

3i: Investing In Infrastructure

Program Design Document (PDD)

Table of Contents

1	Executive Summary	4
2	Acronyms and Definitions	6
3	Analysis.....	7
3.1	Cambodian Growth Context.....	7
3.2	Infrastructure and Development.....	7
3.3	Role of Private Sector in Infrastructure Development.....	10
3.4	Financing for Private Infrastructure in Cambodia.....	11
3.5	Rationale for Australian Involvement	12
4	Proposed Program Overview.....	13
5	Lessons Learned	14
5.1	Lessons from Australian-funded programs	14
5.2	Other Lessons Gleaned From Local Experience	16
6	Priority Sectors Identified for Initial Intervention	18
6.1	Piped Treated Water Sector.....	18
6.1.1	Drinking Water Supply in Cambodia	18
6.1.2	Piped Treated Water Demand in Cambodia	19
6.1.3	Potential to Expand Commercial Water Supply	19
6.2	Electricity Sector	21
6.2.1	Electricity Supply in Cambodia.....	21
6.2.2	Electricity Demand in Cambodia	23
6.2.3	Potential to Expand Private Electricity Supply	23
6.3	Other Sectors with Future Potential	24
7	Program Outline.....	25
7.1	Goal and Outcomes	25
7.2	Current Investments in the Piped Treated Water Sector and Potential 3i Results	26
7.3	Current Investments in the Electricity Sector and Potential 3i Results	28
7.4	Summary of Key Results Expected	29
8	Approach.....	30
8.1	Overview	30
8.2	Guiding Principles	31
8.2.1	Additionality	31
8.2.2	Neutrality	31
8.2.3	Sustainability	31
8.2.4	Value For Money	32
8.3	Partnership Models	32
8.3.1	Model 1 - Co-funding Infrastructure in Direct Partnership with Private Operators.....	32
8.3.2	Model 2 - Co-investment with Private Equity and or Social Impact Funds	34
8.3.3	Model 3 - Catalytic Interventions to Address Infrastructure Market Constraints.....	35
8.4	Governance and Management.....	36
8.4.1	Program Board	36

8.4.2	Investment Committee	37
8.4.3	Consultative Committee	37
8.4.4	Implementation Team	37
8.4.5	Technical Advisory Group (TAG)	38
8.5	Key Implementation Issues	40
8.5.1	Market Analysis	40
8.5.2	Due Diligence on Potential Business Partners	40
8.5.3	Targeting and Market Segmentation	41
8.5.4	Integration of Cross-Cutting Issues	42
8.5.5	Gender	42
8.5.6	Monitoring and Evaluation (M&E)	45
9	Budget Summary	47
9.1	Initial Budget	47
9.2	Scalability Review	47
10	Risk Analysis and Management	48
11	Annex 1 – Examples of Secondary Outcomes	52

1 Executive Summary

Cambodia has experienced a sustained period of strong economic growth. This growth has supported large reductions in poverty. The majority of Cambodia's population still lives in rural areas, and derive all or a large part of their livelihoods from agriculture. Major investments in infrastructure, services and industry have tended to focus on Phnom Penh and its environs with much less investment to date in services and enterprises in rural towns and surrounding areas. However, recent efforts to develop infrastructure services outside Phnom Penh (electricity, water and waste in particular), as well as investments in agricultural enterprises like rice mills, have demonstrated the potential for more evenly spread economic growth and infrastructure investment.

Like many poor countries, Cambodia's infrastructure is underdeveloped and underfunded. This is constraining Cambodia's growth and development potential. Also like many other poor countries, Cambodia is increasingly looking to the private sector to help fund much needed infrastructure investments and to build, operate and maintain key utilities and services. Two important examples of this are Royal Government of Cambodia (RGC) policies in the electricity and water sectors which explicitly encourage small scale private service providers to extend utility provision to new areas under licensing arrangements. This has spawned business investments in water treatment plants and household water connections, small scale power – usually diesel – generation, and new enterprises that connect households and firms to the national electricity grid all over Cambodia. Extending water and electricity connections to businesses and households across Cambodia has helped create new enterprise and job opportunities in rural towns and surrounding areas, and has improved household health and welfare.

Private sector operators in these and other sectors have proven quite entrepreneurial and have shown themselves to be an effective means to increase investment in critical infrastructure. The entrepreneurs operating water and electricity schemes are largely technically competent and provide quality service to their paying customers. They are also keen to grow and expand their business operations: by expanding their current networks, establishing new networks in unserved areas, or simply connecting more businesses and households within their existing licence areas. However they are constrained from doing so. The most significant constraint they face concerns access to appropriate finance; their expansion plans are expected to be profitable but only after long payback periods, so banks are not willing to lend on that basis. These entrepreneurs are often not willing to take on large loans and their businesses do not generate adequate cash flow to finance rapid expansion internally.

In the recent past a number of donors – including the World Bank, USAID and AFD – have successfully operated programs to partner with water and electricity businesses and encourage them to invest and expand operations. Despite their success, few programs currently exist that work directly with the private sector. But the scale of the development opportunity remains considerable: only 16 per cent of Cambodians have access to piped treated water yet the RGC aspires for all Cambodians to have clean water by 2022; only 18 per cent of Cambodians are connected to grid electricity, and most rural Cambodians rely on battery charging stations or 'dirty' diesel generated power.

3i is a program designed to promote and catalyse business growth in the infrastructure sector of Cambodia. It will expand the delivery of key infrastructure services in a sustainable way, consistent with Government priorities and policies. **3i** will partner with the private sector to expand household and business access to utilities and other services. This will create new enterprise opportunities in rural towns and more remote parts of Cambodia, and will generate health and welfare benefits for Cambodians, including the poor. Initial partnerships will be with businesses in the water and electricity sectors where the potential is already proven. Once the partnerships are successfully on track to deliver the required results, partnerships in other sectors such as rural transport and waste management and recycling may be explored.

The profit motive of these businesses is critical to ensuring utilities, services and industries are maintained and sustained. **3i** will catalyse business investments in ways that incentivise them to expand service coverage as rapidly as possible, and to sustainably operate and maintain the systems to the highest standards. All potential business partnerships will be governed by the core principles of

additionality, neutrality, sustainability and maximising value for money. The program will achieve this through three models of partnership with businesses and other actors in chosen sectors:

(a) Modality 1 – Co-funding Infrastructure in Direct Partnership with Private Operators

3i will enter into contracts with private infrastructure operators so that these operators design and build new infrastructure such as water treatment plants and pipe networks, or electricity transmission structures and household connections. **3i** will typically only provide funding where private operators contribute significant co-funding, and will typically use output-based contracts. Operators will be expected to operate such infrastructure commercially and sustainably, without further inputs from **3i**.

(b) Modality 2 – Co-investment with Private Equity and or Social Impact Funds

3i will contribute funding to Private Equity and Social Impact Funds that are planning to, or already investing in water and electricity business expansion in Cambodia. By investing in such funds **3i** will be able to leverage additional outreach and results not possible through direct contracts with private operators, particularly through equity partnership arrangements with private operators.

(c) Modality 3 – Catalytic Interventions to Address Infrastructure Market Constraints

3i will research constraints and opportunities for increased private investment in infrastructure, and design and implement innovative solutions to address these. Such solutions will depend upon the ingenuity and creativity of the implementation team, but might include things like conducting feasibility assessments, supporting policy change or facilitating access to commercial finance.

3i will be implemented by a small team familiar with donor and private sector partnerships, and with strong financial and analytical capabilities. That team will be responsible for identifying partnership opportunities, implementing those selected, and monitoring the progress and realisation of expected results in real time. Advice and oversight will be provided by a Program Board, a Consultative Committee, an Investment Committee and a Technical Advisory Group.

Assuming an investment fund of [Omitted] million and total budget of around [Omitted] million, by 2019 **3i** expects to connect an additional [Omitted] people and businesses to electricity, an additional [Omitted] people and businesses to piped, treated water, and in the process to have leveraged at least [Omitted] million additional co-investment in infrastructure from the private sector. Should **3i** prove successful, other sectors beyond water and electricity will be considered for intervention, and additional investment funding made available to expand **3i** investments and operations.

2 Acronyms and Definitions

3i	Investing In Infrastructure Program
AFD	Agence Française de Développement
CAVAC	Cambodia Agricultural Value Chain program
CDC	Council for the Development of Cambodia
DAI	A global development company
EAC	Electricity Authority of Cambodia
ECF	Enterprise Challenge Fund
EDC	Electricite du Cambodge
EMS	Environmental Management System
EPBC	Environment Protection and Biodiversity Conservation Act 1999
DFAT	Department of Foreign Affairs and Trade
GIZ	Gesellschaft für Internationale Zusammenarbeit
GRET	Groupe de Recherches et d'Echanges Technologiques
IED	Innovation Energie Developpement
IDE	An international NGO
JICA	Japan International Cooperation Agency
M&E	Monitoring and Evaluation
MIME	Ministry of Mines and Energy
MSME	Micro, Small and Medium Enterprise Project
NGO	Non-Government Organisation
OBP	Output-Based Payments
PIDG	Private Infrastructure Development Group
PPIAF	Public-Private Infrastructure Advisory Facility
PPP	Public Private Partnership
RGC	Royal Government of Cambodia
TAG	Technical Advisory Group
USAID	United States Agency for International Development
WASH	Water, Sanitation and Hygiene
WSP	Water and Sanitation Program

3 Analysis

3.1 Cambodian Growth Context

Cambodia has undergone a remarkable period of economic growth in the last two decades. From 1998 to 2007, Cambodia's economic growth performance ranked 6th across all countries in the world and averaged over 7 per cent annual growth for 14 consecutive years to 2007¹. This growth has primarily been driven by a few key sectors – agriculture, garment manufacturing, tourism and construction. Whilst Cambodia experienced a dip in 2008 because of the Global Economic Crisis, growth picked up soon after and continues strongly to this day – at a forecast 7 per cent for 2014. This sustained period of growth has enabled considerable poverty reduction. A poverty study by the World Bank in 2013 estimated poverty levels had reduced from 50 per cent in 2004 to about 20 per cent in 2011².

Agricultural growth has been important for poverty reduction, particularly because such a large proportion (90 per cent) of Cambodia's poor live in rural areas and is employed in the sector. Around 70-80 per cent of the Cambodian population is engaged in agriculture as a source of livelihood, whilst around 80 per cent are estimated to live in rural areas. The same World Bank 2013 study estimated the main drivers of poverty reduction have been higher prices of rice for farmers, better wages for agricultural workers, increases in salaried jobs for the urban labour force, and better income for non-agricultural businesses in rural households. Whilst agricultural growth has been an important driver of poverty reduction, it is contributing an ever-declining percentage of GDP, reducing from 44 per cent in the mid-1995 to 26 per cent in 2011. Agricultural diversification and processing still remains limited. Cambodia continues to produce a limited number of primary products (principally rice), much of which is transported to Vietnam and Thailand unprocessed.

However, many of those now classified as 'non-poor' sit only just above the official poverty line and are vulnerable to falling back below the poverty line as a result of shocks or stresses. Also, much of Cambodia's growth has been concentrated in Phnom Penh, with most recent public infrastructure investment focusing on the capital city, and private investment in manufacturing and services industries following. Rural towns and surrounding areas have seen relatively little new public or private investment by comparison. Although at a much smaller scale, where electricity or water supplies for instance have become accessible in rural areas, pockets of new investment in rural enterprise are observed to spring up shortly afterwards.

Another important dimension of growth in rural Cambodia is migration. Increasingly, Cambodians are moving (seasonally or permanently) to seek wage income in peri-urban areas, in other rural areas or abroad (particularly Thailand). This is creating labour shortages in rural areas which is partly responsible for the rapid mechanisation observed in rural Cambodia over the last five years or so. The overall economic analysis points to a positive growth outlook for Cambodia, although key commentators such as the World Bank or the Asian Development Bank point to some risks the country faces in building upon previous successes in growth and poverty reduction³. One of these risks concerns the rural-urban imbalance in infrastructure investment and resultant slower pace of growth in rural areas where most Cambodians reside. Others include ineffective management of land and natural resources, environmental sustainability, and good governance; corruption and poor public service delivery also continue to impede inclusive development.

3.2 Infrastructure and Development

Infrastructure is an important enabler of economic growth, trade and poverty reduction. Access to quality infrastructure is a key determinant of a country's ability to engage in global trade through the movement and provision of labour, goods and services. Appropriate infrastructure provides the means by which industries and business can grow, make and deliver the goods and services which underpin

¹ World Bank. 2010. Cambodia 1998–2008: An Episode of Rapid Growth. Policy Research Working Paper 5271.

² World Bank. 2013. Where have all the poor gone? Cambodia Poverty Assessment 2013.

³ World Bank, 2013. Cambodia Overview.

economic development and improved quality of life. Conversely, infrastructure gaps constrain economic growth and can have negative impacts on human health and other development indicators. Infrastructure gaps prevent citizens from starting and growing businesses, branching into new forms of industry, increasing productivity, accessing basic services and markets, and leading healthier lives.

Various organisations have attempted to quantify the infrastructure deficit in developing countries. The World Bank⁴ found demand for, 'infrastructure investment and maintenance from developing countries estimated at over US\$900 billion per annum.' OECD has estimated that US\$1,800 billion is needed in developing countries each year⁵. The United Nations Economic and Social Commission for Asia and the Pacific estimated at least US\$228 billion per annum is needed in the region⁶. Others have put the figure much higher. ADB-ADBI have estimated that US\$750 billion will be needed each year during the 2010–20 period⁷. Australia's Prime Minister has noted that, 'More than \$8 trillion worth of infrastructure has been identified within the APEC region that needs to be developed by 2020 and Australia can play a role in turning this backlog into economic opportunity.'

Cambodia's infrastructure coverage is amongst the lowest in the ASEAN region. The International Monetary Fund and the Japan International Cooperation Agency (JICA) estimated in 2011 that Cambodia needed more than, 'US\$13 billion in infrastructure works by 2020 if the country intends to continue attracting foreign investment.' A recent study⁸ examined infrastructure needs assessments for 2010-2020 based on calculations by several donors and estimated that Cambodia had US\$13.36 billion in investment needs, or US\$1.2 billion per year over the period. Based on these figures, this equals an investment of 11.7 per cent of GDP per year, as opposed to current Government investment of 7.5 per cent of GDP per year.

Reasons for Cambodia's comparative lack of infrastructure include its history of conflict, low density of its population, and of course its limited economic capacity to invest in infrastructure. Of the infrastructure that does exist in Cambodia, much is concentrated in urban areas. Water and electricity coverage in Cambodia demonstrates this most clearly (see Figures 1 and 2). These issues and Cambodia's general infrastructure deficit are negatively impacting the country's potential for further trade and growth, and preventing millions of poor from reaping the potential benefits of that.

Unsurprisingly therefore, infrastructure is a top priority for the Royal Government of Cambodia (RGC). One of the four priority areas identified in the RGC's 'Rectangular Strategy' is, 'the Development of Physical Infrastructure.' The Strategy notes that, 'Infrastructure development and modernization is a key factor for supporting economic growth, enhancing economic efficiency as well as strengthening competitiveness and promoting Cambodia's economic diversification, especially for reducing poverty incidence.'

⁴ World Bank Group. Sustainable Infrastructure Action Plan FY2009-2011.

⁵ OECD. 2007. OECD Principles for Private Sector Participation in Infrastructure.

⁶ ESCAP, 2006. Enhancing Regional Cooperation in Infrastructure Development Including that Related to Disaster Management, March, United Nations Economic and Social Commission for Asia and the Pacific..

⁷ ADB and ADBI. 2009. Infrastructure for a Seamless Asia, Asian Development Bank, Manila, and Asian Development Bank Institute, Tokyo.

⁸ Fujita, Y. 2012. Policy Challenges for Infrastructure Development in Asian LICs: Lessons from the Region. JICA Research Institute Working Paper.

Figure 1. Cambodia Electricity Licence Coverage, 2012 (from EAC⁹)

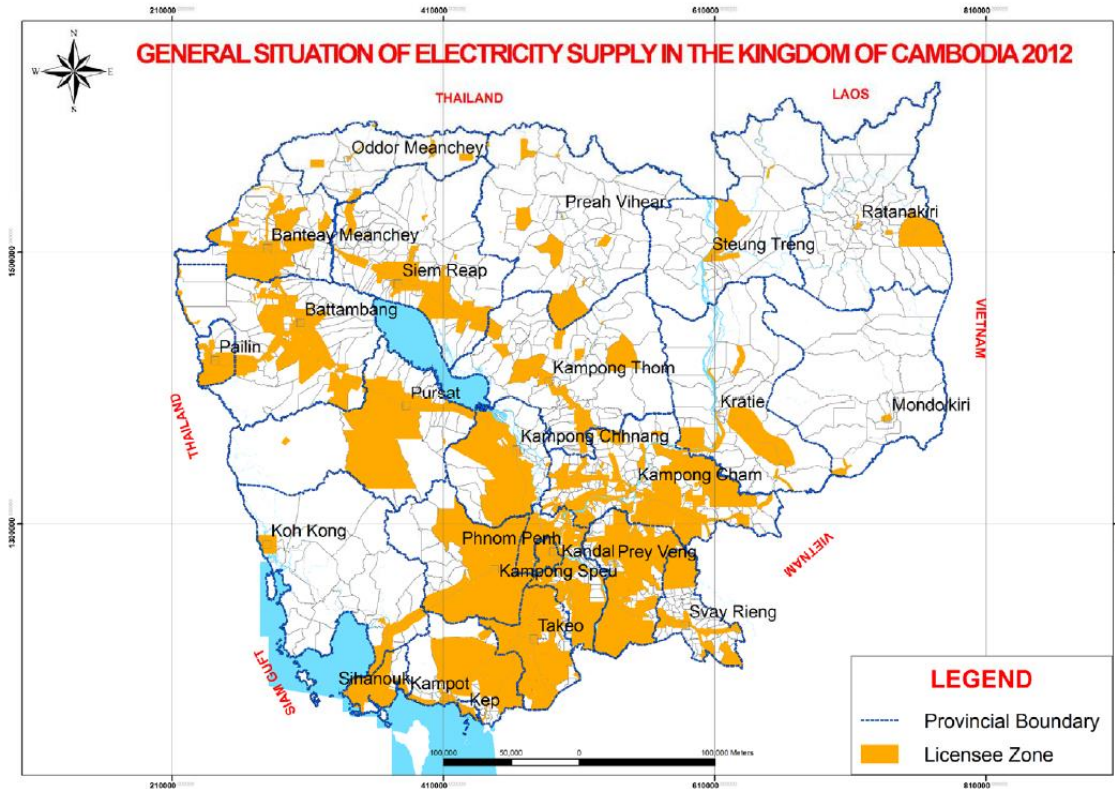
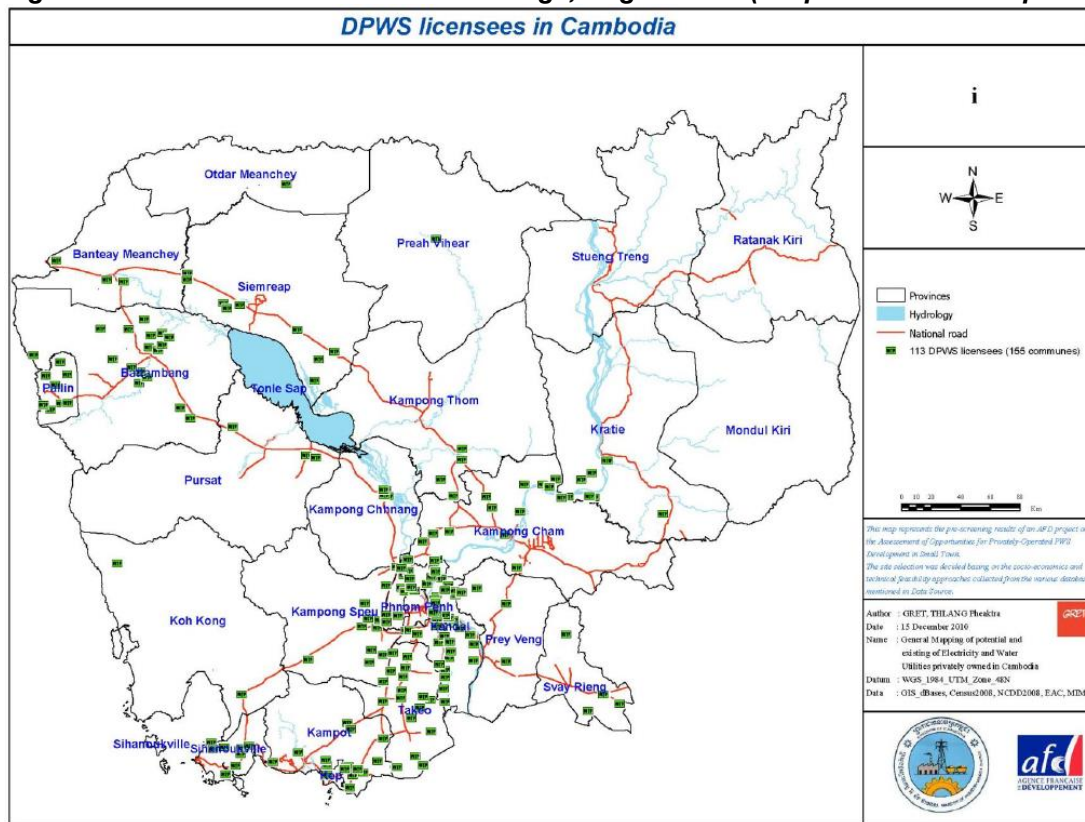


