International Conference on
Benefits and Challenges of Public-Private Partnerships for Improving Energy Efficiency

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Analytical Compendium
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For full reference to sources see the Select Bibliography prepared for the conference.
Majority of the bolded text – except for paragraph titles – have been added by the editor.
1. State of Play

Public-Private Partnerships (PPPs) are increasingly used to provide infrastructure services and other public goods. Thomsen (2005) reports that worldwide investment in PPPs in the early 1990s had reached \$131 billion whereas the World Bank PPP database suggests that their total value reached nearly \$1.2 trillion dollars globally as of 2006. \textit{(Default and Renegotiation in PPP tenders, pg. 2)}

Bracey and Moldovan (2007) point out that about 50 percent of PPPs never even reach the financing stage and, of those that do, about \textbf{50 percent are renegotiated during the building and implementation phases of the projects}. This suggests that the winners of tenders for PPP contracts, especially for major infrastructure projects such as highways, frequently enter financial distress, requiring the concession to either be re-allocated or re-negotiated. Very often, these issues are due to revenue falling short of expectations. \textit{(Default and Renegotiation in PPP tenders, pg. 2)}

In light of the recent global economic recession and the European sovereign debt crisis, as well as the subsequent national budget reductions and austerity measures, one would also assume that European countries and the United States would focus even greater policy attention on enhancing public-private partnerships in order to leverage and maximize scarce development resources.

These assumptions, unfortunately, are incorrect. As the following research will illustrate, the approach of the six leading European development actors—the United Kingdom, Germany, the Netherlands, Ireland, Norway, and France—toward public-private partnerships vary drastically. Moreover, there is no common transatlantic definition of what a public-private partnership is or what it should do. While the United Kingdom, the Netherlands, and Germany have emerged as thought-leaders in developing ODA strategies that incorporate public-private partnerships, Ireland, Norway, and France have less defined roles for the private sector in their development strategies, as development officials in these three countries appear hesitant to incorporate the private sector more fully in their development activities. \textit{("Leading from Behind in Public-Private Partnership: An Assessment of European Engagement with the Private Sector in Development", pg. 1)}

Europe has long been a leader in providing generous international official development assistance (ODA) as a soft power instrument. In 2010, the European Union (EU) and its 27 member states spent €63.8 billion on ODA, accounting for approximately 60 percent of ODA worldwide. For the past several years, the EU and its member states have consistently been the world's largest international aid donors. \textit{("Leading from Behind in Public-Private Partnership: An Assessment of European Engagement with the Private Sector in Development", pg. 2)}

Examples of the early adapters include the United Kingdom, the Netherlands, and Germany. From 1999 to 2009, Germany initiated 3,375 public-private partnerships totaling €1.4 billion.2 Between 2003 and 2012, the Netherlands will have initiated 75 public-private partnerships totaling €2.23 billion.3 While the United Kingdom’s Department for International Development (DFID) has not published figures on the total number of international development PPPs it has initiated, International Development secretary Andrew Mitchell announced in January 2011 that DFID would establish a new department to deepen its engagement with the private sector. \textbf{All three nations have specific development strategies related to PPPs.} \textit{("Leading from Behind in Public-Private Partnership: An Assessment of European Engagement with the Private Sector in Development", pg. 3)}
European Union
In the 20 years between 1990 and 2009 there were more than 1,300 PPP contracts over €5 million signed within the EU, with a combined capital value in excess of €250 billion. The U.K., Spain, Germany, Italy, France and Portugal are the main proponents of PPP in Europe, together accounting for 92 per cent of all PPPs between 1990 – 2009. The U.K. is far and beyond the biggest user of PPP with some 67 per cent of the total EU numbers, with Spain the closest competitor a distant second with 10 per cent. Examining the figures from the perspective of total value bears out a similar result, with the U.K. accounting for 52.7 per cent again followed by Spain et al. While these figures alone may suggest a distortion of the popularity of PPP in Europe, trends over time indicate a slow but steady diversification of PPP across other countries. Accelerating quickly in the 1990’s, the U.K.’s share of the EU projects began a general decline in 2001 and reached its furthest point of difference in the height of the global financial crisis in 2008, with its share falling below 50 per cent (Kappeler & Nemoz, 2010). As a leader in the field of PPPs and one of the first jurisdictions to undertake them, it is not surprising to see the U.K.’s (waning) domination here. ("Harnessing the Power of Public-Private Partnerships: The role of hybrid financing strategies in sustainable development", pg. 9)

