

Avots, I. (1972). PROJECTS IN DEVELOPING COUNTRIES: Improving the odds. *Business Horizons*, *15*, 69. Retrieved from http://w3.bgu.ac.il/lib/customproxy.php?url=http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=4523700&site=eds-live&authtype=ip,uid&custid=s4309548&groupid=main&profile=eds

Baccarini, D. (1999). The logical framework method for defining project success. *Project Management Journal*, *30*, 25–32. doi:Article

Baker, J. L. (2000). *Evaluating the Impact of Development Projects on Poverty A Handbook for Practitioners*. *Project Appraisal* (Vol. 9). Retrieved from http://siteresources.worldbank.org/INTISPMA/Resources/handbook.pdf

Bakker, K. (2013). Constructing "public" water: The World Bank, urban water supply, and the biopolitics of development. *Environment and Planning D: Society and Space*, *31*, 280–300. doi:10.1068/d5111

Bank, A. D. (2005). *Bank Group Quality-at-Entry Assessment in 2005*.

Barder, O. (2009). *Beyond Planning : Markets and Networks for Better Aid*. *Center for Global*

Development. Retrieved from http://www.cgdev.org/content/publications/detail/1422971/

Bardhan, P., & Mookherjee, D. (2006). Decentralisation and accountability in infrastructure delivery in developing countries. *Economic Journal*, *116*, 101–127. doi:10.1111/j.1468-0297.2006.01049.x

Baum, C. F. (2006). *An Introduction to Modern Econometrics Using Stata*. *STATA Press*. Retrieved from http://www.stata-press.com/books/modern-econometrics-stata/

Belassi, W., & Tukel, O. I. (1996). A new framework for determining critical success/failure factors in projects. *International Journal of Project Management*, *14*(3), 141–151. doi:10.1016/0263-7863(95)00064-X

Ben-Akiva, Moshe, et al. (1993). Infrastructure management under uncertainty: Latent performance approach. *Journal of Transportation Engineering*, *119*(1), 43–58.

Birdsall, N., De la Torre, A., & Valencia Caicedo, F. (2011). The Washington Consensus: Assessing a "Damaged Brand." In *The Oxford Handbook of Latin American Economics* (pp. 1–41). doi:10.1093/oxfordhb/9780199571048.001.0001

Birdsall, N., & Londoño, J. L. (1997). Asset Inequality Matters: An Assessment of the World Bank's Approach to Poverty Reduction. *American Economic Review*.

Blanc-Brude, F., & Makovsek, D. (2013). Construction risk in infrastructure project finance. *EDHEC Business School Working …*. Retrieved from http://chaire-eppp.org/files_chaire/blanc-brude-makovsek.pdf

Bond, R., & Hulme, D. (1999). Process approaches to development: Theory and Sri Lankan practice. *World Development*, *27*, 1339–1358. doi:10.1016/S0305-750X(99)00060-1

Boso, A. (2006). Designing Social Inquiry: Scientific Inference in Qualitative Research. *Papers: Revista de Sociologia*. doi:10.2307/2076556

Boudet, H. S., Jayasundera, D. C., & Davis, J. (2011). Drivers of Conflict in Developing Country Infrastructure Projects: Experience from the Water and Pipeline Sectors. *Journal of Construction Engineering and Management*, *137*, 498–511. doi:10.1061/(ASCE)CO.1943-

7862.0000333

Bradshaw, T. K. (2007). Theories of Poverty and Anti-Poverty Programs in Community Development. *Community Development*, *38*(1), 7–25. doi:10.1080/15575330709490182

Brinkerhoff, D. W., & Goldsmith, A. A. (1992). Promoting the sustainability of development institutions: A framework for strategy. *World Development*. doi:10.1016/0305-750X(92)90030-Y

Broad, R., & Cavanagh, J. (2006). The Hijacking of the Development Debate: How Friedman and Sachs Got It Wrong. *World Policy Journal*, *23*, 21–30. doi:10.1162/wopj.2006.23.2.21

Brumm, H. J. (2003). Aid, Policies, and Growth: Bauer Was Right. *CATO Journal*, *23*(2), 167–174. doi:10.2307/117311

Caiden, G. E. (2013). THE LIMITS OF INSTITUTIONAL REFORM IN DEVELOPMENT: CHANGING RULES FOR REALISTIC SOLUTIONS - by Matt Andrews. *Public Administration*, *91*, 1073–1075. doi:10.1111/padm.12061

Carothers, T. (2010). Democracy Support and Development Aid: The Elusive Synthesis. *Journal of Democracy*, *21*(4), 12–26.

Carter, M. R., & Barrett, C. B. (2006). The economics of poverty traps and persistent poverty: An asset-based approach. *Journal of Development Studies*, *42*(2), 178–199. doi:10.1080/00220380500405261

Chambers, R. (2009). Going to Scale with Community-Led Total Sanitation : Reflections on Experience , Issues and Ways Forward. *IDS Practice Papers*, (March), 1–50. doi:10.1111/j.2040-0225.2009.00001_2.x

Chauvet, L., Collier, P., & Fuster, A. (2006). Supervision and project performance: A principal-agent approach. *Economics Repository, University of Southampton*, (33), 1–36. Retrieved from economics.ouls.ox.ac.uk

Chen, D. H. C., & Dahlman, C. J. (2005). The Knowledge Economy , the KAM Methodology and World Bank Operations. *Information Age*. doi:10.2139/ssrn.841625

Clarke, A. (1999). A practical use of key success factors to improve the effectiveness of project management. *International Journal of Project Management*, *17*, 139–145. doi:10.1016/S0263-7863(98)00031-3

Clements, P. (1993). An approach to poverty alleviation for large international development agencies. *World Development*. doi:10.1016/0305-750X(93)90098-T

Clements, P. (1995). Poverty-Oriented Cost-Benefit Approach to the Analysis of Development-Projects. *World Development*, *23*, 577–592.