Figure 2. Cambodia Water Licence Coverage, August 2011 (adapted from AFD report¹⁰)



⁹ Electricity Authority of Cambodia, 2012, Report on Power Sector of Kingdom of Cambodia

¹⁰ AFD. 2011. Opportunities for the development of privately operated water systems in small towns in Cambodia.

3.3 Role of Private Sector in Infrastructure Development

Governments, including in Asia, have traditionally been the primary source of investment in infrastructure. Many, including the ADB¹¹, World Bank¹² and others¹³, have pointed out that governments alone will not be able to provide the financial and technical resources needed to meet infrastructure needs and that private sector involvement is necessary. UN ESCAP found that in Asia, the private sector has been providing nearly half of infrastructure investment finance, around US\$20 billion per annum, whilst governments (including through aid), around US\$27 billion per annum.

There are many forms of private sector participation in infrastructure including the contracting out of specific construction and operations, Public Private Partnerships (PPPs) and concessions. Beyond financing, the private sector can bring a range of benefits in the provision of infrastructure including mobilising technical expertise and improving operational efficiency^{14,15}.

However, efforts to attract private sector investment in infrastructure development in poorer regions have frequently been unsuccessful. Domestic capital markets in poor countries are not sufficiently deep to provide the necessary financing. Whilst the global capital markets have seen some recovery since the global financial crisis, the majority of funds raised target the developed economies of North America and Europe, or large middle income countries. Moreover, increased risk aversion post crisis has meant higher interest rates, shorter tenors and lower debt/equity ratios which undermine the viability of investment¹⁶. Private sector investors in infrastructure also have to take on significant risks because upfront costs are significant and payback periods long. The regulatory environment, the availability of finance and various risk factors limit the willingness of the private sector to invest further.

These 'market failures' have prompted many donors to seek ways to stimulate the private sector to increase the supply, quality and reliability of infrastructure services. Donor support for the private sector typically comes in many different forms, but can include things like:

- Providing finance directly to the private sector to invest in new or improved infrastructure
- Indirectly increasing access to financing for businesses by facilitating loans and equity investments
- Supporting improved regulatory conditions that facilitate greater investment
- Conducting feasibility studies and other analysis to encourage increased investment

Recent analysis has confirmed that these 'market failures' are even more extreme for smaller projects in poor countries particularly in certain subsectors such as water and agribusiness¹⁷. Studies have pointed out that small infrastructure investments are particularly disadvantaged because of the fixed costs of traditional PPPs which naturally incentivise brokers to target only the biggest deals. This has prompted enquiry into new models of donor partnership with the private sector that can be more flexible and efficient whilst operating at the smaller end of the infrastructure investor market.

As early as 2002¹⁸, PPIAF noted that, 'unlike most countries at a similar level of economic development, Cambodia already has significant experience in private sector participation in infrastructure'. Senior officials and politicians from the RGC frequently affirm their willingness and support for private sector investment in infrastructure.

"We acknowledge that we still lack capacity and financial resources to accelerate infrastructure development, thus private sector participation is crucial," H.E. Dr. Cham Prasidh, former Minister of Commerce (July, 2013)

¹¹ <http://www.adb.org/news/op-ed/closing-gap-focus-basic-infrastructure-meet-mdgs>

¹² World Bank. 2006. Infrastructure: Lessons from the Last Two Decades of World Bank Engagement.

¹³ OECD. 2013. Support to enhance private investment for infrastructure in developing countries. Issues Paper.

¹⁴ OECD. 2007. Ibid.

¹⁵ World Bank. 2003. Private Participation in Infrastructure in Developing Countries: Trends, Impacts, and Policy Lessons. Working Paper No. 5.

¹⁶ InfraCo Asia Design Document for AusAID, 2012

¹⁷ PIDG, 2008

¹⁸ PPIAF. 2002. Private Solutions for Infrastructure in Cambodia.

In the past, private sector investment in infrastructure in developing countries was dominated by larger firms from developed countries. However, investment is increasingly driven by firms from developing countries. In Cambodia, small-scale private sector providers play a critical role in sectors such as electricity and water¹⁹, where official RGC policy is to encourage the private provision of water supply outside Phnom Penh and the 12 major towns, and the connection of households and businesses to the grid and the generation of power in areas not served by the grid by private electricity businesses (see more in Section 6).

However, despite the supportive policy context, major challenges prevent private investors from realising their potential contribution to filling Cambodia's infrastructure gap. Key issues identified for Cambodia and other countries in the region include:

- Lack of access to finance and appropriate financial instruments. Recent analysis indicates that even the most bullish Cambodian banks demand security of 150 to 170 per cent of the loan amount, with interest rates around 12 to 13 per cent and a maximum loan term of five years²⁰.
- Government controls that limit prices paid by consumers as a barrier for further private sector investment²¹
- Balancing cost-covering tariffs and affordability concerns; facilitating competition, transparency, and incentives for efficiency; allocating and mitigating risks; mobilising local finance (PPIAF 2002)

3.4 Financing for Private Infrastructure in Cambodia

Private sector infrastructure providers are currently able to access external financing from a limited range of sources in Cambodia. Many larger and more established operators are able to access commercial finance from banks or bank-like institutions. However, their ability to access commercial finance is affected by a range of factors, including high interest rates (12-18 per cent), difficult collateral requirements (150-300 per cent of the loan amount), short loan terms (usually less than 5 years), short licence durations, long payback periods for certain investments etc. Many operators don't have suitable collateral and banks do not allow the valuable licences to be used as collateral. Many operators are not interested in larger loans as the risks are too high (default could result in loss of all land and physical infrastructure they own). The bookkeeping and accounting methods of some operators prevent them from accessing commercial finance. Banks cannot usually offer loan terms for infrastructure beyond the duration of the licence periods. There is some indication that more banks are becoming interested in this form of lending, may consider alternative lending conditions and are taking on staff that can better understand the requirements of infrastructure clients. However, to date there remains limited understanding of the sector and of the financial needs of private operators.

A limited number of private equity funds have existing partnerships and plans for further equity investments into water and electricity businesses. The potential for these types of partnerships is currently constrained, as many infrastructure operators are private, family-owned businesses that are not eager to include outsiders as equity partners.

A limited number of past, current and planned donor-funded initiatives involve financing for private infrastructure operators. Past programs include those run by the World Bank and USAID related to piped treated water. The NGO, GRET, has for a long time, provided support to private water operators, financed through funding from a range of donors. The World Bank Water and Sanitation Program (WSP) is currently providing non-grant support to a number of water operators, principally by helping them get their books aligned with accounting standards with a view to allowing them to access commercial finance. AFD plans to cooperate with a large bank on commercial finance availability, as well as providing grant-based financing for water and electricity providers.

¹⁹ PPIAF. 2002. Ibid.

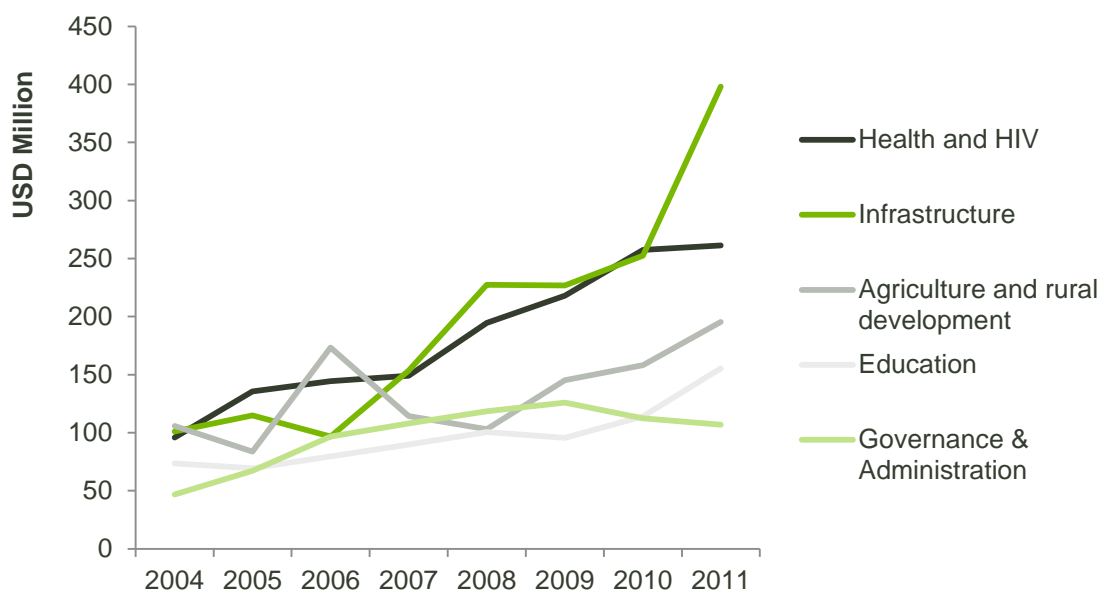
²⁰ IED Final Report. Structuring financing schemes for rural electrification within the Cambodian public-private partnership framework. April 2013

²¹ McCawley, P. 2010. Infrastructure policy in Asian developing countries. Asian Pacific Economic Literature.

Currently, many private sector infrastructure operators finance their expansion through a combination of loans and cash-flow from existing infrastructure schemes. As many are unwilling to take on larger, riskier loans, or consider equity partners, expansion is likely to continue, but at a pace limited by the cash-flows of their existing schemes. A certain subset of diversified operators also tends to balance the returns from water and electricity businesses with the potential returns from other forms of construction, like contract work for buildings and agricultural infrastructure like irrigation.

3.5 Rationale for Australian Involvement

The RGC has a genuine focus on building infrastructure, which is reflected both in their national strategies and national borrowing and spending. Support from donors is demand-driven and highly valued, perhaps more so than in any other area. Development financing for infrastructure in Cambodia (including loans), is larger than funding for other sectors and growing (see below). Most bilateral and multilateral financing is directed towards large-scale, national-level infrastructure.



Infrastructure is one of four priority areas in the Australia-Cambodia Joint Aid Program Strategy (2011-15). However, most existing infrastructure investments of the Australian aid program are coming to an end in the next year or two. If Australia is to continue to provide substantial aid investments for infrastructure, new investment options are necessary.

The quantum of financial assistance available from Australia for infrastructure in Cambodia (around AUD10-15 million per year based on current spending) is relatively modest compared to that available from sources like the World Bank, ADB and bilateral donors like China, whose funding is measured in tens or hundreds of millions. Australia is only able to provide direct financial support in the form of grants. Australia cannot provide loans, equity or other forms of returnable capital unless these are done indirectly, for example through an investment fund. Because of the size and form of financing available, Australia’s ability to influence large-scale, national-level infrastructure is limited. Australia’s financing is more suited towards supporting smaller-scale infrastructure investments. This includes smaller-scale infrastructure that connects households and businesses to the large national-level infrastructure. Australian financing and experience is also suited to developing innovative and flexible program models that seek new ways of stimulating private sector infrastructure investment. Australia’s size and flexibility means we can bring the necessary financial, technical, social and economic expertise together in a combined effort to address opportunities which might be missed by national-level projects.

The Royal Government of Cambodia (RGC) is actively encouraging the private sector to meet the local-level and small-scale infrastructure gap in several key sectors. In particular, the RGC is actively basing its electricity and water infrastructure connection strategies around private sector investment

and operations. To increase the pace, scale and outreach of infrastructure services to households and businesses it is therefore essential to work through and with the private sector.

The option of an Australian program that catalyses additional investment in small scale infrastructure is well aligned to the aid priorities of the Australian Government, which thus far include a focus on economic growth, private sector development and aid-for-trade. The first aid-related media release from the Australian Prime Minister focused on infrastructure. It noted that, “More than \$8 trillion worth of infrastructure has been identified within the APEC region that needs to be developed by 2020 and Australia can play a role in turning this backlog into economic opportunity.” This media release also made a practical observation that, “the infrastructure needs of the APEC economies are simply too large for stretched government budgets to afford on their own. Finding ways to encourage stable private investment will be critical in delivering future projects.” In a speech to the Australian Council for International Development, Australia’s Foreign Minister noted that, “we must absolutely leverage private sector investment to get results” and, “we must tackle infrastructure deficiencies that prevent developing economies from fully engaging in global markets.”

There is clear evidence that donor financing using output-based and co-financing models as proposed in this design can enable increased investment in small-scale infrastructure in Cambodia. In particular, several donors have been able to work successfully with private sector operators to build piped, treated water infrastructure in the recent past. There is emerging evidence that investment funds in Cambodia can have similar success through their equity investment models in water and electricity businesses.

There is a clear and substantial gap in donor support and funding for these purposes in Cambodia. At present, due to different or shifting donor priorities in Cambodia²², and limited financing, there is negligible donor activity in these sectors despite the recent successes in working with businesses. Exceptions include AFD, who plan to extend credit lines to businesses in both sectors, although the limited funding they have available and the current uncertainties in the Cambodian banking sector means only a small proportion of the potential private investment will be catalysed in this way. In addition, the NGO, GRET, continues to support a small number of water schemes depending on available donor funds.

4 Proposed Program Overview

3i is a program designed to promote and catalyse business growth in the infrastructure sector of Cambodia. It will expand the delivery of key infrastructure services in a sustainable way, consistent with Government priorities and policies. **3i** will partner with the private sector to expand household and business access to utilities and other services. This will create new enterprise opportunities in rural towns and more remote parts of Cambodia, and will generate health and welfare benefits for Cambodians, including the poor. Initial partnerships will be with businesses in the water and electricity sectors where the potential is already proven. Once the partnerships are successfully on track to deliver the required results, partnerships in other sectors such as rural transport and waste management and recycling will be explored.

The profit motive of these businesses is critical to ensuring utilities, services and industries are maintained and sustained. **3i** will catalyse business investments in ways that incentivise them to expand service coverage as rapidly as possible, and to sustainably operate and maintain the systems to the highest standards. All potential business partnerships will be governed by the core principles of additionality, neutrality, sustainability and maximising value for money. The program will achieve this through three models of partnership with businesses and other actors in chosen sectors:

a) Modality 1 – Co-funding Infrastructure in Direct Partnership with Private Operators

3i will enter into contracts with private infrastructure operators so that these operators design and build new infrastructure such as water treatment plants and pipe networks, or electricity transmission structures and household connections. **3i** will typically only provide funding where private operators contribute significant co-funding, and will typically use output-based contracts.

²² USAID is now planning to focus on sanitation rather than water.

Operators will be expected to operate such infrastructure commercially and sustainably, without further inputs from **3i**.

b) Modality 2 – Co-investment with Private Equity and or Social Impact Funds

3i will contribute funding to Private Equity and Social Impact Funds that are planning to, or already investing in water and electricity business expansion in Cambodia. By investing in such funds **3i** will be able to leverage additional outreach and results not possible through direct contracts with private operators, particularly through equity partnership arrangements with private operators.

c) Catalytic Interventions to Address Infrastructure Market Constraints

3i will research constraints and opportunities for increased private investment in infrastructure, and design and implement innovative solutions to address these. Such solutions will depend upon the ingenuity and creativity of the implementation team, but might include things like conducting feasibility assessments, supporting policy change or facilitating access to commercial finance.

3i will be implemented by a small team familiar with donor and private sector partnerships, and with strong financial and analytical capabilities. That team will be responsible for identifying partnership opportunities, implementing those selected, and monitoring the progress and realisation of expected results in real time. Advice and oversight will be provided by a Program Board, a Consultative Committee, an Investment Committee and a Technical Advisory Group.

5 Lessons Learned

Australia is currently in a strong position to implement a program that works with the private sector by utilising lessons learnt from current and recent programs operating in the region and in Cambodia. Some of the most relevant programs – like the ongoing Cambodia Agricultural Value Chain program (CAVAC), the recently concluded Enterprise Challenge Fund (ECF), and the existing InfraCo Asia program – have been funded and/or implemented by the Australian aid program. Other lessons have been drawn from similar donor programs in the region.

5.1 Lessons from Australian-funded programs

CAVAC's work developing small to medium scale irrigation infrastructure and working with the private sector has generated critical hands-on experience for the Australian aid program in the use of business cases, value-for-money comparisons, the practicalities of private sector partnership, output-based contracts and the importance of combining investment with up to date market intelligence (see Figure 3).