United States
According to a 2010 PriceWaterhouseCoopers report, the United States showed some reluctance to undertake PPP agreements prior to 2007. The analysis highlights misgivings and misconceptions on the side of government officials as a contributing factor in this, and cites capacity development as a key hurdle that must be addressed if the trend is to be improved. Nevertheless, PPP is gathering momentum, perhaps through necessity and convenience following the credit crunch, as 25 U.S. States have current PPP-enabling legislation—a necessity to provide the authority for transacting a structured finance deal (PriceWaterhouseCoopers, 2010). According to the 19th annual "International Major Projects Survey" carried out by the Public Works Financing newsletter (2010), which has been tracking PPP activity continually since the 1980s, the United States has had a total of 363 funded PPP projects between 1985 and 2010, with a total value in excess of US$59.5 billion. ("Harnessing the Power of Public-Private Partnerships: The role of hybrid financing strategies in sustainable development", pg. 10)
Canada and Australia
Canada can be seen to be very similar to its Commonwealth cousin Australia. Both jurisdictions have been utilizing PPPs since the early 1990’s and have developed comprehensive policy guidelines and legislation for what can be considered a comparatively smaller market in terms of total number of projects undertaken. In Australia, PPPs capture a large slice of the infrastructure market in terms of total government procurement, at between 10–15 per cent (Infrastructure Partnerships Australia, 2007), and had already seen more than 127 projects at a combined value of AU$35.6 billion before the end of 2005 (English, 2006). Canada, by comparison, has seen a little over 100 projects at around the US$31 billion total value since 1985 (Public Works Financing, 2010). ("Harnessing the Power of Public-Private Partnerships: The role of hybrid financing strategies in sustainable development", pg. 10)

Latin America, Caribbean, East Asia and the Pacific
As in Europe, the figures rose quickly in the 1990’s as PPiI (private participation in infrastructure) took hold: total values skyrocketed from US$17 billion a year in 1990 to US$128 billion in 1997, but plummeted by a combined 45 per cent for 1998 and 1999 as the effects of the 1997 Asian Financial Crisis were felt through much of the developing world (Izaguirre, 2002). The period 1990–2000 was dominated by the “Latin America and Caribbean” region, which accounted for 48 per cent of the investment value, while the regions of “East Asia and the Pacific” followed by “Europe and Central Asia” represented the next largest portions, with 28 per cent and 13 per cent respectively. “Sub-Saharan Africa,” along with the “Middle East and North Africa” lagged behind significantly, with 3 per cent each. During this period, Brazil clearly led the way with total investments of US$123 billion, followed by Argentina, Mexico and China (which had the highest number of projects), before Malaysia, Philippines and the Republic of Korea form a group at around 30 per cent of Brazil’s total (Izaguirre, 2002).

The years from 2000 to 2009 saw some levelling out in the distribution of PPiI across regions, as “Latin America and Caribbean” traded places with “East Asia and the Pacific,” slipping to 22 per cent of total projects, although it retained the greatest slice in terms of value at US$152 billion, as large projects drove its activity. Sub-Saharan Africa saw a marked improvement of 7 per cent in its number of projects from 1999 to 2009, with 43 of the 48 nations in the region implementing PPiI projects. Although, at only 238 projects in total, the average number of projects per nation over a 10-year period is incredibly low, especially according to strict PPP definitions, and considering that Nigeria and South Africa each accounted for more than 25 per cent of the region’s investments. Energy and Telecom were consistently the most popular sectors across all regions, achieving large slices of the regional investment and together often accounting for around 80 per cent of investment). ("Harnessing the Power of Public-Private Partnerships: The role of hybrid financing strategies in sustainable development", pg. 11)
It is also interesting to look at the forms private participation has taken. Full or partial divestiture, which are variances of privatization, represent a very small portion of the projects, while contractual agreements with relatively low financial risks for the private operators involved have largely dominated, as the following graph from the same database confirms. Notwithstanding their importance for human beings and the high expectations for human beings and the high expectations that PPP could help meeting ambitious targets such as those defined in the 'Millennium Project' (UN 2005), water and sanitation de facto represent only a small part of PPP. According to the World Bank, for the period 1990-2000 this sector accounted for 6 percent of the total investment commitments to infrastructure projects with private participation and less than 3 percent in the years 2001-2008. At the same time, electricity represented 29 percent and 23 percent respectively, while telecoms took the lion’s share of PPP, rising from 42 percent to 54 percent of the total. An OECD study of all forms of private participation in the MENA region confirms these trends: over 84 percent of private investments in the network infrastructures of this region were concentrated in the energy and telecommunication sectors (Kauffmann and Wegner 2007: 13-17). More generally, it is in these sectors that full or partial privatization was the most significant. Out of the top ten companies involved in private participation for the period 1990-2006, nine were in the telecom business. In other words, whatever form it took, private participation concentrated on the two most profitable sectors, namely telecommunications and to a lesser degree energy. (“Is Public-Private Partnership Obsolete: Assessing the Obstacles and Shortcomings of PPP”, pg. 19)