Cole, W. E., & Hirschman, A. O. (1969). Development Projects Observed. *Southern Economic Journal*, *35*, 284. doi:10.2307/1056551

Collier, P., & Dollar, D. (2002). Aid allocation and poverty reduction. *European Economic Review*, *46*(8), 1475–1500. doi:10.1016/S0014-2921(01)00187-8

Collier, P., & Dollar, D. (2004). Development effectiveness: What have we learnt? *Economic Journal*, *114*. doi:10.1111/j.1468-0297.2004.00221.x

Cooke-Davies, T. (2002a). The "real" success factors on projects. *International Journal of Project Management*, *20*, 185–190. doi:10.1016/S0263-7863(01)00067-9

Cooke-Davies, T. (2002b). The "real" success factors on projects. *International Journal of Project Management*, *20*, 185–190. doi:10.1016/S0263-7863(01)00067-9

Cooper, R. N. (1999). Assessing Aid: What Works, What Doesn't, and Why. *Foreign Affairs*.

Cooper, R. N. (2008). One Economics, Many Recipes: Globalization, Institutions, and Economic Growth. *Foreign Affairs*. doi:10.1111/j.1475-4932.2011.00767.x

Corbett, D. C., & Rostow, W. W. (1960). The Stages of Economic Growth: A Non-Communist Manifesto. *International Journal*, *16*, 83. doi:10.2307/40198523

Crawford, L., & Pollack, J. (2004). Hard and soft projects: A framework for analysis. *International Journal of Project Management*, *22*, 645–653. doi:10.1016/j.ijproman.2004.04.004

Crawford, P., & Bryce, P. (2003). Project monitoring and evaluation: A method for enhancing the

efficiency and effectiveness of aid project implementation. *International Journal of Project Management*, *21*, 363–373. doi:10.1016/S0263-7863(02)00060-1

Cusworth, J. W., & Franks, T. R. (Eds.). (1993). Managing projects in developing countries. Longman Publishing Group

Dailami, M., & Leipziger, D. (1998). Infrastructure project finance and capital flows: a new perspective. *World Development*, *26*, 1283–1298. doi:10.1016/S0305-750X(98)00054-0

de Carvalho, M. M., Patah, L. A., & de Souza Bido, D. (2015). Project management and its effects on project success: Cross-country and cross-industry comparisons. *International Journal of Project Management*, *33*(7), 1509–1522. doi:10.1016/j.ijproman.2015.04.004

De Jong, A. A., Runhaar, H. A. C., Runhaar, P. R., Kolhoff, A. J., & Driessen, P. P. J. (2012). Promoting system-level learning from project-level lessons. An analysis of donor-driven "indirect" learning about EIA systems in Ghana and the Maldives. *Environmental Impact Assessment Review*, *33*(1), 23–31. doi:10.1016/j.eiar.2011.10.001

Dekom, A. K., & Profit Management, A. (1986). Project management: A managerial approach : Jack R. Meredith and Samuel J. Mantel, JR., John Wiley & Sons, New York, 1985, 494 pp. *Engineering Management International*, *3*(4), 290–291. Retrieved from http://www.sciencedirect.com/science/article/B6X1P-45JK42M-10/2/707d59cbd113c90e8ac1cc8870d39d87

Deli, Patricia, Aart, K. (2014). *Predicting World Bank Project Outcome Ratings*.

Dener, C., Watkins, J., & Dorotinsky, W. L. (2011). *Financial Management Information Systems*. doi:10.1596/978-0-8213-8750-4

Denizer, C., Kaufmann, D., & Kraay, A. (2013). Good countries or good projects? Macro and micro correlates of World Bank project performance. *Journal of Development Economics*, *105*, 288–302. doi:10.1016/j.jdeveco.2013.06.003

Devereux, J. a. (2005). Measuring capacity. *Australian Health Review*, *29*(4), 493.

Diallo, A., & Thuillier, D. (2005). The success of international development projects, trust and

communication: An African perspective. *International Journal of Project Management*, *23*, 237–252. doi:10.1016/j.ijproman.2004.10.002

Djankov, S., Montalvo, J. G., & Reynal-Querol, M. (2008). The curse of aid. *Journal of Economic Growth*, *13*(3), 169–194. doi:10.1007/s10887-008-9032-8

Doh, J. P., & Ramamurti, R. (2003). Reassessing risk in developing country infrastructure. *Long Range Planning*, *36*, 337–353. doi:10.1016/S0024-6301(03)00069-4

Dollar, D., & Kraay, A. (2001). Trade , Growth , and Poverty. *Social Science Research Network*, *38*(3), 16–20. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=632684

Domar, E. D. (1948). THE PROBLEM OF CAPITAL ACCUMULATION. *American Economic Review*, *38*, 777–794. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=8718301&site=ehost-live&scope=site

Dowrick, S., & Rogers, M. (2002). Classical and technological convergence: beyond the Solow-Swan growth model. *Oxford Economic Papers*, *54*, 369–385. doi:10.1093/oep/54.3.369

Draper, N. R., & Smith, H. (1998). Applied Regression Analysis. *Technometrics*, *47*(3), 706. doi:10.1198/tech.2005.s303

Dreher, A., Sturm, J. E., & Vreeland, J. R. (2009). Development aid and international politics: Does membership on the UN Security Council influence World Bank decisions? *Journal of Development Economics*, *88*(1), 1–18. doi:10.1016/j.jdeveco.2008.02.003

Durlauf, S. N., Kourtellos, A., & Minkin, A. (2001). The local Solow growth model. *European Economic Review*, *45*, 928–940. doi:10.1016/S0014-2921(01)00120-9

Easterly, W. (1999). The ghost of financing gap: Testing the growth model used in the international financial institutions. *Journal of Development Economics*, *60*, 423–438. doi:10.1016/S0304-3878(99)00047-4

Easterly, W. (2003). Can Foreign Aid Buy Growth? *Journal of Economic Perspectives*, *17*(3), 23–48. doi:10.1257/089533003769204344

Easterly, W., Levine, R., & Roodman, D. (2004). Aid, policies, and growth: Comment. *American Economic Review*. doi:10.1257/0002828041464560

European Commission, Reforming Technical Cooperation and Project Implementation Units for External Aid Provided by the European Commission, A Backbone Strategy, July 2008.