Figure 3. Working with the private sector in the Cambodia Agricultural Value Chain program (CAVAC)

Since 2010, Australia has funded the Cambodia Agricultural Value Chain program (CAVAC). This program is helping poor rice and vegetable farmers increase their productivity and earn higher incomes. One of the ways the program is doing this is by developing market systems and partnering with a wide range of businesses that interact with poor farmers.

Over the past four years the program has partnered with over 30 Cambodian and international businesses in the fertiliser, pesticide, seed, export/milling and media markets. CAVAC works to promote innovative business models that help partners grow their businesses and at the same time improve poor farmers' productivity and incomes. For example, the program has:

- Partnered with a dozen fertiliser companies to help ensure retailers and agents of their products give better advice to farmers about what type of fertiliser to use and when
- Worked with vegetable seed companies to help farmers understand the best ways to grow vegetables for maximum yield and profit
- Supported Cambodia's push to become a major rice exporter by helping rice millers find international buyers and improve product quality
- Developed public-private models of irrigation management where farmers have

responsibility for the collection of water fees and irrigation maintenance whilst local governments manage the overall irrigation planning

The CAVAC program uses a number of strategies to be able to work with the private sector effectively and get the most out of such partnerships. This includes adopting a business-like culture in its operations and interactions with companies; utilising output-based contracts that typically involve 50:50 cost sharing; negotiating hard to obtain strong value-for-money agreements; maintaining a portfolio of simultaneous partnerships to avoid having to enter substandard partnerships because of spending pressures; giving explicit and strong considerations to business incentives; avoiding paying for tradable goods; and avoiding unfair competition by opening similar support to competitors.

We can also learn from our experience with matching grants for businesses through fund instruments like the Enterprise Challenge Fund (see Figure 4).

Figure 4. Challenging the private sector to invest in commercially viable pro-poor businesses with the Enterprise Challenge Fund (ECF)

The Enterprise Challenge Fund for South East Asia and the Pacific (ECF) was established in 2007 to pilot a new approach for Australia to partner with the private sector for international development. The ECF provided grants ranging from A\$100,000 - A\$1.5 million, on a competitive basis, to innovative business proposals that were expected to overcome market barriers and generate employment and income. The key objective of the ECF was to generate employment and income for poor people through sustainable business ventures.

Over 20 business projects were supported by the ECF in a range of countries – including Cambodia – and sectors – including finance, agribusiness and energy enterprises. A total of A\$11 million in ECF grants leveraged A\$18 million from businesses, and the projected benefits in terms of increased incomes are estimated at A\$19 million by 2015.

Some relevant lessons from the ECF experience include:

- The analysis of business proposals was hindered by the lack of detailed local insights into specific local market conditions because of the vast scale of ECF's coverage; more intense analysis would probably have unearthed better projects
- Most ECF investments proved to be genuinely additional – that is, they would not have gone ahead without the ECF grant – but closer scrutiny of proposals would have eliminated those proposals whose additionality was questionable
- Having business and sector expertise on the ECF selection panel was vital in determining the likely viability of business proposals
- By choosing to work only with existing businesses on new business ventures, the additional risks of supporting business start-ups was avoided
- By developing a portfolio of over 20 projects, ECF managers were able to take appropriate risks in project selection; this resulted in one or two super projects whose benefits more than outweighed the few project failures
- Whilst the ECF 'worked' and generated a positive economic rate of return, more flexible forms of business partnership are envisaged as the best way to generate substantial returns and even higher value for money

Finally, we can learn from Australia's support to InfraCo, a donor-funded infrastructure development company, which has considerable experience in project development and financing for private sector infrastructure (see Figure 5).

Figure 5. Investing in Infrastructure through InfraCo Asia

In 2013, the Australian aid program invested \$10.65 million in InfraCo Asia, a donor-funded, privately managed project development company. InfraCo seeks to bring public-private infrastructure projects – that would not otherwise be sufficiently attractive to investors – to market. These project challenges can include investor uncertainty around commercial, technical or environmental risks, a lack of project preparation expertise, or simply the disproportionately high

transaction costs for small infrastructure projects. InfraCo develops these projects as a principle, taking an equity stake in projects and bringing in its own technical expertise from the private sector.

InfraCo Asia is able to invest in 10 countries and 11 infrastructure sectors - energy services, water/waste services, transportation infrastructure services, bulk storage/logistics facilities, telecommunications, gas transportation, oil transportation, mining and upstream oil & gas, urban infrastructure, agriculture-supporting infrastructure and other related activities.

Some important lessons from InfraCo Africa and Asia experience include:

- The value of InfraCo's flexibility, enabling the development company to take initiative and work with business and communities to generate stakeholder buy-in to projects; this flexibility is also vital in enabling InfraCo's management to move quickly, adapt, and seize opportunities as they arise
- The importance of rigorous project screening for additionality, commercial viability and development impact
- The private sector culture of InfraCo has enabled the development company to recruit high quality private sector professionals in financing and infrastructure with deep experience in their sectors
- Ensuring the InfraCo management retain a balanced portfolio, including small projects with high transaction costs and high development impact alongside the lower transaction costs of large infrastructure projects
- The incentives and management arrangements of InfraCo made it difficult for the development company to 'move downscale' and work consistently with smaller scale infrastructure providers and investors

5.2 Other Lessons Gleaned From Local Experience

Desk and field reviews conducted during the design process have unearthed a range of other lessons relevant to the proposed approach. These lessons relate to a variety of aspects of the design, including the best ways to work with the private sector, the role of the private sector in infrastructure, as well as some specific lessons on the two key focus sectors for the design – electricity and water. Some of the most useful lessons are summarised below.

In general centralised utility models are best suited to large, densely populated areas, whilst community and household models may be more appropriate for dispersed or remote communities; however centralised models have typically failed to serve the poor whilst decentralised models suffer from high costs and operations and maintenance challenges suggesting other models need to be identified. Whilst local context is critical, where the private sector is evidently active in decentralised utility service provision, donors can play a catalytic role in stimulating private sector investment that expands service delivery in a sustainable manner. Previous donor programs in Cambodia such as the World Bank – Design Build Lease, and Design Build Operate schemes and USAID's MSME water project and GRET's village water schemes have successfully pioneered approaches to partnering with private utility operators to extend utility supplies into rural towns and communities.

Small scale private service providers play a key role in service provision in areas that utilities do not reach. The existence, success, and continued viability of these businesses in the near to medium term is, therefore, important for the provision of services to certain segments of the population, particularly rural towns, remote and poor communities. Recent World Bank Assessments²³ confirm that small scale private service providers will have a critical role to play for the near to medium term as public utilities try to keep up with the increasing demand for services. It is also expected that these businesses will remain the most viable approach to service delivery over the long term in remote rural areas.

²³ World Bank. 2009. Opportunities Challenges small scale private service providers in electricity and water supply.

Working directly with businesses in Cambodia can lead to expanded and enhanced service delivery that reaches the poor and is sustainable. As the MSME water project demonstrates²⁴, by working directly with water businesses it enabled 14,000 households to gain access to piped treated water that would otherwise have not been reached; many of these households were poor and some had even been excluded by other donor water programs for various reasons.

When partnering with business, it is vital that any donor support or contributions enhance – rather than diminish – the incentives businesses face to invest, maintain and deliver services. The MSME water project's rebate system, a form of output-based payments, was focused on one easily verifiable result (numbers of households connected to piped treated water) that was easily scalable and encouraged viable water businesses to invest and deliver services. Payments were only made once the business had connected households, not before. This also meant that the businesses bore the risks of expansion, not the project. This output based payment system also created incentives for businesses to lower connection costs for customers and increase the number of connections which meant more poor people could get connected.

When working with businesses it is still possible to ensure gender equality is promoted and other marginalised groups – such as people with disability – are properly considered. In contrast to some donor programs where the project manager tries to retain full control over all project activities, those programs that genuinely seek partnerships with other actors, including business, are less able to dictate terms. However, careful and comprehensive market analysis that unearths the key drivers of gender inequalities, the judicious use of business selection criteria that can help address these, and incentivising partners to properly consider issues such as gender and disability in contractual arrangements – as the Enterprise Challenge Fund did²⁵ – can be a powerful and sustainable way to promote more equal and inclusive development.

It is advisable to work with existing businesses in the sector rather than trying to work with business start-ups. Existing businesses in the water and electricity sectors know their business, generally have up to date technical know-how, and have a good appreciation of market potential. Designed capacity is well calibrated to the market and continuity of service is good²⁶. This makes them potentially good and reliable partners for donor programs. As the MSME program and CAVAC has also found, working with businesses that know their way around helps save program time and resources by designing initiatives that take into account market realities upfront and thus avoiding potential pitfalls, delays and mistakes²⁷.

Ongoing market analysis is vital to guide programs that work with businesses. The most effective donor programs that work with the private sector have been those able to stay constantly abreast of changes in market conditions including new regulations, new technology, and expected areas of demand contraction or expansion. The MSME water project and the NGO GRET invested heavily in understanding market context which helped enable them to incentivise businesses to expand services in a sustainable manner and to select the most progressive and reliable businesses. This also has implication for program staffing, with an emphasis on strong business and market analysis skills, as well as any technical competencies required.

Given the importance of small scale private service providers to Cambodians' access to water and electricity, a supportive business environment is vital, and donors need to find better ways to help the creation of such an environment. For these vital businesses to flourish, policies need to support a stable operating environment, effective institutions, access to credit markets, the emergence of business development services, and encourage competition to spur cost and price reductions as well as service quality improvements. Experience in Cambodia and elsewhere suggests working with businesses and business associations can be an effective means to spur positive policy changes that are sustained and continue to evolve once donors have left.

While many poor rural households have access to inexpensive alternative sources of water (if only for parts of the year), including wells, springs, and boreholes, in the medium term we can expect private

²⁴ DAI. Using incentive rebates to grow private water systems: lessons learned.

²⁵ Enterprise Challenge Fund. 2013. ECF Project Completion Report.

²⁶ World Bank. 2013. Tapping the Market: Opportunities for Domestic Investments in Sanitation for the Poor.

²⁷ CAVAC website. <https://www.cavackh.org> (accessed in December 2013)

water networks to become increasingly attractive to these households. The water supply options poor households face currently mean that private operators sometimes face stiff competition when looking to expand piped treated water networks. However the growing concerns about water quality and safety of these alternative sources, and the increasingly reliable service and quality available from private water operators means that with appropriate support and stimulus, private water networks could rapidly become more prevalent.

6 Priority Sectors Identified for Initial Intervention

6.1 Piped Treated Water Sector

6.1.1 Drinking Water Supply in Cambodia

Ensuring all Cambodians have access to clean drinking water by 2022 is a Cambodia Millennium Development Goal. However reaching that target will be a significant challenge. Currently only around 16 per cent of Cambodians – or 2.6 million people – have access to piped treated water into their homes. Few households in rural areas are connected to a piped treated water supply – virtually all such schemes cover Phnom Penh and large towns. According to official estimates, around two thirds of Cambodians – up to eight million people – remain dependent on groundwater and rainwater sources, which are not treated or reliably available year round; and a further five million Cambodians do not have access to safe drinking water. Around 75 per cent of water is collected by women and children.

Figure 6. Typical profile of water businesses

Sophorn Rattanak Water Company, Kampong Cham Province	Saing Yuthy Water Provider, Kompong Speu Province	Leang Davich Water Supplier, Battambang Province
<p>The owners built their water utility in 2005 with assistance from the World Bank Design-Build-Lease program. The company had the capacity to supply 3,000 households but in 2010 only had 916 customers; high connection fees discouraged other households from connecting.</p> <p>In 2011 with USAID support, the company was able to lower connection costs from \$50 to \$15 per household and has subsequently added 1,200 more household connections</p> <p><i>Source: USAID, 2012</i></p>	<p>These owners have been providing water supply to households from a natural pond since 1982. In 1994 they received a licence from MIME to supply piped treated water to 12 villages, or around 1,900 households. They currently employ 16 people and also supply bottled water.</p> <p>With a \$10,000 subsidy from GRET they have connected 1,700 households to date, charging \$80 connection fee per household.</p> <p>They are currently looking to invest in a new water tower and update some of the pipe network, and possibly expand to a further five neighbouring villages.</p> <p><i>Source: Field Interview, 2013</i></p>	<p>Leang Davich started supplying piped treated water to 150 households in 1998. He got his licence from MIME in 1999 which covers three communes, or around 2,400 households. He sources water from two ponds and several wells.</p> <p>Currently he has 940 customers who he charges \$50 for a connection. His pipes are leaking and his water pressure is insufficient to reach more customers. He would like to invest in bigger pumps and upgrade and expand piping, but cannot raise the finances to do so.</p> <p><i>Source: Field Interview, 2013</i></p>

Under the supervision of the Ministry of Industry, Mines and Energy (MIME)²⁸ publicly funded and operated water systems provide piped treated water to households and businesses in Phnom Penh

²⁸ Note that the Ministry of Mines and Energy was recently split into two separate ministries. Responsibility for water and electricity sectors has been split. The Ministry of Industry and Handicraft taking water, and the Ministry of Mines and Energy taking electricity.

and 12 major towns across Cambodia. These public schemes serve around 1.2 million Cambodians. A further 1.4 million Cambodians receive piped treated water from schemes operated by private water businesses. The RGC has acknowledged the scale of the challenge of extending piped treated water supply in relation to the limited availability of public funds and the operational challenges of public utilities. Official policy is to encourage the private provision of water supply in areas outside Phnom Penh and the 12 major towns. MIME encourages private sector investment to expand access to piped treated water supplies by issuing water licences to private operators. These licences permit private operators to source, treat and supply water to households within a certain geographical area, subject to certain conditions and regular water quality checks, usually quarterly. Water tariffs are officially set based on MIME's estimates of the necessary investment and operating costs, although these have not been modified for some years.

To date MIME estimates around 145 water businesses in 20 provinces have obtained official water licences, although other estimates suggest there are up to 300 water businesses providing piped treated water supplies to households and businesses. These water businesses vary considerable in scale and origin, but are generally acknowledged to be profitable operations (Figure 6).

6.1.2 Piped Treated Water Demand in Cambodia

Access to piped treated water is highly sought after by all Cambodians. Surveys consistently indicate strong demand for piped treated water supply across different segments of society and highlight the very high prices of other drinking water sources. Following the establishment of a commercial supply chain for ceramic water purifiers and a social marketing strategy developed in conjunction with IDE, sales continue to expand steadily in Cambodia, reflecting the value households place on safe drinking water. USAID surveys indicated that water purchased from vendors during the dry season cost 15 times as much as piped treated water in rural towns, and 35 times as much as piped treated water in Phnom Penh.

A recent World Bank survey found that the average charge levied to connect a household to a private piped treated water scheme was \$34²⁹. Whilst water connection fees and tariffs exclude the very poorest, household surveys indicated that where these households were located within a water network area, even these households were willing to pay \$30 for a connection. The poorest households outside a networked were willing to pay \$26. The same focus group interviews with poor communities in Cambodia indicate that they could only afford to pay \$0.45-0.49 per litre against an average cost of piped treated water supply of \$0.61 per litre.

This tends to confirm that whilst the very poorest households may not be able to afford the cost of connection, or even the tariff, it is safe to assume that demand from less poor households is likely to significantly outstrip current supply.

Where households cannot afford even the tariffs for piped treated water supply, there is no commercial viability for a water business and therefore no prospects for sustained private provision. These households will continue to obtain water from ground or rainwater supplies until either public investment enables piped treated water provision or public subsidies make piped treated water affordable for these households. For the purpose of assessing the effective demand for commercially piped treated water, we assume that the 4.1 million people currently defined as poor in Cambodia will not be able to afford water fees at these prices.

6.1.3 Potential to Expand Commercial Water Supply

In conjunction with estimates of likely demand for piped treated water, the potential for expanding the commercial supply appears considerable. A recent survey of water businesses³⁰ confirmed that existing businesses demonstrated strong profitability; the average profit margin was 23 per cent, while 80 per cent of providers covered their full costs and 90 per cent covered their operating costs. Interviews with private operators confirmed a strong desire to expand operations; 53 per cent of operators had intentions to invest in further piped treated water supply, 77 per cent were interested in

²⁹ WSP, 2013 Opportunities for Domestic Investments in Water for the Poor

³⁰ WSP, 2013. Ibid.

operating additional water systems, 75 per cent were interested in expanding their existing water network and 50 per cent were interested in investing in new systems.

However, water businesses face a wide array of challenges in converting these intentions and interests to invest into reality. Access to finance was consistently cited by water businesses as a barrier to further investment; their internal cash flow was inadequate to finance the required investments and financial institutions demanded extensive collateral, relatively short duration loans, and charged interest rates of 18 and 40 per cent per annum. In any case, many businesses interviewed were unwilling to take on larger loans even with improved conditions. Banks also typically required a robust feasibility analysis and business case, which many of these family-owned informal businesses were unable to produce without assistance. Some businesses also lacked the technical know-how to really test the feasibility of expanding operations.

Many firms interviewed seemed to think that additional investments in existing systems would be too costly to be profitable, because of the uncertainties involved and because of possibly low demand among people not currently served. They were generally more optimistic about the potential profitability of investments in new water systems.

Another constraint is the challenge of obtaining a water licence through a relatively opaque process, and the three year duration of licences creates disincentives to invest when returns cannot be guaranteed in such a short period. The World Bank Water and Sanitation Program is working closely with the Government on changing this, and estimates that within a year or so that the Ministry of Industry and Handicrafts may implement a tendering system for licences, and longer licence periods.