Evolution of Indian PPPs

- **Phase I**: 19th century and early 20th century
  - Few notable PPPs could be found as early as 19th century:
    - The Great Indian Peninsular Railway Company (1853)
    - The Bombay Tramway Company’s tramway services in Mumbai (1874)
    - PPP models were there in power generation and distribution in Mumbai and Kolkata in the early 20th century

- **Phase II**: 1991 - 2006
  - Only 86 PPP projects worth INR340 billion were awarded till 2004 (World bank study of 13 states in 2005)
  - Most of the projects were in bridges and roads sector
  - Large-scale private financing has been limited to Vishakapatnam and Tirupur

- **Phase III**: After 2006
  - Increasing acceptance of PPP model due to favorable policy reforms and innovative PPP structures
  - Growth in PPP from 450 projects costing INR 2,242 billion in November, 2009 to 758 PPP projects costing INR3,833 billion in July 2011

(“Accelerating public private partnerships in India”, pg. 7)
Public Private Partnerships in Europe

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<th>Country</th>
<th>Value of signed contracts, €m</th>
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<th>Projects being procured Jan 2007</th>
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(“Public-Private Partnerships (PPPs)”, pg. 4)

High PPP usage: Strong deal flow in parts of Europe In 2004 and 2005, around 206 PPP deals worth approximately US$52 billion/€42 billion were closed in the world, of which 152 projects with a value of US$26 billion/€21 billion were in Europe (in this case referring to the EU Member States, the EU acceding countries (Bulgaria and Romania), the EU candidate country Turkey, and Norway).

From January 1994 to September 2005, it is estimated that PPP deals with a value of approximately US$120 billion/€100 billion closed across Europe. Of these deals, two thirds closed in the UK, with the other PPP hotspots of Spain and Portugal accounting for 9-10% each. When compared to the PricewaterhouseCoopers Survey published in May 2004, there has been a notable increase in PPP deals, both in procurement and closed, in Germany, Spain, Italy and Hungary; in particular, school projects in Germany and projects in the health and water/wastewater sectors in Spain.

Geographically, the PPP market has remained concentrated. According to a recent Standard & Poor's report, the global spread of PPPs marks a much slower trend than many market participants had hoped. While the UK market has reached a good level of maturity and continues to grow in all sectors, activity in 2004 remained below expectations. However, there is strong deal flow in the pipeline for Spain, Portugal, France, Italy and Germany which suggests that the PPP concept is becoming more established across Europe.

This is confirmed by industry figures and evidence from PricewaterhouseCoopers offices across Europe. The UK showed substantially more PPP activity than the rest of Europe with 118 deals closed in 2004 and 2005, with the next most active PPP market – Spain – closing 12 deals during the same period. There are a substantial number of PPP projects in procurement or announced in other EU member states. In Italy, just six deals were closed in 2004 and 2005, but there are at least 18 further projects in procurement and an estimated 40 projects in the pipeline.

According to a recent survey by the German Construction Industry Association, 18 PPP deals closed in Germany between autumn 2003 and September 2005. It was estimated that a further 79 projects with a combined capital expenditure of circa €4.8 billion are in procurement or expected in the near future.
While the UK closed the greatest number of PPP deals in 2000-2005, if PPP activity is considered as a percentage of GDP, Portugal has the greatest involvement with PPP relative to its GDP, and countries such as Ireland, Hungary and Greece also show the impact of their major schemes. See graph below.

Average 2000-2005 PPP activity as a percentage of mean GDP

(“Delivering the PPP promise: A review of PPP issues and activity”, pg. 37)
2. Concepts and definitions

There is no one single, concise definition of PPP. Accurately defining a PPP is problematic because by nature it is a contextual concept, responding to the institutional, legal, investment and public procurement settings of different jurisdictions, whilst also considering the contextual nature of individual agreements. Although in a constant state of flux, PPPs can generally be said to include:

- long-term contracts/agreements/relationships;
- a private funding component;
- provision of services or infrastructure through the private sector;
- significant transfer of risk to the private sector, such as investment, design, construction, or operational risks;
- complex contractual responsibilities and deliverables that vary over the contract period as the project moves through its phases, such as from finance to construction and operation;
- the return of infrastructure/services to the control of the State at the end of the contract term or;
- the provision of services by the private sector on behalf of the State following the fulfillment of design and build responsibilities.