Fields, G. (2015). Aid, Growth and Jobs. *African Development Review*, *27*, 5–16. doi:10.1111/1467-8268.12135

Firestone, J. M., & McElroy, M. W. (2005). Doing knowledge management. *The Learning Organization*. doi:10.1108/09696470510583557

Flyvbjerg, B. (2007). Policy and planning for large-infrastructure projects: Problems, causes, cures. *Environment and Planning B: Planning and Design*, *34*, 578–597. doi:10.1068/b32111

Freeman, P. K., & Pflug, G. C. (2003). Infrastructure in developing and transition countries: risk and protection. *Risk Analysis*, *23*, 601–609. doi:10.1111/1539-6924.00340

Frimpong, Y., Oluwoye, J., & Crawford, L. (2003). Causes of delay and cost overruns in construction of groundwater projects in a developing countries; Ghana as a case study. *International Journal of Project Management*, *21*(5), 321–326. doi:10.1016/S0263-7863(02)00055-8

Fukuda-Parr, S., Greenstein, J., & Stewart, D. (2013). How Should MDG Success and Failure be Judged: Faster Progress or Achieving the Targets? *World Development*, *41*(1), 19–30. doi:10.1016/j.worlddev.2012.06.014

G Perry, J. (1986). Risk management — an approach for project managers. *International Journal of Project Management*, *4*, 211–216. doi:10.1016/0263-7863(86)90005-0

Gasik, S. S. (Sybena C. (2011). A Model of Project Knowledge. *Project Management Journal*, *42*(3), 23–44. doi:10.1002/pmj

Gelman, a, & Hill, J. (2007). Data analysis using regression and multilevel/hierarchical models. *Policy Analysis*, 1–651. doi:10.2277/0521867061

Gleick, P.H. Dirty Water: Estimated Deaths from Water-Related Disease 2000-2020

Globerson, S., & Zwikael, O. (2002). The Impact of the Project Manager on Project Management Planning Processes. *Project Management Journal*, *33*, 58. Retrieved from http://search.ebscohost.com/login.aspx?direct=true&db=buh&AN=7350691&site=ehost-live

Goldin, I., Rogers, H., & Stern, N. (2002). The Role and Effectiveness of Development Assistance Lessons from World Bank Experience.

Gore, C. (2000). The rise and fall of the Washington Consensus as a paradigm for developing countries. *World Development*, *28*, 789–804. doi:10.1016/S0305-750X(99)00160-6

Gow, D. D., & Morss, E. R. (1988). The notorious nine: Critical problems in project implementation. *World Development*. doi:10.1016/0305-750X(88)90216-1

Groves, R. M. (2009). An Introduction to Survey Methodology. *Survey Methodology*. Retrieved from papers2://publication/uuid/238B1420-70F1-48B2-BAF2-37BA548CE22D

Groves, R. M., Fowler, F. J., Couper, M. P., Lepkowski, J. M., Singer, E., & Tourangeau, R. (2004). *Survey Methodology*. *Statistics* (Vol. 2nd). doi:10.2307/1504821

Gundlac, E. (2007). The Solow model in the empirics of growth and trade. *Oxford Review of Economic Policy*, *23*, 25–44. doi:10.1093/oxrep/grm002

GWI (Global Water Intelligence). 2004. Tariffs: Half Way There. Oxford, U.K.: GWI

H. Stock, J., & W. Watson, M. (2010). Introduction to Econometrics (3rd Edition) (Addison-Wesley Series in Economics). *Addison-Wesley*, *1*, 840.

Hailu; Degol; and Raquel Tsukada. (2012). Is the distribution of Foreign Aid MDG-sensitive. *UNEP*. Retrieved from http://www.undp.org/content/dam/undp/library/MDG/english/Is the Distribution of Aid MDG-Sensitive.pdf

Hariri, J. G. (2013). Foreign Aided: Why Democratization Brings Growth When Democracy Does Not. *British Journal of Political Science*, *FirstView*(October 2013), 1–19. doi:10.1017/S0007123413000276

Harrison, A. (2002). The World Bank: Structure and Policies. *Journal of International Economics*. doi:10.1016/S0022-1996(01)00140-4

Harttgen, K., & Klasen, S. (2013). Do Fragile Countries Experience Worse MDG Progress? *Journal of Development Studies*, *49*(1), 134–159. doi:10.1080/00220388.2012.713471

Hermano, V., López-Paredes, A., Martín-Cruz, N., & Pajares, J. (2013). How to manage international development (ID) projects successfully. Is the PMD Pro1 Guide going to the right direction? *International Journal of Project Management*, *31*, 22–30. doi:10.1016/j.ijproman.2012.07.004

Hermes, N., & Lensink, R. (2001). Changing the Conditions for Development Aid: A New Paradigm? *Journal of Development Studies*, *37*(6), 1–16. doi:10.1080/713601080

Hillson, D. (2009a). Managing risk in projects. *Project Management Journal*, *46*, 84–96. doi:10.1002/pmj

Hillson, D. (2009b). *Managing risk in projects*. *Project Management Journal* (Vol. 46). doi:10.1002/pmj

Hoeven, R. Van Der. (2001). Assessing Aid and Global Governance. *Journal of Development Studies*, *37*(924316660), 109–117. doi:10.1080/713601085

Hoffman, R. R., Ziebell, D., Fiore, S. M., & Becerra-Fernandez, I. (2008). Knowledge Management Revisited. *IEEE Intelligent Systems*, *23*(3). doi:10.1109/MIS.2008.51

Holt, L. (2005). Utility service quality—Telecommunications, electricity, water. *Utilities Policy*, *13*(3), 189–200. doi:10.1016/j.jup.2004.08.003

Honadle, G. H., & Rosengard, J. K. (1983). Putting "projectized" development in perspective. *Public Administration and Development : A Journal of the Royal Institute of Public Administration*, *3*, 299–305.