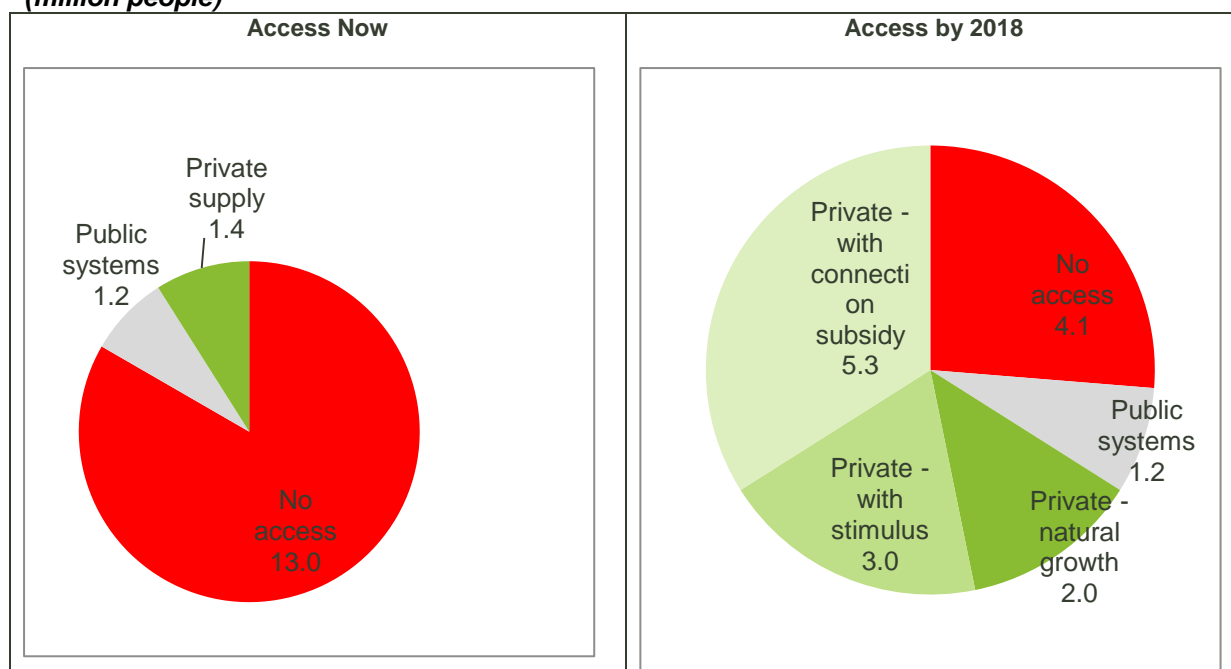
Given the strong demand, but the evident challenges to expanding supply it appears inevitable that some expansion by private operators will take place over time without any additional donor intervention or support. However, given that the most profitable schemes have already been established and very few highly profitable schemes remain undeveloped, it is likely that this expansion will be limited. A recent World Bank study estimated that based on existing trends and the current commercial viability of water businesses, a further 0.6 million people – in addition to the current 1.4 million, making a total of 2 million people – could be served by the expansion of private water businesses in the coming years. In scoping the potential for **3i**, we assume that the return on investment for water businesses serving these 2 million people are sufficiently attractive for them to find and mobilise capital at commercial rates, despite a challenging financial environment.

However, to realise any additional expansion of private piped treated water supply, other interventions in the water market will be needed to encourage businesses to expand current networks to less profitable areas.

We estimate that with additional market stimulation, piped treated water provision could be commercially viable for up to a further 8 million people. Those schemes which are marginally less profitable than the existing (most profitable) schemes would require relatively little stimulation to encourage private operators to invest. Greater stimulation would be required for those schemes – often the more remote and dispersed communities – which may only be commercially viable if some portion of the up-front investment costs are subsidised.

Based on the current literature and recent field research, of the 8 million people for whom some form of commercially sustainable water supply is viable, we estimate around 3 million people could be served by schemes that are fully commercially viable – that is, schemes that cover both the necessary investment costs and the operating costs, and generate a reasonable return on investment for the business. However, because the returns are not sufficiently attractive to attract investors – particularly given the current constraints in the financial sector and regulatory framework – some external stimulus will be necessary. For the remaining 5 million people, we estimate these people can also be served by commercially viable water businesses which could cover their operating costs, but could not generate a sufficiently attractive return on investment if they also have to cover the up-front investment costs. Greater stimulus, and different stimulus models will be required to trigger the necessary investments and commercial operations for these schemes.

Figure 7. Cambodians with access now, and potential access to piped treated water by 2018 (million people)



6.2 Electricity Sector

6.2.1 Electricity Supply in Cambodia

In 2009 only 18 per cent of the total population was connected to grid electricity; only 13 per cent of rural households had access to grid electricity, compared to 54 per cent of urban households. Most rural Cambodians have to resort to car batteries and charging stations for electricity or pay some of the highest prices in the world for locally produced power. According to more recent official estimates, around two thirds of all villages currently have access to a source of electricity, but only one third of households are connected to grid electricity. In urban areas, household access to electricity has expanded whilst in rural areas and small towns still only around 20 per cent of households have electricity connections.

Expanding electricity supply is an important goal for RGC. This is currently articulated as two key objectives, namely that all villages have access to a source of electricity by 2020, and that 70 per cent of villages are covered by grid (or grid-standard) electricity by 2030. The intent is for those villages not able to access the grid to be covered by hydro, biomass or diesel mini-grid systems, or in very remote areas, solar power systems.

Under the guidance of MIME and the Electricity Authority of Cambodia (EAC) – the regulatory authority – the state-owned Electricite du Cambodge (EDC) recently extended the 22KV grid to large areas of Cambodia by connecting to power sources in neighbouring Thailand and Vietnam. Cambodia has entered into several power purchase agreements with these two countries³¹. The RGC's energy strategy notes a range of transmission lines that will be constructed during the next few years, including a connection to the Laos network, enabling grid electricity to reach many more communities. This plan also notes a number of electricity power plants to be constructed over the coming decade.

It is RGC policy to license private electricity businesses to connect individual households and businesses to the grid, and also to generate electricity and connect households in areas not served by the grid. The EAC issues five kinds of electricity licences under its Electricity Law; information on

³¹ <http://www.cambodiainvestment.gov.kh/investors-information/infrastructure/electricity.html>

licences including locations is available from the EAC website³². Each licence notes the decision to grant the licence as well as the various conditions which are applicable.

In 2013 there were an estimated 312 licenced electricity companies, around 65 per cent of whom purchase electricity from the EDC grid. A further estimated 300 unlicensed electricity businesses also generate and distribute electricity³³. The private electricity distribution companies typically invest in transformers, poles, cables and electricity meters as well as a fee collection system. Other private electricity firms generate their own electricity, often using diesel generators, and distribute this to households (Figure 8). Households are typically charged a connection fee to cover a portion of the investment costs – which can range from \$40-\$50 per household in grid transmission systems up to \$150 or more in remote locations not connected to the grid.

Tariffs are set by the EAC, but vary from licensee to licensee based on the investment and operational costs for each licenced area. The intention is to provide private operators a 13-16 per cent margin on average depending on the size of investment required and scale economies possible within each licenced area.

Whilst there are plans for EDC to continue extending the grid, RGC policy emphasis is on encouraging private operator expansion of their distribution networks, especially connections to the national grid. Encouragement is also given to generation and distribution companies in areas not likely to be served by the grid. Expansion within existing licence areas is also important, as one estimate put average village coverage rate within a licence zone below 40 per cent.

Figure 8. Typical profile of electricity businesses

Visal Electricity Company, Battambang Province	Sao Savorn Electricity Provider, Rattanakiri Province	Srey Sokhom Electricity Supplier, Takeo Province
<p>The owner of this business supplied electricity with two diesel generators for nearly 15 years. He bought the licence from another electricity business. In 2010, he was able to connect to the grid and buy electricity from EDC. He now employs 5 people and distributes electricity 24 hours a day.</p> <p>His licence covers 2 communes and around 5,000 households; currently he has 3,890 customers. He charges \$38 for a connection, and has collaborated with EDC to provide interest free loans to households to enable them to connect.</p> <p>He has plans to expand his distribution lines using his own funds; his biggest challenge is getting technically competent staff</p> <p><i>Source: Field Interview, 2013</i></p>	<p>This businessman has been providing electricity supply since 2011. He has a permit from the provincial DIME office but does not have a licence yet from EAC. With the help of three staff, he operates two diesel generators – a 50KVA and a 75KVA – for 18 hours a day and has 250 customers. He charges \$38 for a connection plus the cost of cabling.</p> <p>He estimates there are potentially around 1,000 households he could serve, but he cannot expand his diesel operation because of a lack of finance. He has heard that the grid may come to this area soon, and if it does he will purchase electricity from EDC and distribute it locally.</p> <p><i>Source: Field Interview, 2013</i></p>	<p>The owner has provided electricity services since 1994 when he started with a generator. In 2011 he switched from a production licence to a 12 year distribution licence, purchasing his electricity from a Vietnamese company. He employs 6 people and distributes electricity 24 hours a day.</p> <p>His licence covers 4 communes or 6,435 households and he has 4,000 customers. The unconnected households are in relatively remote locations, so to connect them he would need to charge around \$300, compared to existing customers who paid between \$100 and \$120 to connect. He would need to invest around \$60,000 to be able to connect these remote households and does not have the funds to do so.</p> <p><i>Source: Field Interview, 2013</i></p>

³² <http://www.eac.gov.kh/license.php>

³³ IED, 2013. Ibid

6.2.2 Electricity Demand in Cambodia

There is strong demand for electricity supply across geographical regions and socioeconomic groups in Cambodia. Even very poor households are frequently observed using 12V batteries as an electricity source, recharging these from sources connected to the grid in nearby towns. Rural households typically spend around \$5 per month on simple lighting, a radio or television, and mobile phone charging. Wealthier and more modern households typically spend around \$30 per month on electricity, including for air conditioners and fridges for example. Rice millers and rural garment factories consume considerably more electricity.

Given the relatively low operating costs of electricity distribution networks once a household or business is connected and the strong demand from relatively poor households, we estimate that only the very poorest 10 per cent of the population could not afford commercial electricity tariffs, even if the cost of establishing their connection was subsidised.

6.2.3 Potential to Expand Private Electricity Supply

The potential to further expand commercially electricity supply beyond the current 5 million people served is considerable. The pace of expansion from the current 30 per cent coverage towards 90 per cent will be governed by the expansion of the EDC grid and the concentration and likely consumption patterns of households in new areas.

In a 2013 detailed study of the licenced electricity sector it was identified that even in those areas under private licences only half of the villages had been connected, and 78 per cent of electricity businesses had connected less than 15 per cent of the households within their licence area³⁴. The average proportion of households connected within a business licenced area was 11 and only one business was found to have connected to more than half of the households within the licenced area. Further, in a survey of 82 of the largest private electricity firms whose licences covered an estimated 2.8 million households, only 0.3 million households had been connected.

Interviews with existing electricity businesses indicated a strong interest to expand existing operations by between 50 and 100 per cent over the next five years. These operators have several years of experience, a good understanding of their market and customer consumption patterns, and the technical capacity to make judgements about future expansion. There were clear signs of intent with some new investments having been made recently using reinvested profits and or small bank loans, which typically accounted for only around 20 per cent of their investment as banks were unwilling to lend more due to loans having to be backed by collateral rather than cash flow.

However, electricity businesses face a number of challenges in expanding their operations. Access to finance is a widespread barrier to further investment, with high interest rates and bank requirements for formal business plans cited as the most frequent challenge. Obtaining a licence was also described as problematic for some operators. Other businesses suggested finding technically competent staff prevented them from expanding their operations.

In estimating the potential for expansion of private electricity supply and distribution, it is reasonable to assume that some expansion by private operators will take place with no additional donor intervention or support. Most of this expansion will occur as the national electricity grid is slowly extended. However, the most profitable licences have already been issued and expansion within existing licence networks will not be as profitable as the costs of connecting more remote households rises and the electricity consumption of new households is likely to be lower than existing clients. Given that the most profitable schemes have already been established and few highly profitable schemes remain, we assume some grid extension will occur and estimate that this expansion will be limited to servicing a further 2 million people at best.

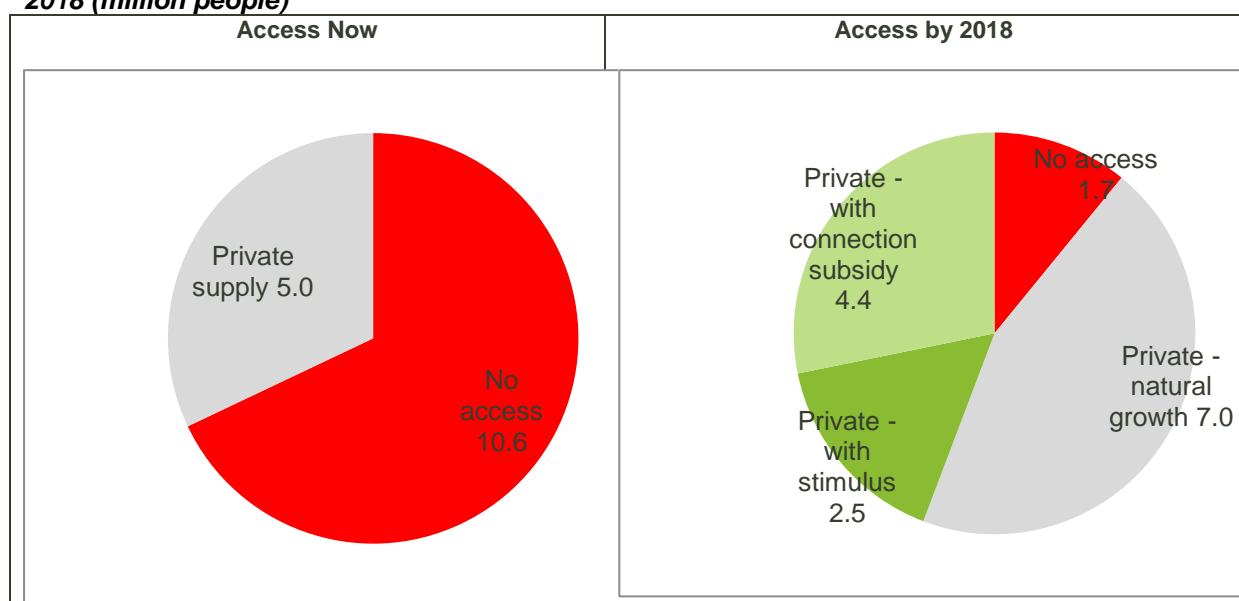
To realise any additional expansion of private electricity supply, interventions will be needed to encourage firms to expand current networks to less profitable areas. We estimate that with additional market stimulation, electricity supply could be commercially viable for up to a further 7 million people. Those schemes which are marginally less profitable than the existing (most profitable) schemes would require relatively little stimulation to encourage private operators to invest. Greater stimulation

³⁴ IED, 2013 *ibid*

would be required for those schemes – often the more remote and dispersed communities, and the mini-grid schemes – which are less profitable but still commercially viable, or schemes that are only viable if some portion of the investment costs are subsidised. Help could also be provided to enable private operators to consider the costs of different off-grid generation options.

Of this potential market of 7 million people, we estimate around 2.5 million people could be served by fully commercially viable schemes – that is, schemes that cover both the necessary investment costs and the operations and maintenance costs, and generate a reasonable return on investment for the business. However, because the returns are not sufficiently attractive to attract investors, some external stimulus will be necessary. For the remaining 4.4 million or so, we estimate these people can also be served by commercially viable businesses which could cover their operating costs, but cannot generate a sufficiently attractive return on investment if they also have to cover the up-front investment costs. Greater stimulus and different stimulus models will be required to trigger the necessary investments and commercial operations for these schemes.

Figure 9. Cambodians with access now, and potential access to grid standard electricity by 2018 (million people)



6.3 Other Sectors with Future Potential

Whilst the water and electricity sectors exhibit clear potential for DFAT partnerships with businesses to generate sustainable development results, the design team also briefly noted other sectors where there could be similar potential.

Waste management and recycling is largely conducted by private businesses in Cambodia, and with continued rapid economic growth is a sector that will likely grow in importance in terms of potential value add, employment and environmental sustainability. The design team interviewed several private operators, many of whom saw the potential for viable business expansion either into new areas, or simply collecting and processing more of the waste within their existing licenced areas. These operators also noted the potential for increased efficiencies in the waste management and recycling value chain that could create considerable employment for – often very poor – waste consolidators and generate substantial environmental benefits. However, the lack of appropriate finance and sometimes licensing restrictions often constrained these plans from being realised.

During fieldwork in rural parts of Cambodia, the design team noted the challenges to domestic trade in agricultural produce sometimes posed by the limited availability and capacity of **rural water transport** operators. Farmers, crop consolidators and rural traders frequently spoke of the challenges of river crossings as a significant barrier to increased trade and growth opportunities. The frequency of river flooding making crossings dangerous or impossible, the absence of even rudimentary ferry

facilities, and the limited number of boat operators all indicated the potential for relatively small infrastructure investments to stimulate trade. Similar business partnerships with ferry and terminal operators could be a way to promote sustainable infrastructure investments that generate increased enterprise opportunities.

The opportunities in these other sectors may be explored once the partnerships in the water and electricity sectors are successfully on track to deliver the required results.

7 Program Outline

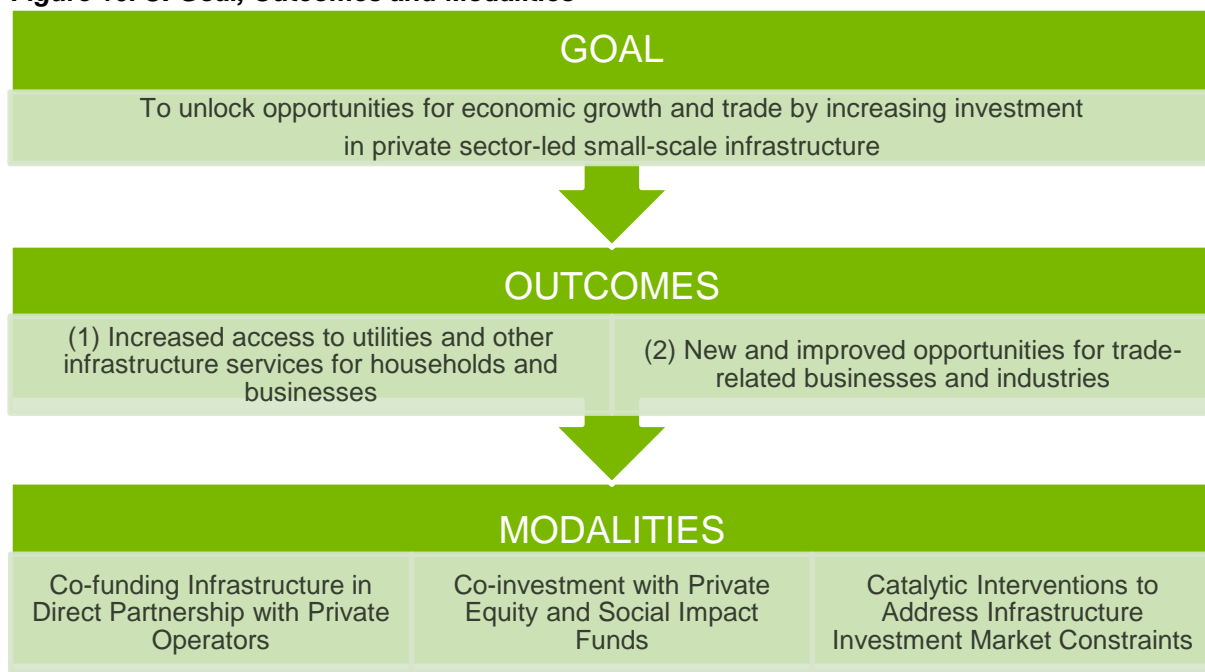
7.1 Goal and Outcomes

The goal of **3i** is, 'To unlock opportunities for economic growth and trade by increasing investment in private sector-led small-scale infrastructure.' The program will support this goal by contributing to the achievement of two primary outcomes:

- (1) Increased access to utilities and other infrastructure services for households and businesses; and
- (2) New and improved opportunities for trade-related businesses and industries.