For the purposes of this paper any reference or discussion of PPPs is framed by a definition that consists of all the points listed above.

Common areas where jurisdictions differ in their application of PPP will be in:

- whether there is a public sector finance component, and if so;
- the percentage to which financial investment is generally divided between public and private sectors
- the method of remuneration to the private sector, i.e., user fees (concession) or government payments (availability-based)

Although initially restricted to public infrastructure in the form of roads, railways, prisons, government buildings, power generation, or water and waste treatment facilities, PPP has increasingly moved into the provision of so-called “soft infrastructure,” such as schools, hospitals, and health services, as it continues to diversify across markets. 

(“Harnessing the Power of Public-Private Partnerships: The role of hybrid financing strategies in sustainable development”, pg. 2)

Selected Definitions of Partnerships
There is a wide range of definitions for public-private partnerships, including:

- **USAID Global Development Alliance Initiative.** Global development alliances (GDAs) are USAID’s commitment to change the way we implement development assistance. GDAs mobilize the ideas, efforts, and resources of governments, businesses, and civil society to stimulate economic growth, develop businesses and workforces, address health and environmental issues, and expand access to education and technology.

- **OECD.** Arrangements [focused on infrastructure investment] whereby the private sector provides infrastructure assets and services that traditionally have been provided by government, such as hospitals, schools, prisons, roads, bridges, tunnels, railways, and water and sanitation plants. [Partnerships operate in] cases where the private operator has some responsibility for asset maintenance and improvement are also described as concessions. Although there is no clear agreement on what does or does not constitute a [public-private partnership], they should involve the transfer of risk from the government to the private sector.

- **United Nations.** "The public benefits [that come from] not only ... the financial resources but from infrastructure, expertise and the management skills of the private sector. Businesses can align corporate socially responsible activities with global goals so as to work towards a more stable and
inclusive world market, embracing . . . global corporate citizenship: advocacy, cooperation on the ground and strategic partnerships."

Models for Partnerships

There is a range of potential actors in partnerships, as well as three distinct partnership models.

- **Financial partnership.** A partnership that is based on one or more partners providing funding to a project that is undertaken by a small number of implementers (for example, a donor agency, NGO, for-profit development consultancy).
- **Partnership based on expertise.** A partnership that is based on leveraging the competencies, skills, knowledge, or expertise of one or more partners to make a project or set of projects more efficient or effective.
- **Partnership based on market.** Partnerships that align with core business strategies of local and international companies to find market-based solutions to development problems.

("Seizing the Opportunity in Public-Private Partnerships: Strengthening the Capacity at the State Department, USAID, and MCC", pg. 2)

Different country definitions of public-private partnerships

- **Korea** defines a public-private partnership project as a project to build and operate infrastructure such as road, port, railway, school and environmental facilities – which have traditionally been constructed and run by government funding – with private capital, thus tapping the creativity and efficiency of the private sector.

- **South Africa** defines a public-private partnership as a commercial transaction between a government institution and a private partner in which the private party either performs an institutional function on behalf of the government institution for a specified or indefinite period, or acquires the use of state property for its own commercial purposes for a specified or indefinite period. The private party receives a benefit for performing the function or by utilising state property, either by way of compensation from a revenue fund, charges or fees collected by the private party from users or customers of a service provided to them, or a combination of such compensation and such charges or fees.

- **The United Kingdom** defines a public-private partnership as “…arrangements typified by joint working between the public and private sectors. In their broadest sense they can cover all types of collaboration across the private-public sector interface involving collaborative working together and risk sharing to deliver policies, services and infrastructure” (HM Treasury, 2008). The most common type of PPP in the United Kingdom is the private finance initiative (PFI). A PFI is an arrangement whereby the public sector contracts to purchase services, usually derived from an investment in assets, from the private sector on a long-term basis (often between 15 to 30 years). This includes concessions and franchises, where a private sector partner takes on the responsibility for providing a public service including maintaining, enhancing or constructing the necessary infrastructure.