Howsawi, E. M., Eager, D., & Bagia, R. (2011). Understanding project success: The four-level project success framework. In *IEEE International Conference on Industrial Engineering and Engineering Management* (pp. 620–624). doi:10.1109/IEEM.2011.6117991

Hudson, J., & Mosley, P. (2008). Aid Volatility, Policy and Development. *World Development*, *36*(10), 2082–2102. doi:10.1016/j.worlddev.2007.02.018

Hulme, D., & Shepherd, A. (2003). Conceptualizing chronic poverty. *World Development*, *31*(3), 403–423. doi:10.1016/S0305-750X(02)00222-X

Hunter, P. R., Zmirou-Navier, D., & Hartemann, P. (2009). Estimating the impact on health of poor reliability of drinking water interventions in developing countries. *Science of the Total Environment*, *407*(8), 2621–2624. doi:10.1016/j.scitotenv.2009.01.018

Hutton, G. (2013). Global costs and benefits of drinking-water supply and sanitation interventions to reach the MDG target and universal coverage. *Journal of Water and Health*, *11*(1), 1–12. doi:WHO/HSE/WSH/12.01

Hutton, G., & Bartram, J. (2008). Global costs of attaining the Millennium Development Goal for water supply and sanitation. *Bulletin of the World Health Organization*, *86*(1), 13–19. doi:10.2471/BLT.07.046045

Idoko, L. A. (2008). Developing local capacity for project management - Key to social and business transformation in developing countries. PMI Global Congress 2008. Project Management Institute

Ika, L. A. (2009). Project success as a topic in project management journals. *Project Management Journal*, *40*(4), 6–19. doi:10.1002/pmj.20137

Ika, L. A. (2015). Opening the black box of project management: Does World Bank project supervision influence project impact? *International Journal of Project Management*, *33*(5), 1111–1123. doi:10.1016/j.ijproman.2015.01.005

Ika, L. A., Diallo, A., & Thuillier, D. (2010). Project management in the international development industry: The project coordinator's perspective. *International Journal of Managing Projects in Business*. doi:10.1108/17538371011014035

Ika, L. A., Diallo, A., & Thuillier, D. (2011). The empirical relationship between success factors and dimensions: The perspectives of World Bank project supervisors and managers. *International Journal of Managing Projects in Business*. doi:10.1108/17538371111164092

Ika, L. A., Diallo, A., & Thuillier, D. (2012a). Critical success factors for World Bank projects: An empirical investigation. *International Journal of Project Management*, *30*(1), 105–116.

Ika, L. A., Diallo, A., & Thuillier, D. (2012b). Critical success factors for World Bank projects: An empirical investigation. *International Journal of Project Management*, *30*(1), 105–116. doi:10.1016/j.ijproman.2011.03.005

Ika, L. A., & Hodgson, D. (2014). Learning from international development projects: Blending Critical Project Studies and Critical Development Studies. *International Journal of Project Management*, *32*, 1182–1196. doi:10.1016/j.ijproman.2014.01.004

Inter-American Development Bank. (2004). *Instruments and Development: An Evaluation of IDB Lending Modalities. Washington D.C.: Inter-American Development Bank.*

Islam, M., & Yoshida, S. (2009). MDG 5: How close are we to success? *BJOG: An International Journal of Obstetrics and Gynaecology*. doi:10.1111/j.1471-0528.2009.02335.x

Jimenez, B. S., & Pagano, M. a. (2012). What Factors Affect Management Quality? State Infrastructure Management and the Government Performance Project. *Public Works Management & Policy*, *17*, 124–151. doi:10.1177/1087724X11419308

Jugdev, K., & Moller, R. (2006). A retrospective look at our evolving understanding of project success. *IEEE Engineering Management Review*, *34*, 110–127. doi:10.1109/EMR.2006.261387

Jugdev, K., & Muller, R. (2005). A RETROSPECTIVE LOOK AT OUR EVOLVING UNDERSTANDING OF PROJECT SUCCESS. *Project Management Journal*, *36*, 19–32. doi:10.1109/EMR.2006.261387

Kamara, J. M., Anumba, C. J., Carrillo, P. M., & Bouchlaghem, N. (2003). Conceptual framework for live capture and reuse of project knowledge. In R. Amor (Ed.), *Proceeding of the 20th CIB W78 Conference on Information Technology in Construction* (pp. 178–185).

Kar, K. (2012). Why not Basics for All? Scopes and Challenges of Community-led Total Sanitation. *IDS Bulletin*, *43*(2), 93–96. doi:10.1111/j.1759-5436.2012.00312.x

Kar, K., & Chambers, R. (2008). *Handbook on Community-Led Total Sanitation*. *Children* (Vol. 44). Retrieved from http://www.communityledtotalsanitation.org/sites/communityledtotalsanitation.org/files/clts handbook.pdf

Kärnä, S., Junnonen, J.-M., Manninen, A.-P., & Julin, P. (2013). Exploring project participants' satisfaction in the infrastructure projects. *Engineering Project Organization Journal*, *3*, 186–197. doi:10.1080/21573727.2013.823083

Kayaga, S., & Franceys, R. (2007). Costs of urban utility water connections: Excessive burden to the poor. *Utilities Policy*, *15*(4), 270–277. doi:10.1016/j.jup.2007.06.002

Khagram, S., Thomas, C., Lucero, C., & Mathes, S. (2009). Evidence for development effectiveness. *Journal of Development Effectiveness*. doi:10.1080/19439340903141415

Khang, D. B., & Moe, T. L. (2008). Success Criteria and Factors for International Development Projects: A Life-Cycle-Based Framework. *Project Management Journal*, *39*(1), 72–84. doi:10.1002/pmj

Khang, Do Ba; Moe, T. L. (2008). Success Criteria and Factors for International Development Projects: A Life-Cycle-Based Framework. *Project Management Journal*, *39*, 72–84. doi:10.1002/pmj

Kilby, C. (2000a). Supervision and performance: The case of World Bank projects. *Journal of Development Economics*, *62*(1), 233–259.