The three key modalities of the program will involve creating different partnership models with private piped treated water and electricity businesses to generate these outcomes (see Figure 10).

Figure 10. 3i Goal, Outcomes and Modalities



The program will operate nationally, and will operate as a flexible facility to support private sector infrastructure investment and service provision in multiple sectors. Sectors have and will be selecting according to the following criteria:

- (a) Proven potential to achieve results
- (b) Unmet demand for services
- (c) Potential for scalability and replicability
- (d) Presence of existing private sector operators with necessary experience and willingness to invest and cooperate
- (e) Suitability of specified program modalities

Based on analysis conducted by the design team (see Section 6 above), the program will focus its initial support for infrastructure investment in two sectors - electricity and water. It should be noted

that the design team believes there is potential for **3i** to catalyse infrastructure investments in sectors other than electricity and water. Indeed, such a diversification of the **3i** investment portfolio would be a sensible risk management strategy in case unforeseen events or a rapid decline in the business climate of the electricity or water sector renders continued **3i** investments in these sectors unattractive. However, for practical reasons the design team recommends **3i** begin with a focused portfolio in the selected two sectors where success is more certain; this can expand once the initial investments are deemed to be on track to deliver results, and as more information about other sectors becomes available.

Therefore, during the program inception phase and beyond, the program will also analyse the potential to support infrastructure in additional sectors in line with these criteria and may make some smaller, pilot investments in these. However, the bulk of program expenditure will focus on the electricity and water sectors.

As the program focus will always be on the electricity and piped treated water sectors, the program emphasis will be on achieving Outcome 1. Consequently, Outcome 2 will be of secondary importance, though might become more important depending upon changes made as a result of a Scalability Review that will be conducted 1.5 to 2 years into the program. This Scalability Review will examine the potential for increased funding and/or changes to the sector portfolio. It is expected that there may be some overlap in the achievement of outcomes. In particular, increased access to electricity and water utilities will in turn enable new and improved opportunities for trade related businesses and industries.

Whilst the primary outcomes of initial sector investments are outlined above, a wide range of additional or 'secondary' outcomes will be supported, depending upon the sectors ultimately chosen for investment and support. Some examples of possible secondary outcomes – further elaborated in Annex 1 – include:

- Reduced cost of utilities for households and businesses
- Changes in water and electricity consumption over time
- Better health outcomes from improved water and sanitation

The program implementation team will ensure its M&E system includes monitoring of primary and secondary outcomes.

7.2 Current Investments in the Piped Treated Water Sector and Potential 3i Results

There are a number of recent and current interventions in the Cambodian water supply sector. The World Bank – through WSP – provides on-going research and analytical support to the sector that has been instrumental in the policy dialogue around expanding private water supplies. Some business development support is provided to water businesses but there is no significant investment planned by the World Bank in the sector.

AFD is finalising a \$50 million loan with RGC part of which is concerned with the expansion and improvement of public water supply in Phnom Penh. \$15 million of the AFD loan is intended for on-lending to private water operators via a commercial bank (Foreign Trade Bank of Cambodia) and will be contingent on the ability of that bank – with technical assistance from AFD – to develop a new array of lending instruments appropriate to private operator's needs.

The recently completed USAID MSME project successfully piloted a series of partnerships with water businesses to help them overcome some of the financial and technical constraints inhibiting their expansion of water connections. Using a system of investment rebates, payable to water businesses based on the number of household connections on a scale commensurate with the investments required, the project was able to partner with around 26 businesses and connect more than 14,000 households. The average rebate to water businesses was about \$70 for each household connection and covered around 45 per cent of the additional investment costs. The project support – which was provided in a variety of forms – enabled the businesses to reduce their connection fees by half or more.

The NGO GRET has been active in providing technical assistance to private water operators and subsidising the costs of water treatment plants on a relatively small scale, using funds from a variety of donors (including possible funding from Australia through a global WASH grant scheme). GIZ has also recently supported the expansion of private water provision through subsidising the costs of water treatment in two communities covering around 4,000 people. The other major investor in the sector – JICA – is solely focused on public water supply in Cambodia's regional towns.

Estimations of **3i**'s potential results depends on three key factors:

- (1) How much private piped treated water supply will expand to meet demand without **3i** interventions i.e. how much more private investment will occur anyway given the current business climate, along with any minor additional investments supported by other donors;
- (2) How much private investment in piped treated water systems is **3i** able to catalyse, and the total (investment, operational, maintenance) costs of creating additional household and business water connections; and
- (3) How much funding does **3i** have available that it can realistically manage.

In terms of likely expansion of piped treated water supply, as outlined above, we assume that without any further intervention in the sector private piped treated water provision will reach a total of 2 million people in the next 5 years. We also estimate that AFD and JICA support to public water systems in Cambodia's towns will expand piped treated water supply there by 50 per cent. Finally, we estimate that AFD and other NGO support to water businesses could optimistically expand private provision to around 1 million additional people. Given these optimistic scenarios, there will still remain around 6 to 7 million people for whom commercial water provision is a viable opportunity given appropriate stimulus.

The number of people that **3i** can benefit with piped treated water supply depends fundamentally on the amount of private investment in water supply which it can leverage, as well as the costs of extending existing water systems and establishing new ones that connect to households and businesses.

Recent USAID surveys and current fieldwork indicate that the average total investment cost per connected household is around \$200, which includes the costs for the treatment plant and piping infrastructure. Assuming a household is made up of five people this equates to \$40 per person connected. The USAID MSME program was able to catalyse (or leverage) businesses to invest on average 1.3 times the funding provided by the program. However, by its own admission the USAID program was hurriedly established with very tight deadlines to disburse all funds; this would have pressured program managers into making deals with businesses quickly which may well have resulted in a smaller investment from the business than would have otherwise occurred. Indeed, the recent fieldwork involving interviews with numerous water businesses strongly suggested those entrepreneurs were willing to proceed with water investments if a donor could co-invest as little as 10 to 30 per cent of the total investment; this equates to a leverage ratio of between 1:3 and 1:9.

For the purposes of our estimates we conservatively assume that \$1 of **3i** co-investment stimulates a private operators' investment of \$2.5. Assuming an [Omitted] million investment by **3i** in schemes similar to those in which the MSME program invested, **3i** could enable water supply to an additional [Omitted] people. These would be investments in the segment of the water supply market that is 'fully commercially viable water supply possible with some stimulus to encourage investment' (refer Section 6.1.3)

In the market segment where it is only commercially viable if up-front investment costs are subsidised (because householders can only afford the water meter charges but cannot afford the up-front connection costs – refer Sections 0 and 6.1.3), **3i** would also look at ways to subsidise the connection fee for households (the fee payable for the water meter and piping from the street to the house), or provide a subsidy to the overall cost of scheme development. Recent surveys indicate household connection fees range from \$20 to \$50 per household, with an average of \$34. If we use the higher figure of \$50 or \$10 per person, assuming the program subsidised 70 per cent of the connection fee a [Omitted] million **3i** investment would leverage private investment enabling water supply to an additional [Omitted] people.

7.3 Current Investments in the Electricity Sector and Potential *3i* Results

There are a number of recent and current interventions in the Cambodian electricity supply sector. The main supporters to the electricity sector in Cambodia are AFD and JICA. JICA recently provided a \$25 million loan to support the grid extension from Kampt to Sihanoukville. AFD is negotiating a \$50 million loan to EDC to help extend the grid to Koh Kong and Kratie provinces. Another \$10 million from AFD will also be on-lent to private electricity businesses via a commercial bank to enable them to expand operations. This will be contingent on the ability of that bank – with technical assistance from AFD – to develop a new array of lending instruments appropriate to private operator’s needs. No direct support for private electricity business expansion is currently envisaged.

In terms of likely expansion of electricity supply to households and business, as outlined above, we assume that without any further intervention in the sector private electricity supply will reach a total of 7 million people in the next 5 to 10 years. If we assume that electricity provision is not commercially viable for around 1.5 million people at this stage, there are potentially 7 million more people for whom commercially viable electricity supply (covering total costs or only operating costs) is feasible.

Estimations of *3i*'s potential results depends on three key factors:

- (1) How much private electricity supply will expand to meet demand without *3i* interventions i.e. how much more private investment will occur anyway given the current business climate, along with any minor additional investments supported by other donors;
- (2) How much private investment in electricity systems is *3i* able to catalyse, and the total costs (investment, operational, maintenance) of creating additional household and business electricity connections; and
- (3) How much funding does *3i* have available that it can realistically manage.

Based on recent surveys of private electricity schemes that distribute electricity from the grid to between 3,000 and 4,000 households, AFD research into over 80 electricity businesses, and detailed analysis of six of these³⁵, we estimate that the total investment cost per household connected ranges from \$100 to \$250 which equates to an average of \$35 per person.

In the remote province of Ratanakiri, interviews with private electricity (diesel) generator and distribution schemes serving around 250 households indicated that the total investment cost was in the region of \$400 per household or \$80 per person.

Survey data and interviews with electricity business owners consistently indicated that a co-investment of around 20-40 per cent of the total investment from another party would be adequate to trigger their expansion plans. If we assume a \$1 co-investment from *3i* catalyses or leverages a \$4 investment by the business, we estimate that a *3i* [Omitted] million co-investment in a grid distribution business could enable an additional 1,200,000 people to access electricity. A *3i* [Omitted] million co-investment in a diesel generation and distribution business could enable electricity access for an additional [Omitted] people. These would be investments in the market segment which is ‘fully commercially viable electricity supply possible with some stimulus to encourage investment’.

In the market segment where it is only commercially viable if up-front investment costs are subsidised (because householders can only afford the electricity meter charges but cannot afford the up-front connection costs – refer Sections 6.2.2 and 6.2.3) *3i* would subsidise the connection fee for households. Connection fees range from \$40 up to \$150 per household (or \$8 to \$30 per person) in more dispersed and remote locations. Assuming *3i* subsidised 70 per cent of the connection fee a [Omitted] million *3i* co-investment with a grid distribution business would enable electricity supply to an additional [Omitted] people, whilst a [Omitted] million *3i* co-investment with a diesel generation and distribution business in a remote area would enable electricity supply to an additional [Omitted] people.

³⁵ IED, 2013. *ibid*

7.4 Summary of Key Results Expected

Key results likely to be achieved based on the selection of the first two sectors (electricity and water) will include:

- [Omitted] people and businesses gain access to electricity
- [Omitted] people and businesses gain access to piped, treated water
- At least [Omitted] million co-investment in infrastructure leveraged from the private sector

Figure 11. Calculations and assumptions behind result estimates

Assumption: [Omitted] million total project budget. Of this, [Omitted] million is available for investments in water businesses and [Omitted] million for electricity businesses. Of the remaining budget [Omitted] million will cover staff, administrative and other program costs, and [Omitted] million will be used for piloting investment in alternative infrastructure sectors.

Assumption: Each household is made up of five people on average

Electricity

- Total investment cost per household connected to the grid = \$175 per household = \$35 per person (AFD, 2013; Field interviews, 2013)
- Total investment cost per household connected to diesel generation and distribution system = \$400 per household = \$80 per person (Field interviews, 2013)

Assumption: \$1 of **3i** co-investment stimulus with private operators leverages \$4 private investment

Assumption: 70 per cent of **3i** investments ([Omitted] million) are made in grid connection businesses and 30 per cent of investments ([Omitted] million) are in diesel generator businesses in poor, remote areas where connection subsidies of 70 per cent are also required.

[Omitted] million co-investment in grid connection businesses enables [Omitted] people to access electricity. [Omitted] million co-investment in diesel generator businesses in poor, remote areas enables [Omitted] people to access electricity.

Combined total [Omitted] additional people access electricity

Water

- Total investment cost per household connected = \$200 per household = \$40 per person, or \$50 per person if connection fees are subsidised (MSME, 2011; Field Interviews, 2013)

Assumption: \$1 of **3i** co-investment stimulus with private operators leverages \$2.5 private investment (that is, **3i** covers 25 per cent of the total investment)

[Omitted] million co-investment in water schemes enables between [Omitted] and [Omitted] people to access piped, treated water (estimated used = [Omitted]).

Water and Electricity Business co-investment

Recent fieldwork consistently indicates both water and electricity entrepreneurs view further investments as low risk and profitable in the long term. Entrepreneurs considering electricity distribution from the grid envisaged relatively small investments and overheads and expected to turn a profit within three to four years. Water businesses faced greater investment costs and a slower payback period of five to ten years. Whilst neither groups of entrepreneurs were able to obtain loans, interviews consistently suggested that a co-investment by **3i** of between 25 and 40 per cent of the total scheme cost would be sufficient to trigger their investment plans.

[Omitted] million **3i** investment could trigger between [Omitted] million and [Omitted] million co-investment from the private sector.

3i will need to conduct a validation of these potential program impacts during the program inception period. Afterwards such a 'Program Impact Estimate' will be updated by **3i** at least annually.

Depending upon the specific investments and the depth of impact monitoring the implementation team will also monitor additional results and develop associated targets related to the electricity and water sectors, and economic development in general. These will be proposed by the implementation team and approved by DFAT during the program inception period. These might include:

- Megawatts of additional electricity generated
- Health benefits from access to piped and treated water for drinking
- Number of increased jobs created
- Dollars of increased income generated

If more sectors are chosen, additional results and targets will need to be formulated by the implementation team. For example, options might include:

- Time and cost saved in transport travel times for people and goods
- Additional tons of waste recycled and/or processed in Cambodia contributing to X dollars in increased revenue.

8 Approach

8.1 Overview

In recognition of RGC's policy emphasis on promoting and expanding infrastructure provision – including electricity and water – through the private sector, **3i** is designed explicitly to work with businesses. Whilst some aspects of the program will be similar to traditional donor projects in the water or electricity sectors, other aspects will differ. Experience gained through the Australian aid program and other donor programs that work with businesses suggest four areas that require particular emphasis in this design:

1. Flexibility in **3i** operations is vital. Whilst considerable analysis and research has gone into understanding the sectors and how we expect private operators will respond to offers of partnership, there will be some variability in how businesses will respond when a real partnership offer is made. Based on recent experience with businesses in these sectors **3i** can be reasonably confident that there will be no shortage of potential partners, but the most promising partners may take some time to find. Similarly, unexpected opportunities to partner with businesses may present, that require a rapid and opportunistic response. Work plans and budgets therefore need to be flexible and a gradual program start – with the potential to rapidly scale up – is required.
2. Maintaining a portfolio of interventions across more than one sector is an important way to manage risk. Even if **3i** is initially inundated with offers of partnership from businesses, some of these might not eventuate, or might generate unexpected outcomes and need to be terminated. Other partnerships might take off in unexpectedly positive directions, and program staff and resources need to be flexibly deployed to realise the opportunities that these present. Having an array of partnerships on the go at any one time is a powerful way to manage downside risks, as well as upside opportunities.
3. As this is a program driven by business priorities, **3i** needs to be able to work at the pace, use the language, and understand the context of business. **3i** must develop a credible and business-like image in the sector and **3i** systems will need to operate in a business-like manner.
4. Most important of all, **3i** staff require business acumen, an analytical and open-minded approach, and an ability to handle the complexity of negotiating several business deals at once, whilst keeping a firm fix on the risks to achieving intended outcomes. **3i** team recruitment should therefore emphasise these attributes over and above long experience in aid programs.

Being a business-driven program does not mean **3i** will not engage with government or on matters of wider policy; **3i** will certainly seek to do so judiciously. However **3i** will seek to engage and leverage

policy discourse and practice primarily through the businesses and business associations that it works with, as well as through its relationships with other donors such as the World Bank, AFD and JICA.

8.2 Guiding Principles

Acknowledging that **3i**'s strong focus on working with businesses is a relatively new approach for the Australian aid program, it is important that the four key principles guiding **3i** operations and decision-making – additionality, neutrality, sustainability, and value for money – are explicitly laid out and adhered to during implementation.

8.2.1 Additionality

3i's engagement with water, electricity, or any other businesses must lead to development outcomes that would not have happened without the Australian aid program's involvement. In other words, DFAT must be satisfied that it is not funding or supporting something that the business partner would have paid for itself or done anyway.

In practice there are no hard and fast ways to prove additionality because there is no counter-factual and controlled experiments are not feasible. It will be imperative for **3i** to ascertain additionality as part of each business partnership based on reasonable assumptions, grounded in a sound understanding of the business and sector context. This may include collating evidence that a water business wishes to expand operations but cannot obtain financing from banks or other sources, or that it is deemed insufficiently profitable relative to other investments that the business could make. It might also include the program developing a set of additionality criteria and an associated scoring system whereby only certain schemes fall eligible. It is important to recognise the timing aspect of additionality also, namely that enabling household water connections today is more valuable than enabling these in five years' time; so if DFAT support can accelerate investment in water business operations that might have happened anyway in five years' time, that DFAT support is still additional.

8.2.2 Neutrality

3i support for businesses within any given sector must not confer an unfair advantage on one business over another. In other words, DFAT support should be neutral and encourage a level playing field so all businesses have the same opportunities to partner or co-invest, without any unfair advantage or market distortion, and with transparent provision of information to all interested stakeholders.

In practice, it is important to recognise that businesses take risks and invest in the hope of obtaining higher profits and keeping competitors at bay so **3i** will need to strike a balance between fairness and respecting how firms do business. On occasion, it may be necessary for **3i** to work with a specific company and if this is the case it is imperative that **3i** can explain why this is justified and how issues of neutrality have been addressed. For example, to encourage electricity connections in a new but remote area it may be appropriate for **3i** to run a widely advertised competition amongst potential electricity distributors to see which businesses are prepared to co-invest the most with **3i**. Conversely, if **3i** seeks to increase the number of poor household electricity connections within a licenced area, it may not be possible to attract new businesses to compete with the incumbent distributor.

8.2.3 Sustainability

It is essential – as with all development interventions – that the partnership between **3i** and a business or group of businesses can be genuinely expected to result in changes that will persist beyond the period of the partnership. In other words, the additional **3i**-supported water or electricity connections will be maintained and sustained for the foreseeable future.

In practice, it is difficult to be absolutely certain that the connections created will be maintained and sustained, but because business' profitability is directly dependent upon the fee revenue for water or electricity charges, there is a clear incentive for the business to maintain services to households and businesses. Part of **3i**'s modus operandi is to stimulate as much investment as possible by the partner business with as little of **3i** investment as possible; this will generally ensure substantial investment by the business and a strong desire to maintain infrastructure so that revenue collection

can continue. In this regard, **3i** can be generally confident that the changes **3i** is able to stimulate will continue beyond the life of the partnership and the **3i** program.

8.2.4 Value For Money

3i support to water and electricity businesses must always justify the costs involved, and **3i** must strive to pursue those deals with businesses that generate the highest development impacts.

In practice this means that **3i** must develop a portfolio of potential interventions, clearly outlining the expected impacts and the costs involved in each 'business case'. Then investment decisions should be taken – in consultation with **3i**'s Investment Committee – to determine which mix of investments is likely to maximise **3i**'s value for money. It also means that **3i** will need to closely monitor how its initial investments turn out in practice, and then learn from these to focus subsequent investments on those with the highest value for money.

8.3 Partnership Models

Three different partnership models with business are envisaged for leveraging additional private sector investment in infrastructure. Whilst it is not appropriate to specify the precise terms of these models – this cannot be done until the program goes live and begins real negotiations with private water and electricity operators – the feasibility of each has been explored and broad parameters are described below. It is highly likely that Partnership Model 1 is likely to be means by which most expenditure and effort is directed. However, it is not possible to say in advance precisely what the balance of investment might be across the three different models. This will be a program management decision after mobilisation. It is prudent to have multiple partnership models to allow the program to meet the needs of the unique circumstances facing each sector and business, to be able to capitalise on as many opportunities as possible; and to strive for maximum leverage of funding.

A key feature of **3i**'s design is to manage risk through a portfolio approach; this means exploring and establishing an array of interventions in each sector, exploring several partnership models, and initiating the program in two promising sectors – water and electricity – whilst maintaining options to expand into other sectors – such as waste management and transport – as and when opportunities arise and resources become available. Maintaining a portfolio of interventions and partnership models in each sector is a powerful way to manage both up- and down-side risks. Closing down market interventions which are heading 'off track' and expanding those that are exceeding expectations is an essential part of engaging with business to achieve development outcomes.

8.3.1 Model 1 - Co-funding Infrastructure in Direct Partnership with Private Operators

In this partnership model, **3i** will enter contracts with private operators to ensure additional infrastructure gets built, such as new water treatment plants and pipe networks, or electricity transmission structures and household connections. In return the businesses will provide access and services that would otherwise not have been realised. The precise terms of payment will be determined according to the business case for investment, negotiations with businesses and a financial model to achieve the least-cost trigger to additional investment. Typically partnerships might involve **3i** paying a fixed percentage of infrastructure costs (e.g. 10-50 per cent) or alternatively, a fixed fee per connections (e.g. \$40 per household or business). Payment would eventuate after **3i** verifies that minimum service standards (e.g. quantity and quality) have been met. **3i** will typically only put in funding where operators are also providing significant co-funding. **3i** will utilise different types of Output Based Payments; Figure 12 outlines the example used for the MSME project recently.

Output Based Payments (OBPs) are an increasingly common form of aid. This is a results-based payment mechanism under which service provision is contracted to a third party, usually a private sector operator, and subsidies (either one-off, transitional or continuing) are paid to the provider after the delivery of specific outputs. A key feature of OBPs is that payments are made to the business after delivery, not before. It is important to remember that this model will only be offered and negotiated where the profitability of investment is inadequate to trigger private investment unaided; in other words, this model is being used to encourage investment in schemes that are commercially viable but not as profitable as the most favourable schemes.

Figure 12. Examples of Output Based Payments to Water Businesses from the MSME Project³⁶

The USAID funded MSME Cambodia project made Output Based Payments to water businesses based on pre-set construction and equipment costs. To establish those costs, the project team conducted a study of actual construction costs nationwide and designed rebates to reimburse water operators for about 40 per cent of typical and expected costs to expand networks, connect households, and expand treatment facilities. The project allowed combinations of activities depending on what the water businesses needed to meet their objectives.

While actual materials and construction costs varied, contracts were based on the fixed amounts the project would pay once the water businesses achieved specific milestones. This encouraged and created incentives for the water businesses to be efficient in their designs and implementation. All water businesses received payments according to the following formulas:

- New Household Connections

Payments were determined by the number of households connected to clean water multiplied by the fixed rebate per house. Water businesses were free to decide how much of this rebate they would pass on to households. However, as the contract payment scheme was tied to successful house connections, businesses had strong incentives to decrease connection costs and increase connections.

- Water Treatment

Payments for building new treatment facilities or improving existing facilities were based on the size of the new water treatment facility, in terms of cubic meter per day capacity, multiplied by the number of houses connected to clean water.

- Pipe Extension

The project refunded approximately 50 per cent of the cost to purchase and install high-quality pipe to extend transmission and distribution systems.

This approach encouraged the project and water businesses to tailor expansions and determine the total value for each contract. All payments were tied to the number of houses connected. For example, if the first milestone included 20 per cent of the new houses connected, then only 20 per cent of the installed piping and/or treatment payment would be made. This kept pressure on the water businesses to connect houses.

This program has finished and within the WASH sector, USAID is focusing its efforts on hygiene and sanitation, including through private sector partnerships.

The design team found that this type of support would be the most likely to achieve results for the types of businesses operating in the water and electricity sectors, particularly within a reasonable program timeframe. This is as opposed to other options to increase the availability and uptake of investment financing, like trying to facilitate loans through the commercial banking system. This is because many businesses in these sectors are family-owned businesses that are risk averse to asset collateral requirements of banks and are also averse to having loans forming a large source of their finance, preferring self-financing.

The guarantee provided by the OBP mechanism to the water or electricity business providers is likely to strengthen incentives for the businesses to invest and to reduce the connection fees that households are charged, as payments are based on the number of connections. This has been the experience of the USAID MSME project which used OBPs to stimulate an additional 14,000 household water connections (see Figure 12). Payments to water businesses ranged from \$10,000 to \$200,000 depending on the nature and scale of their expansion plans, and many of the businesses reduced household connection fees by 50 to 80 per cent to maximise connections.

This model could also be adapted to incentivise businesses to establish trunk lines, reduce network losses, or establish more environmentally friendly electricity generation. In addition to payments

³⁶ DAI, 2012. Using incentive rebates to grow private water systems: lessons learned.

based on household connections, the MSME project made payments based on the establishment or upgrading of water treatment plants and the upgrading and extension of pipe networks.

This type of partnership could also be used to encourage commercial banks in Cambodia – such as ANZ Royal – to consider water and electricity businesses benefitting from this guaranteed payment more favourably for loans. By providing potential payment guarantees, and linking these to potential lending instruments from the commercial banking sector, **3i** could stimulate wider changes that may benefit partner operators, as well as other businesses in other sectors.

8.3.2 Model 2 - Co-investment with Private Equity and or Social Impact Funds

Around seven private equity and social impact funds have been identified in Cambodia (see Figure 13). These funds aim to bring a positive return to their investors, but vary in terms of profit maximisation and achieving additional social, environmental, or economic growth outcomes for Cambodia. Meetings with two of these funds revealed that private investors have already made investments in water and electricity businesses in Cambodia and have plans to make more of these. Their strategies vary, but typically involve buying a large stake in one or more businesses (including water, electricity, and waste/recycling businesses), strengthening the businesses' internal management and planning to improve profitability and the ability to secure loans, and then helping the businesses to grow and expand. Ultimately the private investors are seeking a financial return on their investment and so Fund Managers are looking to sell their stake after a 5 to 10 year period.

Figure 13. Equity and Social Impact Funds Currently Operating in Cambodia

Company Name	Year operations began in Cambodia	Activities
Emerging Market Investment (EMI)	2010	Private Equity, operating in Cambodia, Laos, and Myanmar
Leopard	2008	Private Equity, operating in Haiti, Cambodia, Laos, Thailand, Myanmar, Bangladesh, and Bhutan
Devenco	2008	Business Consulting and Private Equity
Asia Frontier Capital	2013	Private Equity (Invest in high growth Asian Frontier economies such as Bangladesh, Cambodia, Iraq, Laos, Mongolia, Myanmar, Pakistan, Papua New Guinea, Sri Lanka and Vietnam.
Insitor	2009	Impact investing firm based in Phnom Penh, Cambodia with offices in New Delhi, India and Yangon, Myanmar. Equity investment and debt financing
Arun	2010	Japanese social enterprise focuses on debt financing (its plan is to be a social equity firm in 2013)
Garuna Fund	2012	Impact investing to growth SMEs in Cambodia which have direct and indirect impact on communities in Cambodia. Garuna Project's impact investment program supports businesses that provide economic, social and environmental benefits for area residents. Job creation and production

3i's co-investment with these private equity funds has the potential to leverage these private investments in a number of ways, all of which could accelerate and or expand the total coverage of infrastructure in Cambodia (for an example, see Figure 14). These include **3i** co-investments achieving the following:

1. Simply providing the additional investment necessary to enable a greater number of connections to be made;

2. Lowering the interest rates on loans for capital expenditure projects which can then be leveraged for additional infrastructure investments;
3. Helping to cover the transaction costs of searching for, identifying, appraising, and conducting due diligence on potential investment deals with businesses;
4. Lowering the required financial return on investment of each investment;
5. Lowering the overall portfolio risk, thereby enabling the Fund Managers to extend into more challenging environments or to invest in innovative and more risky approaches to extending infrastructure.

Figure 14. Equity Fund Co-Investment Example

A private Equity Fund is targeting investments in electricity production and transmission businesses in Cambodia. It has identified five potentially promising electricity businesses each of which have apparently robust growth prospects making them a potentially attractive equity investment. These businesses are looking to upgrade their power generation capacity and expand their transmission lines and cannot obtain loans to do so. However, the Equity Fund has limited capital so decides to make just one investment in the sector to ensure an overall balance across the Fund's wider portfolio. However, with the offer of **3i** co-investment the Fund is able to invest in two additional electricity businesses, thereby accelerating electricity coverage.

Alternatively, the **3i** funds are used by the Fund to cover the costs of detailed feasibility studies on all five businesses. These confirm the strength of the business case for investment in four of the five electricity businesses; armed with this robust information, the Fund Managers are persuaded to invest in the four businesses.

While the Aid Program continues to explore the potential of different financial instruments beyond grants – such as loans, equity and other forms of returnable capital – this partnership model enables DFAT to engage more closely with such instruments but still through a conventional grant aid vehicle.

8.3.3 Model 3 - Catalytic Interventions to Address Infrastructure Market Constraints

Analysis to date indicates a range of reasons why businesses are hesitating from making initial or additional investments. Most commonly, this is due to a lack of access to appropriate financial instruments, but other issues also influence and impinge upon the decision as to whether or not to invest. A lack of information about the feasibility of a new or expanded scheme is a frequent barrier to investment - for example information on the socioeconomic profile and likely demand of potential customers within the licence area, or the technical challenges of laying and maintaining water pipes in areas with frequent road construction activity. The short duration of licences (currently three years for water licences), the opacity of the licensing process, and the transaction costs involved in obtaining a licence also present additional risks to water and electricity business expansion plans.

Innovative partnerships between **3i** and businesses or other actors, or certain kinds of research and analysis might have the potential to overcome some of these barriers and catalyse investments that would not have occurred otherwise. This approach has been successfully deployed by the CAVAC program to catalyse new investments by a range of Cambodian businesses. As with CAVAC, great care would be taken to ensure any **3i** support was stimulating investments that are truly additional – that is, investments that would not have occurred anyway – and that **3i** support did not confer an unfair advantage on one business over another – that is, the offer of support is made available to all businesses as appropriate.

The kind of interventions that **3i** might undertake will be determined by the nature of the barrier to investment. For instance, the program could provide technical assistance to businesses to help them research, identify, and assess potential investments, or explore innovative approaches to water or electricity distribution and management. **3i** might also provide technical support to the business associations in each sector to help them better communicate with members, advocate for policy change. One particularly likely intervention might include arrangements whereby **3i** co-finances the costs of a water scheme's feasibility study to enable competing businesses to make a more informed choice about whether or not to invest. This is particularly relevant because the RGC is considering

changing the process by which licences are allocated, including the use of tendering. With regards electricity, the program might be able to help enable private operators to consider cleaner and potentially cheaper options for off-grid generation than diesel.

Some solutions under this modality might be made by collaborating with relevant government entities and/or other donors in the sector. This might include attempts to address policies or regulations that are specific barriers to greater private sector investment in infrastructure. This is sometimes referred to as improving the Business Enabling Environment. If the program were to consider such interventions, a clear link would need to be made to increased infrastructure investment and benefits for households and businesses.

Figure 15. Example of a Catalytic Intervention with a Water Business

A water business owner is considering upgrading her treatment plant and expanding service coverage. The owner has heard of some new technologies and equipment that may reduce water filtration costs and result in cleaner, safer water but does not know who to contact about it and is concerned about the costs that may be involved. **3i** is able to assist the owner to research and analyse several suggested alternative technologies and then negotiates to share the cost of the feasibility study of applying the technology at scale. This collaboration then extends to supporting the business to develop a full business plan that enables the business to secure a commercial loan for the investment. Over the following year, two other water businesses who were made aware of the innovation by **3i** adopt the technology as they upgrade their water treatment plant.

Following these investments, **3i** is again approached by the same businesses keen to extend their connections to all of the households including the poorest ones in their catchment area. **3i** works with all three businesses to trial the use of transitional subsidies for poor households that cannot afford the full connection fee.

The key element of this partnership model is the need for flexibility. The **3i** implementation team will need the flexibility to rigorously analyse the underlying constraints to business expansion, formulate ideas and negotiate 'deals' with first mover businesses, group of businesses or other actors who can influence business investment in infrastructure.

8.4 Governance and Management

A Governance and Management structure with five defined entities is proposed for **3i** that provides a robust risk management framework, whilst encouraging creativity, a business-like approach to the pursuit of program objectives and high prospects for additionality (see summary in Figure 16). The Program Board and DFAT will regularly monitor the effectiveness, efficiency and risk management capacity of the governance and management framework throughout the program cycle but especially in the first year of implementation, and make changes where necessary.

8.4.1 Program Board

Overall governance of the program will be provided by a Program Board. Primary responsibilities of the Program Board will be: (a) approving procedures and other reports from the inception period, (b) reviewing 6-monthly progress reports and (c) approving Annual Work Plans. Should **3i** wish to venture into any additional sectors or trial new partnership models, this will also require approval by the Program Board. In its meetings the Program Board will examine **3i** processes, development of the partnership/investment portfolio, and provide advice and guidance to **3i** where necessary, such as on risk management. The Board will also ensure that lessons learnt by **3i** and other Australian-funded initiatives are incorporated.

The Board will normally meet every 6 months, but additionally as required. The Board will be co-chaired by the RGC counterpart (proposed to be the CDC) and the Counsellor (Development Cooperation), Phnom Penh Post. The Program Board will incorporate individuals with expertise in

infrastructure, private sector development and other relevant sectors drawn from relevant sections with DFAT in Canberra and elsewhere.

8.4.2 Investment Committee

Decision-making on the choice of investments and partnership modalities under this program will involve a delicate balance. On one hand **3i** must be able to quickly seize opportunities and work at the pace of the private sector. On the other hand, **3i** must also take care, put in place sufficient procedures and seek expert input to investment choices.

The Operational Contractor will have ultimate oversight and responsibility for **3i** activities from a technical, financial, managerial and risk management perspective. For decision making about investments and partnership modalities the Operational Contractor will therefore need to put in place an appropriate set of procedures, including for due diligence. After all potential partnerships and investments have undergone all necessary checks they will need to be put for approval by an Investment Committee.

This Investment Committee would be established by the Operational Contractor and funded through the program budget. It would include senior **3i** staff in -country, as well as head office Contractor representatives as appropriate. The majority of its members would be external (non-staff) with expertise covering investment and business financing, especially in Cambodia, along with relevant sector knowledge (primarily electricity and water). It is expected that such individuals would be drawn largely from the private sector, but some may have familiarity with donors and development programs. A very important determinant for selection of external members would be their ability to be able to provide regular and timely inputs. It will also be important to ensure that members are chosen who are not likely to present a major risk to the security of commercial-in-confidence material, and that they have no major conflicts of interest, or that these can be managed.

DFAT will be consulted about possible Investment Committee members, will approve members proposed by the Operational Contractor and will reserve the right to appoint members on its own. DFAT will also approve Terms of Reference for the Investment Committee approved by the Operational Contractor.

Once approved by the Investment Committee, partnerships and investments over \$100,000 will be referred to the DFAT for approval within one week of any request made. DFAT will only look to ensure selection, due diligence and other internal approval procedures have been followed, and will not seek to independently evaluate the merits or risks of particular investments.

For the first round of investments, in addition to approval by the Investment Committee, approval will also be sought from the Program Board. Thereafter, approval will only be necessary from the Investment Committee (and DFAT for agreements over \$100,000).

8.4.3 Consultative Committee

The Operational Contractor will set up and manage a Consultative Committee. Membership of this Committee will include interested and relevant Government line ministries and agencies, key donors working in similar sectors and other stakeholders as deemed appropriate. The Committee will have no approval or decision-making power, but will be provided information and asked to provide input on the methods and progress of **3i**, particularly as part of the Annual Work Plan process. The timing, formality and other arrangements for the Committee will be negotiated by the Operational Contractor and the DFAT and then implemented by the Operational Contractor with DFAT's assistance.

8.4.4 Implementation Team

In recognition of the particular emphases required in this program, the accent in team composition and skillsets is on familiarity with business processes and culture and analytical capability. Potential contractors will be asked to propose an appropriate mix of international adviser positions but this will definitely need to include individuals with (a) Financial and (b) Procurement/Administration expertise.

There is likely to be a limited number of suitably qualified Team Leaders most suitable to manage such a cross-sectoral program. Accordingly, to ensure the best Team Leader candidates are not locked into proposals by specific bidders, the first Team Leader will be chosen by DFAT, but contracted to the program by the Operational Contractor that is chosen by DFAT. The selected Team Leader's Curriculum Vitae will be made available to potential bidders during the tender process.

In addition to team leadership skills, the Team Leader is required to have experience of managing development programs involving the negotiation of partnerships with businesses in a developing country context and of market-based approaches to development. Given the array and potential complexity of the financial elements of each partnership model, the Financial Adviser requires practical experience of negotiating, establishing, and managing a variety of financing arrangements – including loans, equity, and other forms of returnable capital – with businesses and investors, ideally in a developing country context; familiarity with venture capital funds would be desirable. The Procurement/Administration Adviser will be primarily concerned with the fiduciary aspects of all deals made with businesses or investors, and their adherence to DFAT, Cambodian and global best practice standards; experience of procurement on programs similar to **3i** would be desirable.

The core of the implementation team will initially comprise around 6-8 locally engaged Market Analysts. These staff will require strong analytical and investigative capabilities and inquiring minds; they will most probably have some work experience in the private sector. More Market Analysts could be hired if the portfolio expands and/or if additional sectors are incorporated into **3i**.

Locally engaged water and electricity expertise will provide technical inputs into financial and technical feasibility assessments, support environmental and other risk assessments, and keep the team abreast of potential innovations in each sector. This will be complemented by short term international water and electricity expertise. These international experts will provide quality assurance and ensure innovation from other countries benefits this program. Technical specialists for other sectors incorporated into **3i** will be hired – at least initially – on a short term basis. A locally engaged Monitoring and Evaluation Expert will provide monitoring and results measurement support to the analysts and other team members responsible for supervising the progress of each intervention in the portfolio. Expertise in environmental issues, gender and social inclusion will also be sourced periodically to support the core implementation team. Finally the team will include necessary administrative support staff.