Kilby, C. (2000b). Supervision and performance: The case of World Bank projects. *Journal of Development Economics*, *62*, 233–259. doi:10.1016/S0304-3878(00)00082-1

Kilby, C. (2000c). Supervision and performance: The case of World Bank projects. *Journal of Development Economics*, *62*(1), 233–259. doi:10.1016/S0304-3878(00)00082-1

Kilby, C. (2013). The political economy of project preparation: An empirical analysis of World Bank projects. *Journal of Development Economics*, *105*, 211–225. doi:10.1016/j.jdeveco.2013.07.011

Kilby, C. (2015). Assessing the impact of World Bank preparation on project outcomes. *Journal of Development Economics*, *115*, 111–123. doi:10.1016/j.jdeveco.2015.02.005

Kindornay, B. S., & Morton, B. (2009). Development effectiveness: towards new understandings. *Development Cooperation Series*, 1–6.

King, K. (2002). Banking on Knowledge: The new knowledge projects of the World Bank. *Compare: A Journal of Comparative and International Education*. doi:10.1080/0305792022000007472

King, K. (2004). Knowledge for Development?: Comparing British, Japanese, Swedish and World Bank Aid. *Books.google.com*. Retrieved from http://books.google.com/books?hl=en&lr=&id=shHIk9jU-8gC&oi=fnd&pg=PP9&dq=king+Multilateral+Agencies+in+the+Construction+of+the+Global+Agenda+on+Education&ots=IqGFXs8HXK&sig=NHL-Arso3ZAX16MmnwaDrZlMLIw\npapers://33432778-ef7b-4391-ae67-220f9c46620d/Paper/p4577

Kleinbaum, D. G., & Klein, M. (2010). *Logistic regression: A self-learning text*. *Statistics for Biology and Health*. doi:10.1007/978-1-4419-1742-3

Komives, K., Halpern, J., Foster, V., & Wodon, Q. (2006). *The Distributional Incidence of Residential Water and Electricity Subsidies*. *World Bank Policy Research Working Paper*. Retrieved from http://econ.worldbank.com

Komives, K., Halpern, J., Foster, V., Wodon, Q., & Abdullah, R. (2007). Utility subsidies as social transfers: An empirical evaluation of targeting performance. *Development Policy Review*, *25*(6), 659–679. doi:10.1111/j.1467-7679.2007.00391.x

Komives, K., Whittington, D., & Wu, X. (2001). Infrastructure Coverage and the Poor: A Global Perspective. *Policy Research Working Papers*, 56. doi:doi:10.1596/1813-9450-2551

Kosack, S. (2003). Effective aid: How democracy allows development aid to improve the quality of life. *World Development*, *31*(1), 1–22. doi:10.1016/S0305-750X(02)00177-8

Kraay, A. (2012). How large is the government spending multiplier? Evidence from World Bank lending. *Quarterly Journal of Economics*, *127*(2), 829–887. doi:10.1093/qje/qjs008

Kwak, Y. H., D, P., & Hall, M. (2002). Critical Success Factors in International Development Project Management. In *CIB 10th International Symposium Construction Innovation & Global Competitiveness*.

Landoni, P., & Corti, B. (2011). The management of international development projects: Moving toward a standard approach or differentiation? *Project Management Journal*, *42*, 45–61. doi:10.1002/pmj.20231

Lantagne, D., Quick, R., & Mintz, E. (2006). Household water treatment and safe storage options in developing countries: a review of current implementation practices. *Woodrow Wilson Quarterly*, 17–38. doi:10.1021/es301842u

Lensink, R., & White, H. (2000a). Aid allocation, poverty reduction and the Assessing Aid report. *Journal of International Development*. doi:10.1002/(SICI)1099-1328(200004)12:3<399::AID-JID658>3.0.CO;2-5

Lensink, R., & White, H. (2000b). Assessing Aid: A Manifesto for the 21st Century? *Assessing Aid at DGIS*, 1–16.

Lensink, R., & White, H. (2001). Are There Negative Returns to Aid? *Journal of Development Studies*, *37*(6), 42–65. doi:10.1080/713601082

Leo, B., & Barmeier, J. (2010). Who are the MDG trailblazers? A new MDG progress index. *Parasitology International*, *63*(5), 708–712. doi:10.1016/j.parint.2014.06.001

Leseure, M. J., & Brookes, N. J. (2004a). Knowledge management benchmarks for project management. *Journal of Knowledge Management*, *8*(1), 103–116. doi:10.1108/13673270410523943

Leseure, M. J., & Brookes, N. J. (2004b). Knowledge management benchmarks for project management. *Journal of Knowledge Management*, *8*(1), 103–116. doi:10.1108/13673270410523943

Long, J. S., & Freese, J. (2001). *Regression Models for Categorical Dependent Variables Using STATA. Sociology The Journal Of The British Sociological Association* (Vol. Revised ed). Retrieved from http://www.amazon.com/dp/1597180114

Long, S., & Freese, J. (2006). *Regression Models for Categorical Dependent Variables using Stata, 2nd Edition*. *Stata Press books*.

Love, P. E. D., Edwards, D. J., & Irani, Z. (2012). Moving beyond optimism bias and strategic misrepresentation: An explanation for social infrastructure project cost overruns. *IEEE Transactions on Engineering Management*, *59*, 560–571. doi:10.1109/TEM.2011.2163628

Mair, J., & Marti, I. (2009). Entrepreneurship in and around institutional voids: A case study from Bangladesh. *Journal of Business Venturing*, *24*, 419–435. doi:10.1016/j.jbusvent.2008.04.006

Matsumoto, I. T., Stapleton, J., Glass, J., & Thorpe, T. (2005). A knowledge-capture report for multidisciplinary design environments. *Journal of Knowledge Management*. doi:10.1108/13673270510602782

McCullagh, Peter (1980). "Regression Models for Ordinal Data". Journal of the Royal Statistical Society. Series B (Methodological) 42 (2): 109–142. JSTOR 2984952.

McQuinn, K., & Whelan, K. (2007). Solow (1956) as a model of cross-country growth dynamics. *Oxford Review of Economic Policy*, *23*, 45–62. doi:10.1093/oxrep/grm009

Mehta, L. (2001). The World Bank and Its Emerging Knowledge Empire. *Human Organization*, *60*(2), 189–196.

Menard, S. (2002). *Applied Logistic Regression Analysis*. (SAGE Publications, Ed.) (2nd ed.).

Meyers, R. T. (2009). Governance Ideas for and from the "Knowledge Banks." *Public Administration Review*. doi:10.1111/j.1540-6210.2008.01962.x

Milosevic, D., & Patanakul, P. (2005). Standardized project management may increase development projects success. *International Journal of Project Management*, *23*(3), 181–192. doi:10.1016/j.ijproman.2004.11.002

Mir, F. A., & Pinnington, A. H. (2014). Exploring the value of project management: Linking Project Management Performance and Project Success. *International Journal of Project Management*, *32*, 202–217. doi:10.1016/j.ijproman.2013.05.012

Moreno Pires, S., Fidélis, T., & Ramos, T. B. (2014). Measuring and comparing local sustainable development through common indicators: Constraints and achievements in practice. *Cities*, *39*, 1–9. doi:10.1016/j.cities.2014.02.003

Mosley, P., Harrigan, J., & Toye, J. (1991). Aid and power: the World Bank and policy-based lending. Volume 2: case studies. *Aid and Power: The World Bank and Policy-Based Lending. Volume 2: Case Studies*. Retrieved from http://www.scopus.com/inward/record.url?eid=2-s2.0-0026277713&partnerID=40&md5=d013798e6b78037de5e13d79b664f4c2

Müller, R. (2012). Critical success factors in projects: Pinto, Slevin, and Prescott – the elucidation of project success. *International Journal of Managing Projects in Business*. doi:10.1108/17538371211269040

Munns, A. K., & Bjeirmi, B. F. (1996a). The role of project management in achieving project success. *International Journal of Project Management*, *14*, 81–87. doi:http://dx.doi.org/10.1016/0263-7863(95)00057-7

Munns, A. K., & Bjeirmi, B. F. (1996b). The role of project management in achieving project success. *International Journal of Project Management*, *14*(2), 81–87. doi:http://dx.doi.org/10.1016/0263-7863(95)00057-7

Muriithi, N., & Crawford, L. (2003). Approaches to project management in Africa: Implications for international development projects. *International Journal of Project Management*, *21*(5), 309–319. doi:10.1016/S0263-7863(02)00048-0

Naim, M. (2000). Washington Consensus or Washington Confusion? *Foreign Policy*, 87–103. doi:10.2307/1149672

Oecd. (2005). *Paris Declaration*. *Development*. doi:10.1787/9789264098084-en

OECD, The Challenge of Capacity Development: Working towards good practice, 2005

Onda, K., Lobuglio, J., & Bartram, J. (2012a). Global access to safe water: Accounting for water quality and the resulting impact on MDG progress. *International Journal of Environmental Research and Public Health*, *9*(3), 880–894. doi:10.3390/ijerph9030880

Onda, K., Lobuglio, J., & Bartram, J. (2012b). Global access to safe water: Accounting for water quality and the resulting impact on MDG progress. *International Journal of Environmental Research and Public Health*, *9*, 880–894. doi:10.3390/ijerph9030880

Öniş, Z., & Şenses, F. (2005). Rethinking the emerging post-Washington consensus. *Development and Change*, *36*, 263–290. doi:10.1111/j.0012-155X.2005.00411.x

Organisation for Economic Co-operation and Development, C. D. A. (2008). Paris Declaration on Aid Effectiveness: Ownership, Harmonisation, Alignment, Results and Mutual Accountability. *Paris, France: Organisation for Economic …*, 21. Retrieved from http://www.oecd.org/document/18/0,3343,en_2649_3236398_35401554_1_1_1_1,00.html\nhttp://scholar.google.com/scholar?hl=en&btnG=Search&q=intitle:The+Paris+Declaration+on+Aid+Effectiveness+and+the+Accra+Agenda+for+Action#6

Papafilippou, N., Templeton, M. R., & Ali, M. (2011). Technical Note: Is there a role for external technical support in the Community-Led Total Sanitation (CLTS) approach? *International Development Planning Review*, *33*(1), 81–94. doi:10.3828/idpr.2011.5

Patanakul, P., & Shenhar, A. (2012). What Project Strategy Really Is: The Fundamental Building Block in Strategy Project Management. *Project Management Journal*, *43*, 4–20. doi:10.1002/pmj

Pich, M. T., Loch, C. H., & Meyer, A. De. (2002). On uncertainty, ambiguity, and complexity in project management. *Management Science*, *48*, 1008–1023. doi:10.1287/mnsc.48.8.1008.163

Pinto, J. K., & Mantel, S. J. (1990). The causes of project failure. *IEEE Transactions on Engineering Management*, *37*, 269–276. doi:10.1109/17.62322

Pritchett, L., & Woolcock, M. (2004a). Extending the "Institutional" Turn Property, Politics and Development Trajectories. *World Development*, *32*, 191–212. doi:10.1016/j.worlddev.2003.08.009

Pritchett, L., & Woolcock, M. (2004b). Solutions when the solution is the problem: Arraying the disarray in development. *World Development*, *32*, 191–212. doi:10.1016/j.worlddev.2003.08.009

Pritchett, L., Woolcock, M., & Andrews, M. (2012). Capability Traps in Development: How Initiatives to Improve Administrative Systems Succeed at Failing. *Prism*, *3*, 63–74.

Pritchett, L., Woolcock, M., & Andrews, M. (2013). Looking Like a State: Techniques of Persistent Failure in State Capability for Implementation. *Journal of Development Studies*, *49*, 1–18. doi:10.1080/00220388.2012.709614

Project Management Institute. (2013). *A Guide to the Project Management Body of Knowledge*.