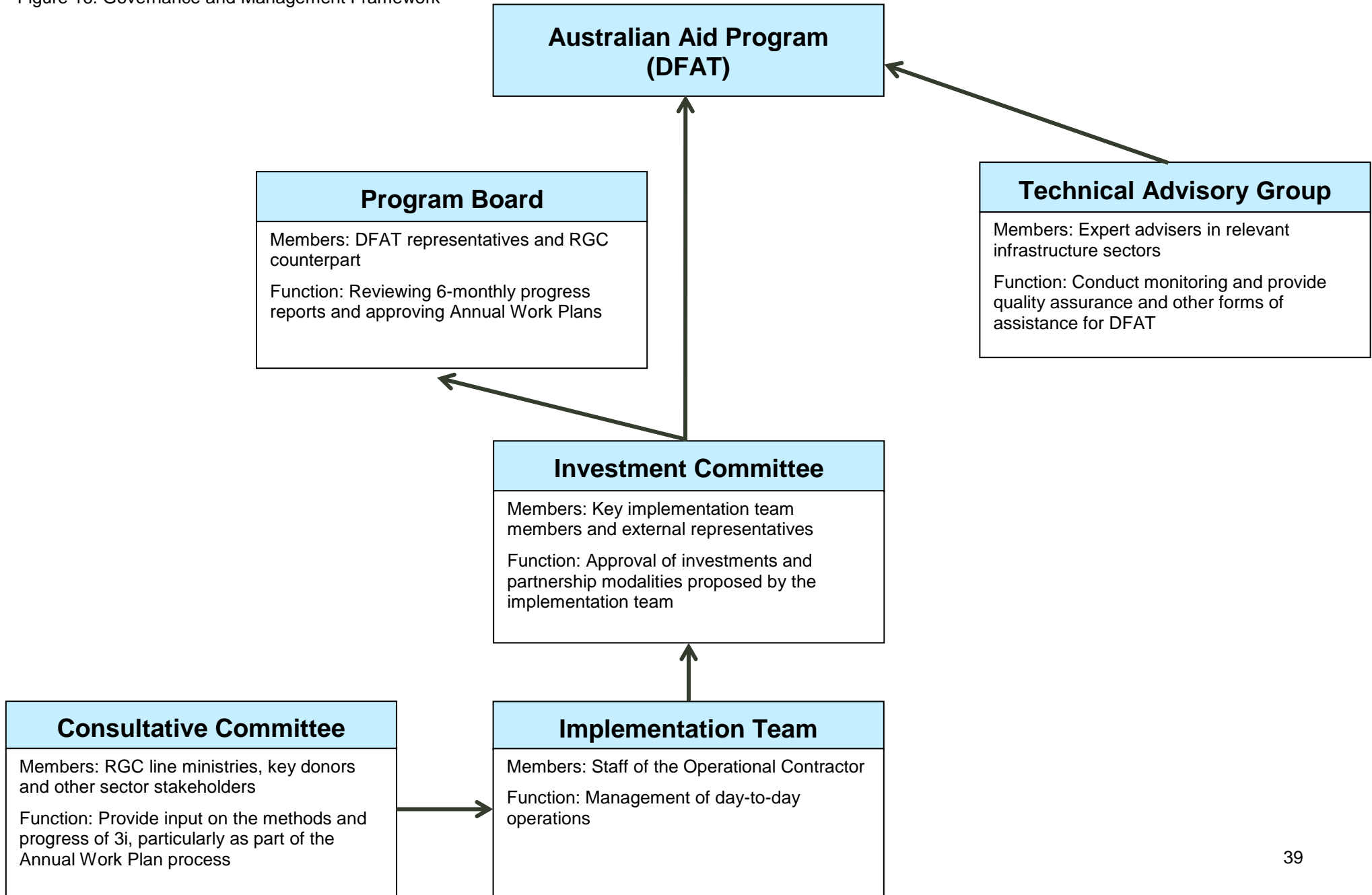
It is expected that **3i** will have a national geographic focus so that it can identify and select those potential water and electricity investments that will generate the greatest value for money. Given the widespread current gaps in water and electricity access, there is no case to focus the program on any particular geographical region or set of provinces. The implementation team is therefore expected – initially at least – to operate from a base in Phnom Penh with extensive field travel. If over time **3i** effort becomes concentrated in particular regions, the case for establishing one or more regional program offices will be revisited.

8.4.5 Technical Advisory Group (TAG)

The approach for **3i** outlined in this design document builds on other programs, but in many ways is relatively new and innovative for DFAT. It is therefore proposed that a Technical Advisory Group (TAG) is set up to conduct monitoring and provide quality assurance and other forms of assistance to DFAT. The TAG would be set up, managed and funded directly by DFAT, whilst the Operational Contractor would provide logistical support, including for any in-country missions. The TAG will probably be more active in the early years of the program and reduce its involvement over time if the approach proves successful.

Terms of Reference would be written by DFAT. The TAG would report directly to DFAT, but **3i** would need to respond to recommendations provided in TAG reports at DFAT's direction. Aside from the above-mentioned duties, the TAG might be utilised to provide input into different technical documents, progress reports and other established management and governance processes where a specific role is identified during implementation.

Figure 16: Governance and Management Framework



8.5 Key Implementation Issues

There are a range of issues related to infrastructure, private sector development and effective program management that **3i** will need to take into account during implementation.

8.5.1 Market Analysis

3i's operations need to be underpinned by frequent, in-depth analysis of the markets in which it will work and related support markets. For example, **3i** will need to understand which public and private stakeholders play what role in the provision of infrastructure, what incentives exist for each actor, how providers and consumers and regulators interact with each other, who pays for what (formally and informally), how are decisions made that affect both business and regulations. This list is far from exhaustive, and the **3i** team will need to spend considerable time and resources to build knowledge of each relevant infrastructure market and support markets (like financial and capital markets).

Methods for this analysis will be determined by the **3i** team, but will likely include a range of techniques including surveys and focused interviews. Where possible **3i** will use data from, and cooperate in data collection and interpretation with other donor-funded programs, like those of WSP and AFD. **3i** will need to recruit a suitable group of local and international staff with the kinds of skills to undertake this kind of data collection and analysis. Where necessary, **3i** will outsource some data collection and analysis.

Initial analysis should culminate in the development of Sector Strategies. These Sector Strategies will include background on key issues, stakeholders and regulations, and an outline of the strategy **3i** will take to partnerships, investment and other activities in each sector. Sector Strategies should be conducted for each relevant infrastructure sector targeted by the program, initially water and electricity. As well as developing a very sound picture of markets at the start of the program, the **3i** team will need to ensure it monitors and updates its sector knowledge regularly, including through updating the formal Sector Strategies.

8.5.2 Due Diligence on Potential Business Partners

As with all development interventions, engaging with business entails risk and requires due diligence. Typical challenges include vetting a potential business partners to ensure that individuals/businesses don't have a reputation of illegal or antisocial behaviour, thus posing reputational risks to the Aid Program. There are also potential fiduciary risks that **3i** funds may not be used for the purpose intended or properly accounted for by a business partner. **3i** could find itself committed to a deal with business that turns out not to have the capacity or commitment to deliver.

Ultimately the Operational Contractor will need to devise its own due diligence procedures. However, some key risks will be managed through the following:

1. The **3i** approach emphasises in-depth analysis of the sector and the businesses in that sector by a team selected for their analytical and investigative capabilities and 'business savvy'. This emphasis on gathering market intelligence and probing the motives of individual businesses provides a sound basis for robust management of all the risks described above.
2. **3i** will explicitly exclude businesses that have a proven reputation of undertaking illegal or antisocial behaviour, or activities that contravene environmental protection laws and regulations. Where **3i** obtains intelligence to suggest potential business partners pose a major reputational risk to the Australian Aid Program any proposal will be cancelled or referred to the Investment Committee for advice.
3. The **3i** partnership models are generally geared to payment on delivery which diminishes the risk of payments being made to partners that cannot deliver. The OBP model where **3i** payments are made to firms once household connections are verified ensures delivery before payment. Activities under Modality 1 will involve agreements with individual businesses founded on an in-depth analysis of the business partner's capability and motives; these deals are almost always

structured so that **3i** payments are made after the majority of investment is incurred by the business partner. Activities under Modality 2 will generally involve **3i** making supplementary investments that leverage or otherwise influence a much larger, already committed, private investor commitment. Private Equity Funds will go through their own high levels of due diligence on behalf of their investors, which will provide additional levels of vetting and risk mitigation for DFAT.

8.5.3 Targeting and Market Segmentation

The focus of **3i** interventions will be on engaging the private sector to provide electricity and water infrastructure services to households and businesses that would otherwise not be served. Such households and business might be within an existing licence area, but where their locality (e.g. village) is not serviced; in unlicensed/unserved areas; or in new licence areas.

3i will selectively conduct market segmentation analysis to enable it to better understand which locations to target its investments in new infrastructure, in order to ensure additionality. Market segmentation will build upon the following model of four market segments. However, the boundaries between these four market segments are not sharp, and change over time.

1. **Fully commercially viable locations** – these areas will have sufficient resources and customers with a willingness and ability to pay for the full investment and operational costs of a private piped treated water/electricity supply scheme without assistance. In other words potential business operators would be able generate sufficient revenue in these areas to make an adequate return on her initial investment and maintain it in perpetuity without a subsidy. These areas are typically located relatively close to water sources or national electricity grid lines. **3i** will not target this market segment as private investments could reasonably be expected to occur anyway within the next 5-10 years and no additionality would be realised from **3i** investment here.
2. **Commercially viable locations if a limited investment subsidy is provided (under 50 per cent of investment costs)** – these areas contain customers with a willingness to pay standard ongoing user fees, but the up-front investment required is a bit too high such that business operator could not generate sufficient revenue from these areas to make an adequate return on their initial investment and maintain it in perpetuity without charging high connection fees and/or higher than feasible user fees. With some additional co-investment, stimulus or support, which could be for up-front costs and/or connection fees, the business operator would be able invest and provide a profitable and sustainable utility service. This is **3i**'s core target market, yielding high levels of additionality with minimum subsidy/investment.
3. **Commercially viable locations only if investment costs are largely or fully subsidised (over 50 per cent of investment costs)** – these areas are those where customers would only able to afford the water/electricity meter usage charges (equivalent to the business operator's ongoing operational and maintenance costs) but could not afford anywhere near a large enough contribution to the investment costs of a private piped treated water/electricity supply scheme to get it started (through higher connection fees and/or user fees). In order to stimulate sustainable water/electricity service provision, substantial co-investment with the business or a large connection subsidy for the customer will be required to help cover the up-front investment costs. This market would also provide high additionality, and **3i** may therefore target such locations, but these locations will be of secondary importance to those where the investment subsidy is lower.
4. **Non-commercially viable locations** – analysis by the design team indicated that in most locations, there would be enough customers with sufficient capacity to afford standard user fees, if a service was available. However, there may be some locations where potential customers would be unable to pay even for user fees let alone contribute to the investment costs of private piped treated water/electricity supply schemes, making this a small but distinct market segment. This fundamentally undermines any potential sustainability of such schemes. For these locations, an increasingly small number of places, often the very poorest in remote areas, there is no likelihood of private investment in sustainable schemes until their incomes improve. **3i** will not

target this market segment as this is the domain of RGC-funded and subsidised schemes, or NGO schemes with ongoing funding able to cover operational costs.

Within each of the above market segments there is also likely to be a spectrum of household abilities to pay user fees and/or connection fees that can also change over time. This can be impacted by a wide range of factors including household composition and incomes. As Cambodia's rapid growth continues, fewer and fewer households will not be able to afford to purchase services, where they are available.

Early in the implementation phase the **3i** team will validate and refine this market segmentation model. As part of its early and ongoing market analysis, **3i** will also develop an agreed methodology – most likely using proxies – to quickly ascertain which locations fall into which of the four market segments. Similarly, **3i** will try to develop models to understand which proportion of households within a proposed area have a capacity to pay user fees and/or connection fees and at what cost. It is expected that this approach will be refined during throughout the program period.

8.5.4 Integration of Cross-Cutting Issues

3i activities are expected to generate positive benefits for socially excluded groups such as people with disabilities, women and the elderly. For example, easier access to water and power can permit people with disability to undertake more home-based activities and initiate income-generating activities. Women and children who typically have the responsibility to collect water will no longer have to spend so much time doing this, nor face associated risks of travelling to fetch water. Positive sanitation impacts associated with piped treated water supplies are also expected to reduce the family health burden that usually falls on women, and access to electricity may open new income-generation avenues for women.

It is difficult to predict the exact nature of the impacts of improved access to water and electricity on women, people with disability and other socially excluded groups. Female-headed households are amongst the poorest and least likely to be able to afford water or electricity connections. However, the program will need to try and anticipate what the social impacts of the program might be, and to establish monitoring systems that can verify what impacts actually arise. The **3i** team will be responsible for incorporating these considerations into feasibility assessments, intervention design, and ongoing monitoring and corrective action when necessary.

The overall net environmental impact of **3i** is expected to be highly positive, primarily through the expanded use of 'clean' grid electricity replacing 'dirty' diesel power generation. However, the construction of water treatment plants and piping systems, the use of water treatment chemicals, and the construction of electricity distribution systems all present potential environmental hazards. Other environmental issues concern the sustainability of water and groundwater supplies, and arsenic contamination of groundwater.

3i will ensure environmental issues are appropriately assessed and managed. To do this **3i** will develop an Environmental Management System (EMS) during the program inception period. This EMS must be consistent with the DFAT Environment Management Guide for Australia's Aid Program, which includes reference to climate change, disaster risk reduction and DFAT's legal responsibilities under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The **3i** EMS will specify when environmental impact assessments will be conducted and environmental mitigation/management plans created.

3i may use a mixture of internal and external advisers (local and international) to assist it manage environmental issues, but it will be the responsibility of the **3i** team to ensure any environmental management plans are executed.

8.5.5 Gender

The Australian aid program identifies gender equality as a critical cross-cutting theme. Gender equality is central to economic and human development and to supporting women's rights. Equal opportunity for women and men supports economic growth and helps to reduce poverty. Of the four pillars to Australia's

Gender Strategy, the most relevant for this program is No. 3, 'empowering women economically and improving their livelihood security.'

New infrastructure can have both positive and negative impacts on gender equality. Programs cannot assume that men and women will benefit equally from infrastructure. Due consideration must be given to existing patterns and how new infrastructure might impact economic and social norms. Positive impacts might include freeing up time from laborious and/or dangerous tasks like collecting water, or allowing women to be able to work from home because of access to electricity. However, these and other benefits are contingent upon the new infrastructure being affordable, well-designed, appropriately controlled, and accessible for both men and women. Gender can be considered at many points during the construction of infrastructure including planning, feasibility studies, design, construction, operation and maintenance.

8.5.5.1 Gender and Water

Women frequently have a central role in the collection or acquisition, transport and management of household water. More often than not, women are also the primary users of water in the home. As a consequence, women tend to benefit more when water services are improved. Improved water is a concept that includes many things from a well-and-pump system, to fully treated, piped systems.

Access to piped, treated water has great potential to improve gender outcomes and gender equality. It can help women reduce the significant amount of time and physical effort required to collect and carry water to and from standing water sources, or pumping systems. It can help improve their health by providing higher quality drinking and cooking water, or enabling better sanitation infrastructure. In certain circumstances it can enable women to undertake additional or alternative income-generating activities from, or close to the home where previously they might have had to travel, or miss out altogether. It can also increase safety and lessen the risk of sexual harassment and assault by reducing the time and distance spent obtaining water away from the home.

For this program, the choice to scale-up existing patterns of private sector water provision mean that the program will not have such a strong focus on the intersection between gender and governance of water schemes. This is a matter for the private sector operators and is therefore unlike many donor-funded programs in the sector that must consider representational issues with water user groups.

8.5.5.2 Gender and Electricity

Access to, or improved access to modern electricity services has great potential to improve gender outcomes and gender equality. Electricity can allow women to reduce the time and cost typically spent accessing more basic forms of energy (like wood, kerosene, generators or batteries). Electricity can enable the provision of lighting which makes travel outside the home safer, and can allow activities to be done at night where they could not so easily before (e.g. reading). Electricity can enable women to undertake additional or alternative income-generating activities from, or close to the home where previously they might have had to travel, or miss out altogether. Electricity can also allow women to access additional media and information through television and radio where previously this might have been limited. Electricity can help improve women's health outcomes by reducing the amount of time spent cooking with fuels, especially indoors where it can negatively impact the respiratory system. Electricity can help free up women's time by reducing the amount of time spent on time-consuming household and manual activities and by allowing them to utilise new technologies (for example in food preparation).

For this program, as the focus of support for electricity infrastructure will be on increasing the number of households and businesses connected, consideration will need to be given to how this might be different for female headed households or businesses. For example, the possible impacts on getting connections, ensuring payment or fixing technical problems.

8.5.5.3 Gender in Implementation

This program is designed to indirectly benefit women and men by working directly with businesses. Because the program will typically not have a direct relationship with its target beneficiaries, it will

sometimes have difficulty in directly controlling gender equality issues that concern private sector management. This is because most private infrastructure businesses will have little understanding of, or interest in gender issues.

However, there are things the program can do to ensure a ‘do no harm’ approach. By actively considering gender throughout the program cycle, it should be able not only to ensure equitable benefits for men and women, but improve gender equality. Key junctures in the program cycle for consideration include market analysis, investment selection and program monitoring. Where opportunities arise to address key gender constraints in conjunction with electricity or water supply expansion, such as women’s access to finance, **3i** will explore mechanisms these where there are strong prospects of sustainability.

Gender analysis will be undertaken as a part of the rigorous market analysis that will take place in the early stages of program implementation. It will be beneficial to do this, as opposed to a stand-alone exercise, as the market analysis envisaged for this program will already need to be something that integrates economic, technical and social factors. Likely priorities for this gender analysis include:

- Understanding the capacity of program partners with regards gender considerations. This primarily means the private sector operators of electricity and water networks.
- Assessing the existing situation as regards gender interactions with infrastructure
- Early identification of possible positive and negative impacts of new infrastructure
- Ongoing review of gender issues that might help improve program objectives (e.g. maximising the number of household connections)
- Ongoing review of gender-based risks or constraints that might impact achievement of program objectives
- Continuous exploration of opportunities to improve gender equality or Women’s Economic Empowerment

Thought must be given to both how men and women relate to (a) existing infrastructure; and (b) possible new infrastructure (see sample analytical questions in Figure 17).