Prokopy, L. S. (2005). The relationship between participation and project outcomes: Evidence from rural water supply projects in India. *World Development*, *33*, 1801–1819. doi:10.1016/j.worlddev.2005.07.002

Radelet, S. (2006). A Primer on Foreign Aid. *Working Paper*, 24. Retrieved from papers2://publication/uuid/7F92956E-A7DC-4640-9EAC-2A20B28CAB39

Ramamurti, R., & Doh, J. P. (2004). Rethinking foreign infrastructure investment in developing countries. *Journal of World Business*, *39*, 151–167. doi:10.1016/j.jwb.2003.08.010

Ringel-Bickelmaier, C., & Ringel, M. (2010). Knowledge management in international organisations. *Journal of Knowledge Management*. doi:10.1108/13673271011059509

Robinson, A. (2005). Scaling-Up Rural Sanitation in South Asia. *Lessons Learned from Bangladesh, India, and Pakistan*, (May).

Robinson, A. (2006). Total Sanitation: Reaching the parts that other approaches can't reach? *Waterlines*, *25*(2), 8–10. doi:10.3362/0262-8104.2006.046

Rodrik, D. (2008). Goodbye Washington Consensus, hello Washington confusion?: A review of

the World Bank's "Economic growth in the 1990s: Learning from a decade of reform." *Panoeconomicus*. doi:10.2298/PAN0802135R

Rodrik, D., & Zeckhauser, R. (1988). The Dilemma of Government Responsiveness. *Journal of Policy Analysis & Management, 7*, 601–620. doi:10.2307/3323483

Rondinelli, D. A. (1976). International assistance policy and development project administration: the impact of imperious rationality. *International Organization*. doi:10.1017/S0020818300018452

Rondinelli, D. a. (1983). Projects as instruments of development administration: A qualified defence and suggestions for improvement. *Public Administration and Development*, *3*, 307–327. doi:10.1002/pad.4230030404

Rostow, W. W. (1998). The Five Stages of Growth. In *Development and Underdevelopment: The Political Economy of Global Inequality* (pp. 9–16).

Rwelamila, P. M. D. (2007). Project management competence in public sector infrastructure organisations. *Construction Management and Economics*, *25*, 55–66. doi:10.1080/01446190601099210

Saad, M., Cicmil, S., & Greenwood, M. (2002). Technology transfer projects in developing countries-Furthering the project management perspectives. *International Journal of Project Management*, *20*(8), 617–625. doi:10.1016/S0263-7863(02)00024-8

Sachs, J. (2010). The MDG decade: Looking back and conditional optimism for 2015. *The Lancet*. doi:10.1016/S0140-6736(10)61440-7

Sachs, J. D. (2012). Government, geography, and growth. *Foreign Affairs*.

Shenhar, A., & Dvir, D. (2007). Project Management Research - The Challenge and Opportunity. *Project Management Journal*, *38*, 93–99. doi:10.1109/EMR.2008.4534315

Sigler, R., Mahmoudi, L., & Graham, J. P. (2015). Analysis of behavioral change techniques in community-led total sanitation programs. *Health Promotion International*, *30*(1), 16–28. doi:10.1093/heapro/dau073

Solow, R. M. (1956). A Contribution to the Theory of Economic Growth. *Quarterly Journal of Economics*, *70*, 65–94. doi:10.2307/1884513

St. Clair, A. L. (2006). The World Bank as a Transnational Expertised Institution. *Global Governance*, *12*(1), 77–95.

Stern, E.D; Altinger, L.; Feinstein, O.; Marahon, M.; Schultz, N.-S. and Steen Nielsen, N. (2008). *Thematic Study on the Paris Declaration, Aid Effectiveness and Development Effectivenes*. *Development*. Retrieved from http://www.oecd.org/dataoecd/59/28/41807824.pdf

Stiglitz, J. E. (2004). The Post Washington Consensus Consensus. *The Initiative for Policy Dialogue*, 1–67. Retrieved from http://policydialogue.org/files/events/Stiglitz_Post_Washington_Consensus_Paper.pdf

Tarrow, S. (1995). Bridging the quantitative-qualitative divide in political science.(The Qualitative-Quantitative Disputation: Gary King, Robert O. Keohane, and Sidney Verba's Designing Social Inquiry: Scientific Inference in Qualitative Research). *American Political Science Review*, *89*, 471–475.

Temple, J. (1998). Equipment Investment and the Solow Model. *Oxford Economic Papers*, *50*, 39–62. doi:10.1093/oxfordjournals.oep.a028635

Temple, J. R. W. (1998). Robustness tests of the augmented Solow model. *Journal of Applied Econometrics*, *13*, 361–375. doi:10.1002/(SICI)1099-1255(199807/08)13:4<361::AID-JAE483>3.0.CO;2-1

ten Raa, T., & Shestalova, V. (2011). The Solow residual, Domar aggregation, and inefficiency: A synthesis of TFP measures. *Journal of Productivity Analysis*, *36*, 71–77. doi:10.1007/s11123-010-0205-z

Thomas, A. (1996). What is development management? *Journal of International Development*, *8*, 95–110. doi:10.1002/(SICI)1099-1328(199601)8:1<95::AID-JID348>3.0.CO;2-B

Thomas, A. (2000). Poverty and the End of Development. In *Poverty and Development Into the 21st Century* (pp. 3–23). Retrieved from

http://books.google.co.jp/books?id=jLRxQgAACAAJ&dq=intitle:Poverty+and+Development+into+the+21st+century&hl=&cd=1&source=gbs_api\npapers2://publication/uuid/2D01BFC7-4551-4508-87D7-1533CD942EBF

Thomas, J., & Mengel, T. (2008). Preparing project managers to deal with complexity - Advanced project management education. *International Journal of Project Management*, *26*(3), 304–315. doi:10.1016/j.ijproman.2008.01.001

Toor, S.-R., & Ogunlana, S. (2010). Beyond the "iron triangle": Stakeholder perception of key performance indicators (KPIs) for large-scale public sector development projects. *International Journal of Project Management*, *28*, 228–236. doi:10.1016/j.ijproman.2009.05.005

Unicef. (2005). WHO 2004 Meeting the MDG Drinking Water and Sanitation Target: A Mid-Term Assessment of Progress. *UNICEF/WHO, Geneva, Switzerland*.

United Nations. (2008). Millennium Developmenet Goals Indicators: The Official United Nations site for the MDG Indicators. *Official List of MDG Indicators*, (January 2008), 6–7.

UNDP, 2011, Implementing the Paris Declaration on Aid Effectiveness

Unsworth, S. (2008). Is political analysis changing donor behaviour? In *Development Studies Association Annual Conference* (pp. 1–10). Retrieved from http://www.delog.org/cms/front_content.php?idcat=71

UN-Water. (2009). *Water in a Changing World: The United Nations World Water Development Report*.

Uphoff, N. (1990). Paraprojects as new modes of international development assistance. *World Development*. doi:10.1016/0305-750X(90)90118-H

Vawda, A. Y., Moock, P., Gittinger, J. P., & Patrinos, H. A. (2003). Economic analysis of World Bank education projects and project outcomes. *International Journal of Educational Development*, *23*(6), 645–660. doi:10.1016/S0738-0593(03)00100-7

Verdeaux, J.-J. (2006). The World Bank and public procurement: improving aid effectiveness and

addressing corruption. *Public Procurement Law Review*, *2006*, 179–187.

Voropajev, V. (1998). Project management development for transitional economies (Russian case study). *International Journal of Project Management*, *16*(5), 283–292. doi:10.1016/S0263-7863(97)00026-4

Wade, R. H. (2007). Ngaire Woods The Globalizers: The IMF, the World Bank and Their Borrowers. *New Political Economy*, *12*(1), 127–138. doi:10.1080/13563460601068909

Ward, S., & Chapman, C. (2003). Transforming project risk management into project uncertainty management. *International Journal of Project Management*, *21*(2), 97–105. doi:10.1016/S0263-7863(01)00080-1

Whittington, D., Nauges, C., Fuente, D., & Wu, X. (2015). A diagnostic tool for estimating the incidence of subsidies delivered by water utilities in low- and medium-income countries, with illustrative simulations. *Utilities Policy*, *34*, 70–81. doi:10.1016/j.jup.2014.12.007

Williamson, J. (1993). Democracy and the "Washington consensus." *World Development*. doi:10.1016/0305-750X(93)90046-C

Willis, B. E. (1995). APM project-management body of knowledge: the European view. *International Journal of Project Management*. doi:10.1016/0263-7863(95)00006-C

Winters, M. S. (2010). Choosing to Target: What Types of Countries Get Different Types of World Bank Projects. *World Politics*, *62*(3), 422–458. doi:10.1017/S0043887110000092

Winters, M. S. (2014). Targeting, accountability and capture in development projects. *International Studies Quarterly*, *58*(2), 393–404. doi:10.1111/isqu.12075

Winters, M.S. (2011). Splitting the Check: Counterpart Commitments in World Bank Projects University of Illinois at Urbana-Champaign mwinters@illinois.edu Jaclyn D. Streitfeld University of Illinois at Urbana-Champaign jstreit2@illinois.edu September 2011

Woods, N. (2009). Bretton Woods Institutions. In *The Oxford Handbook on the United Nations*. doi:10.1093/oxfordhb/9780199560103.003.0013

Woolcock, M., Lant, P., & Andrews, M. (2010a). *Capability Traps ? The Mechanisms of*

Persistent Implementation Failure. *World*. doi:10.2139/ssrn.1824519

Woolcock, M., Lant, P., & Andrews, M. (2010b). Capability Traps ? The Mechanisms of Persistent Implementation Failure 1. *World*. doi:10.2139/ssrn.1824519

World Bank. (2005). *Economic Growth in the 1990s: Learning from a Decade of Reform*.

World Bank. (2007). *Building knowledge economies: advanced strategies for development*. *World*. World Bank. Retrieved from http://books.google.com/books?hl=en&lr=&id=cZyvZX0JCfAC&oi=fnd&pg=PR9&dq=Building+KNOWLEDGE+ECONOMIES:+Advanced+Strategies+for+Development&ots=gye5onkaPi&sig=fkzdhoe1M5PV0IskuFZCNS1pRyo

World Bank (2013). Task Team Leader Toolkit. Investment Project Financing: The Project Cycle

World Bank. (2015). World Development Report 2015: Mind, Society, and Behavior, 1–2.

World Bank, (2014). The World Bank and Public Procurement—An Independent Evaluation Volume II: Achieving Development Effectiveness through Procurement in Bank Financial Assistance (IEG, 2014)

Yanwen, W. (2012). The Study on Complex Project Management in Developing Countries. *Physics Procedia*, *25*, 1547–1552. doi:10.1016/j.phpro.2012.03.274

Yepes, G., & Mundial, B. (1998). Do Cross-Subsidies Help the Poor to Benefit from Water and Wastewater Services? Lessons from Guayaquil. *Water*, (February). Retrieved from http://bases.bireme.br/cgi-bin/wxislind.exe/iah/online/?IsisScript=iah/iah.xis&src=google&base=REPIDISCA&lang=p&nextAction=lnk&exprSearch=43500&indexSearch=ID

Youker, R. (1989a). Managing the project cycle for time, cost and quality: lessons from World Bank experience. *International Journal of Project Management*, *7*(1), 52–57. doi:10.1016/0263-7863(89)90055-0

Youker, R. (1989b). Managing the project cycle for time, cost and quality: lessons from World Bank experience. *International Journal of Project Management*. doi:10.1016/0263-

7863(89)90055-0

Youker, R. (1992). Managing the international project. *Journal of Project Management (1992)*, *10*(4), 219–226. doi:10.1016/0263-7863(92)90081-J

Youker, R. (1999). Managing International Development Projects - Lessons Learned. *Project Management Journal*, *30*, 6.

Zhang, W., Hill, A. V., Schroeder, R. G., & Linderman, K. W. (2008). Project management infrastructure: The key to operational performance improvement. *Operations Management Research*, *1*, 40–52. doi:10.1007/s12063-008-0008-9

Zwikael, O., Shimizu, K., & Globerson, S. (2005). Cultural differences in project management capabilities: A field study. *International Journal of Project Management*, *23*, 454–462. doi:10.1016/j.ijproman.2005.04.003