Figure 17. Sample Questions for Gender Analysis

Issue	Example
Roles and responsibilities	Who is responsible for collecting water, or charging batteries, buying kerosene? How would new infrastructure change responsibilities of men or women, including changing power dynamics?
Time allocations	How much time is spent collecting water or waste, travelling on transport networks? How much time would be saved by adding a household connection? Whose time could be saved?
Location and Accessibility	How far away from the family home are services now? How might this change with new infrastructure?
Usage knowledge	Do men and women know how to use existing infrastructure services, or new infrastructure?
Social and Cultural	Are there any social or cultural norms which impact on men and women’s interactions with specific infrastructure? How might these impact the use of new infrastructure?
Control and Governance	Do men or women control existing infrastructure? If new infrastructure was built, would this change (either positively or negatively)? Are there any group-based governance mechanisms of existing or new infrastructure and what role do men and women have in these groups?
Economic and livelihoods	What economic activities do men and women undertake under existing circumstances? How might this change with different types of infrastructure available?
Health and Safety	Are there health and safety issues of existing or new infrastructure that affect women and men differently?

When it comes to water, analysis must be directed at understanding the specific water needs of men and women (such as drinking, bathing, sanitation, cooking etc.). As the focus of support for water infrastructure will be on increasing the number of households and businesses connected, consideration

will need to be given to how this might be different for female headed households or businesses. For example, the possible impacts on getting connections, ensuring payment or fixing technical problems. Similar kinds of considerations will need to be made for the electricity sector, or other potential sectors analysed by the program team.

Gender Analysis in the program's early stages will contribute to the development of Cross-Cutting Issue Action Plans. One of these will be completed for each infrastructure sector in which the program operates. In the early stages this will be for the electricity and water sectors only, however more may be necessary if at a later stage the program moves into other areas. These plans will specify the actions the Operational Contractor will take throughout the program cycle, including the inputs of specific staff and advisers. Effort must be made to ensure these plans are followed, including by making the operational contractor and management positions accountable for their delivery. These plans should also be reviewed and updated periodically.

The gender analysis should be used to inform development of the M&E Plan. In particular, this will include informing development of an appropriate set of gender-sensitive indicators. Naturally, this will also include ensuring where appropriate sex disaggregated data. Some indicators for the implementation team to consider include:

- Numbers of women and men able to access improved water and electricity services
- Ratio of female-headed households or businesses with increased access to water or electricity services
- Number of women and men taking up additional/alternative income generating activities
- Number of women and men employed by private sector electricity and water operators
- Reduced time taken for women and men to:
 - a) access water
 - b) obtain electricity services
 - c) complete regular household or business-related tasks (e.g. cooking)

Based on the gender analysis **3i** will explore appropriate methods to ensure better gender-sensitive outcomes. For example, **3i** can learn from the experiences of other programs like "Power to the Poor" in Laos, which was also funded by Australia. This program helped households that were female-headed or included people with disability to access electricity connections, through subsidised credit using revolving funds. A voucher system was used to defray the cost of electrical grid connection and the loans repaid by households at zero interest through higher monthly electricity charges over a period of three years.

The program will engage appropriate gender expertise in order to be able to undertake the above-mentioned tasks. The program implementer will need to consider a mixture of in-house and on-demand gender expertise. There will be a designated individual within the program implementation team with responsibilities and performance measures focused on ensuring positive gender outcomes. It will also be important to ensure all program staff have a basic understanding by of key gender considerations.

8.5.6 Monitoring and Evaluation (M&E)

3i will develop a Monitoring and Evaluation Plan and associated monitoring systems in the program inception period. The M&E Plan of **3i** will adapt and apply the DCED Standard for Results Measurement³⁷ to promote process and output monitoring in real time thus ensuring effective program management, and credible estimates of program results. This will include subjecting the program to mock and full audits against the DCED Standard. Key elements of the DCED Standard include:

1. Articulating the Results Chain or program logic
2. Defining indicators of change based on the logic
3. Measuring changes in indicators, applying good practice
4. Estimating attributable changes
5. Capturing wider changes in the system or market
6. Tracking associated program costs
7. Reporting results in a responsible way

³⁷ <http://www.enterprise-development.org/page/measuring-and-reporting-results>

8. Managing the system for results measurement

The M&E Plan will be updated as necessary throughout the program cycle. In particular, it will need to be updated if other sectors beyond piped treated water and electricity are added to the **3i** portfolio.

As noted in Section 8, at least one locally engaged M&E expert will provide dedicated monitoring and results measurement support to the program. This will likely be complemented with short-term inputs from an international M&E adviser. Whilst **3i** will have dedicated M&E staff, **3i** will also ensure that all of its staff understand the importance of M&E, are involved in data collection and interpretation, and use monitoring data to improve program performance. To ensure program monitoring is regularly utilised to improve program performance **3i** will develop and maintain a strong staff culture of reflection and learning.

Different kinds of monitoring will be conducted by various program stakeholders. This will include:

1. Monitoring by the **3i** team – The **3i** team will conduct the majority of program monitoring. This will include monitoring each intervention (partnership with a business or investor, or other activities under Modality 3) to ascertain how the business plan is being executed, if the partner is fulfilling its commitments, if unexpected environmental or social issues require additional measures, and whether the expected connections are likely to be achieved or if any adjustments are required etc. **3i** will monitor partners to verify not only that infrastructure is built, but that minimum service standards (e.g. quantity and quality of water or electricity supply) have been met. **3i** will closely monitor developments and changes in the water and electricity sectors and related support markets such as financial and business development services; in other words it will maintain a high level of market intelligence. **3i** will monitor results and outcomes in line with the program logic.
2. Monitoring by partners – This will include monitoring of connections and other indicators by private sector infrastructure operators. This might also include monitoring by Private Equity or Social Impact Funds. Under Modality 3 it might include monitoring by other sector stakeholders who are engaged by **3i**. Where **3i** relies upon monitoring by partners, appropriate verification by **3i** should be undertaken.
3. Monitoring by DFAT and TAG – DFAT staff will monitor program implementation by the **3i** team. This will be conducted by Post staff, and through the Program Board. The TAG will, at DFAT's direction, monitor particular aspects of **3i** and report this to DFAT.

Monitoring of results and outcomes by the **3i** team will principally be concerned with tracking the following:

- Number of additional water or electricity connections that **3i** co-investments enable
- Access to other forms of infrastructure provided (depending upon sectors chosen)
- Private sector funding leveraged
- Secondary outcomes as agreed with DFAT. This might include things like: (a) reduced cost of utilities for households and businesses; (b) changes in water and electricity consumption over time; and (c) Better health outcomes from improved water and sanitation (see Annex1 for additional possible outcomes).

The principal unit of calculation will be connections, which will typically be 'household connections' and 'business connections'. However, **3i** will extrapolate these figures using average household size data to estimate the number of 'people' connected. Besides monitoring the total number of additional water or electricity connections **3i** will ensure that such data is sex-disaggregated, particularly to monitor the number of female-headed households or businesses connected. **3i** will also need to ensure that it monitors access to infrastructure across time. For instance, **3i** will monitor the potential and actual number of beneficiaries connected annually for each piece of infrastructure supported, and the number of connections that are still functional two years after original connection.

There will be some challenges in the monitoring process. In particular, **3i** will need to rely in part on information collected and provided by others, particularly private sector partners. These partners may not

be interested in, have experience with, or be comfortable with collecting and sharing some of this data, particularly information on poverty, gender, and revenue/profit. **3i** will need to agree suitable terms with partners to get the information it needs. **3i** may also have difficulty obtaining data from private equity or social impact funds, and other stakeholders involved in activities under Modality 3.

In addition to ongoing monitoring, **3i** will collate information and devise appropriate methodologies to deepen understanding of **3i**'s contribution to economic growth and its impact on other higher-level development outcomes. Some of the additional studies proposed include:

- A study to better understand the link between the availability of infrastructure services, and income generating activities. This will likely involve tracking household behaviours and investments, as well as business growth and start-ups following connection.
- A study of the effects of water and electricity connections on gender relations and the distribution of benefits across different social groups, including people with disabilities. This will be informed by early and comprehensive market analysis and could be combined with efforts to track changes in household water and electricity consumption over time.
- An estimation of the additional private sector investments that **3i** funds have leveraged. This could comprise a simple calculation of the funds leveraged, but may also be combined with an attempt to more rigorously determine the *net* effect on private investment of **3i** activities. This involves more complex attempts to determine how much of the additional investment that was catalysed was genuinely additional – that is, would not have taken place without **3i** support – and how much, if any, potential private investment was displaced – that is, where **3i** support actually *discouraged* additional private investment.

At least one independent evaluation of the program will need to be conducted during its implementation in accordance with DFAT guidelines. **3i** will provide assistance for any evaluations as requested by DFAT.

9 Budget Summary

9.1 Initial Budget

Omitted

9.2 Scalability Review

Analysis conducted to support this design indicated significant potential for increased funding and partnerships within existing and additional infrastructure sectors. Based on current country budget allocations, there may be scope for additional funding to be provided to **3i** in line with existing infrastructure sector expenditure. **3i** has therefore been designed to accommodate flexibility in its budget and timeframe.

Figure 18. Simplified 5-year program budget and milestones

3i Program Year	Key Activities and Milestones	3i Budget (A\$ million)
1	<ul style="list-style-type: none"> • Program establishment, team building, develop program procedures, establish governance committees • Update sectoral analyses and business research to re-validate market-sizing and 3i potential impacts 	Omitted

	<ul style="list-style-type: none"> Identify potential business partners and explore partnership models Present 3i strategy including updated sectoral analyses, potential impacts and proposed interventions and partnership models Develop approved interventions and partnership models, and initiate these following approval 	
2	<ul style="list-style-type: none"> Complete payments on initial interventions and extend intervention portfolio and partnership models Initiate studies on social and economic growth impacts Present 3i results to date, expected results, investment potential in water, electricity and other sectors to Scalability Review 	Omitted
3	<ul style="list-style-type: none"> Complete initial interventions and extend intervention portfolio Continue studies on social and economic growth impacts Explore investment opportunities in other sectors 	Omitted
4	<ul style="list-style-type: none"> Complete payments on interventions Complete social and economic growth impact studies 	Omitted
5	<ul style="list-style-type: none"> Complete payments on interventions 3i closure and final reporting 	Omitted
Total		Omitted

A Scalability Review will be conducted relatively early in the program cycle, perhaps after 1.5 or 2 years. Based on this Scalability Review, a decision will be made on whether to close **3i** after the designated 5-year time period, or extend and/or expand **3i**'s timeframe and/or budget. DFAT and the Program Board will also regularly consider the potential for program scale-up outside of this formal Scalability Review.

The Scalability Review will be initiated at DFAT's direction, and an initial report will be prepared by the Operational Contractor. The report will be expected to describe either how **3i** can most effectively be scaled up and/or extended, including possible budget scenarios, or how **3i** can most effectively be closed down in line with the existing timeframe and budget. The report will be utilised by an independent scalability review team and/or DFAT to determine any changes to the contract.

Based on the program model proposed there is strong potential for this program to scale up and extend the program timeframe, depending on the funding available. However, it will be important to make these decisions in a timely fashion, because some infrastructure investments may take place over multiple years and the program team will need some years to do forward planning for major increases and to conclude agreements after any decision to close is taken.

10 Risk Analysis and Management

Key risks, risk ratings and possible management responses are summarised in Figure 19. Two risks were rated as high. The first of these is reputational risk. **3i** will form partnerships with a range of private sector businesses. The private sector and donors frequently come under increased scrutiny when development aid funding is provided to the private sector. There are also a range of risks inherent to the construction and operation of infrastructure. Depending on how these are handled, the business and any funders could be targeted. Finally, private businesses may be involved in risky activities unrelated to any aid funding. If issues arise, whether or not they are related to **3i** activities and Australian funding, there might

be negative publicity directed to Australia. Recent experience in Cambodia suggests that vocal negative publicity related to one part of an aid program, can have major consequences for the operation of the entire program. To mitigate this risk, the **3i** implementation team will: conduct due diligence assessments of potential projects, monitor compliance with agreements, and establish a complaints handling system.

Because of the high overall risk of fraud and corruption in Cambodia, there are relatively high fraud and fiduciary risks for this program. In particular these centre on contracts with private sector partners. The risk of this occurring is lower than some other programs in Cambodia simply because the project will be managed by an Operational Contractor; who should put in place fairly rigorous prevention and control measures. In addition, the program will utilise Output-Based Contracts and schedules where payment follows completion of works. Program contracts with private sector will be limited to business investment only, and there will be no funding for licences and legal instruments. The consequence of fraud occurring is likely to be moderate, but this would depend upon the size of any fraud case.

Risk management will primarily be completed by the **3i** team. However, other management and governance structures will also support this. This includes the Investment Committee which will examine partnership/investment specific risks before making investment decisions. The Program Board will also play a role in overseeing whole-of-program risks. The **3i** team will discuss risk management regularly with DFAT, in line with DFAT's regular risk management systems (Risk Matrix is updated quarterly).

Figure 19. Summary of Key Risks and Risk Management Responses

Risk and Potential Impact	Likelihood	Consequence	Rating	Management Responses
<p>Reputational – Private sector partners do various things which cause reputational damage to Australia. Examples could include getting involved in court cases, selling their business to disreputable owners or disagreements with their consumers. If Australia’s reputation is damaged by association, our low tolerance for negative publicity could force the amendment or closure of the program.</p>	Possible	Major	High	<ul style="list-style-type: none"> • Due diligence assessments will be conducted by the program of all potential business partners. Where major reputational risks are identified these businesses will be excluded and/or risk mitigation measures will be put in place in agreements. • Regular monitoring of partner compliance • Complaints handling system established.
<p>Fraud and Fiduciary – Private sector partners commit fraud in relation to contracts with program.</p>	Possible	Moderate	High	<ul style="list-style-type: none"> • Program will largely utilise Output Based Contracts • Contracts will be arranged to have payment schedules such that payment follows completion of work. • Due diligence assessments will include examination of fraud and fiduciary risks for individual enterprises. • Program contracts with private sector will be limited to business investment only, and there will be no funding for licences and legal instruments.
<p>Business Climate – Regulatory changes by Government reduce likelihood of business investment. This might include changing licencing terms or conditions for electricity or water operators.</p>	Unlikely	Moderate	Moderate	<ul style="list-style-type: none"> • Market assessments to include analysis of regulatory issues and how these impact investment climate. • Program to maintain watch over changes that may impact program implementation. • Program to maintain portfolio in multiple markets (electricity, water and others) and shift emphasis to other markets if one encounters negative regulatory changes. • Program to liaise with key sector actors such as the World Bank Water and Sanitation Program (WSP).
<p>Health and Safety – Issues associated with construction or operation of infrastructure, including electricity networks and water quality.</p>	Unlikely	Major	Moderate	<ul style="list-style-type: none"> • Program to work with existing operators, experienced in constructing and operating infrastructure. • Due diligence assessments to look at capability of potential partners. • Program to engage appropriate engineering expertise to examine plans and monitor construction to ensure alignment with agreements.
<p>Land Issues – Partner businesses are involved in land disputes over ownership and access to land for infrastructure funded by the program such as</p>	Possible	Minor	Moderate	<ul style="list-style-type: none"> • Market assessments to analyse types, likelihood and mitigation strategies for land conflicts in target markets. • Due Diligence assessments to undertake analysis of

water treatment plants, or transmission towers.				<p>potential issues for each proposed scheme/partnership.</p> <ul style="list-style-type: none"> • Program will not fund projects that involve displacement or resettlement
Macro-economic – Major economic downturn such as a debt crisis substantially reduces business confidence and willingness to invest in infrastructure ventures.	Unlikely	Moderate	Moderate	<ul style="list-style-type: none"> • Difficult to mitigate likelihood, but if this occurs, the program can shift towards agreements with reduced leveraging in co-investment.
Environmental – Although the program is likely to substantially improve environmental outcomes (for example by reducing use of 'dirty diesel'), there is a risk that selected infrastructure investments may have negative environmental consequences. For example, risks associated with chemical use in water treatment.	Unlikely	Minor	Low	<ul style="list-style-type: none"> • Program to develop an Environmental Management System that includes process for assessing environmental risks and mitigation strategies. This may include full Environmental Impact Assessments where a major risk is identified. • Program to be obliged to ensure full legal compliance with Australian Environmental Protection and Biodiversity Conservation Act (EPBC), and local environmental laws.
Business Failure – Where a business that is a partner in the program fails or withdraws.	Unlikely	Minor	Low	<ul style="list-style-type: none"> • Program to maintain a portfolio of investments in key sectors which means that the failure of a single business would have only a minor impact on achievement of overall development outcomes. • Program to focus on existing businesses/operators (with experience) rather than new entrants to the field.
Innovation – Although there are some similarities with existing programs, this approach is somewhat new for DFAT, which is inherently a risk to successful implementation.	Possible	Minor	Moderate	<ul style="list-style-type: none"> • Post to encourage transfer and sharing of knowledge from CAVAC, ECF, InfraCo and other programs funded by Australia. • Program to analyse current and past programs operating in target sectors funded by other donors as part of initial market assessments.

11 Annex 1 – Examples of Secondary Outcomes

Core Sectors

	Economic	Social
Electricity	<ul style="list-style-type: none"> • New economic activities able to be undertaken in areas not previously serviced by electricity • Cost savings for consumers who previously relied on batteries, kerosene and generators 	<ul style="list-style-type: none"> • Households able to undertake economic activities in the home instead of travelling • Households able to use electricity to utilise additional services e.g. television • Program might assist shift from 'dirty' diesel generators to 'cleaner' on-grid generation • Reduced use of 'dirty' household stoves and cooking fuels/fumes
Water	<ul style="list-style-type: none"> • New economic activities able to be undertaken in areas not previously serviced by water • Cost savings for consumers who previously relied on trucked and packaged water 	<ul style="list-style-type: none"> • Health benefits from access to piped and treated water for drinking • Facilitation of improved sanitation options

Potential Sectors

	Economic	Social
Waste and Recycling	<ul style="list-style-type: none"> • Increased trade within Cambodia and for export • Increased value-capture (and jobs created) in the waste and recycling value chains as more processing done in Cambodia instead of Vietnam and Thailand • Development of new industries around waste and recycling (e.g. re-processing of steel, plastic, cardboard etc.) 	<ul style="list-style-type: none"> • Poverty – Waste and recycling services built upon a network of ultra-poor collectors. Improvements to value-chains have potential to improve livelihood opportunities and incomes of many. • Gender – Many of the collectors are women and increased growth in this area could help improve their livelihoods. • Environmental – Reducing landfill, reducing imports of new material and mitigating other negative environmental impacts (e.g. used batteries)
Water Transport	<ul style="list-style-type: none"> • Cost savings for consumers and businesses in transport of people and goods, leading to increased trade and wealth creation • New industries and processing options 	<ul style="list-style-type: none"> • Improved connectivity between communities separated by water bodies • Environmental benefits of taking trucks off the road