- **The State of Victoria (Australia)** defines a public-private partnership as relating to the provision of infrastructure and any related ancillary service which involve private investment or financing, with a present value of payments for a service to be made by the government (and/or by consumers) of more than AUD 10 million during the period of a partnership that do not relate to the general procurement of services.

("How to Attain Value for Money: Comparing PPP and Traditional Infrastructure Public Procurement", pg. 4)
How the EU Accounts for PPPs

One method for grappling with the fiscal impact of PPPs for countries with accrual accounting comes from the European System of Accounts (known as ESA95). This requires statisticians to look at the risk/reward balance in the underlying PPP arrangement. ESA95 analyzes the allocation of construction, availability, and demand risk. Construction risk covers events related to the construction and completion of the PPP’s assets. Availability risk refers to situations in which underperformance linked to the state of PPP assets results in partial or complete denial of services during the operational phase. Demand risk relates to the variability of demand irrespective of the private firm’s performance.

According to ESA95 rules, if the government bears the construction risk, then the PPP project is on its balance sheet. This is irrespective of the allocation of demand and availability risks. ESA95 also states that if the government takes on the demand and availability risks, then that also places the project on its balance sheet. The only way ESA95 allows the government to classify the PPP as off its balance sheet is when it absorbs just one risk—either demand or availability.

(“Harnessing the Power of Public-Private Partnerships: The role of hybrid financing strategies in sustainable development”, pg. 12)

(“Partnerships for Transformation Using Public–Private Partnerships in the GCC”, pg. 15)
A. Definition of a PPP Unit
Similar to the lack of uniformity in PPP definitions, there is no strict definition of a PPP unit. The World Bank defines a PPP unit as “any organization designed to: promote or improve PPPs [...]; [and] has a lasting mandate to manage multiple PPP transactions, often in multiple sectors.” One study emphasizes this role as servicers on PPP-related matters to public entities “within or connected to government that provides services related exclusively to PPPs to other governmental bodies [...].” Another describes a PPP unit as “any organization set up with full or partial aid of the government to ensure that necessary capacity to create, support and evaluate multiple public/private partnership agreements is made available and clustered together within government.”

Based on these studies and the evidence from around the world, several characteristics emerge: A PPP unit is a public entity (government, public/private corporation, or nonprofit) that supports other government agencies to procure projects through a PPP process; it is not the procuring agency. It is a “dedicated” agency, meaning that it has a permanent structure dealing with multiple projects versus ad-hoc teams put together in ministries and departments to deal with procurement through a specific PPP project. It may support government agencies in procuring PPP projects that span multiple sectors or in just a specific sector, such as transportation.

B. Functions of a PPP Unit
A PPP unit is the response to an identified institutional problem encountered by a government in managing its PPP program. The government failures (or nonmarket failures) may include poor procurement incentives, lack of coordination among government agencies, lack of expertise or sufficient information, and high transaction costs in proceeding with PPP deals. Given that governments face a diverse range of these failures in dealing with their PPPs, the PPP units fulfill different functions such as these identified by the World Bank:

- **Policy Formulation and Coordination.** A PPP unit may act as a consolidator of information and policy regarding PPPs, overcoming the traditional siloed structure of government agencies. While
this function has a wider applicability at a central level, it is still feasible in a specific department sector or ministry with numerous offices involved in the PPP process. For example, the UK Treasury’s PPP Policy Team—part of Infrastructure UK—is responsible for formulating the national PPP policy guidelines. In Canada, Partnerships British Columbia, the PPP unit for that province establishes policies and best practices for PPP management.

- **Quality Control.** PPP units may respond to poor PPP procurement incentives by acting as the first reviewer of the potential PPP project proposals. This may occur when agencies or ministries promote PPP projects without fully taking into consideration the long term fiscal impact on the government’s budget. For example, South Africa’s PPP Unit was created to prevent ministries from pursuing PPP projects that allowed them to avoid the national budgetary limits. In addition, a PPP unit may verify whether the proposed project fulfills all the desired criteria set beforehand. Portugal’s central PPP unit, Parpública SA, conducts a technical assessment of proposed PPP projects before the procurement phase and provides its recommendation to the Ministry of Finance.

- **Technical Assistance.** One of the recurring problems in PPPs is the lack of adequate and necessary skill in the public sector to deal with PPP deals. This proficiency is not limited to financing issues such as the assessment of the Value for Money and the discount rate of the project, which may be contracted out to private consultants. More important is to understand the place of the PPP project in the government’s long term plan, its fiscal consequences, the allocation of risk between the public and the private sector and what government reforms would be required for a successful implementation. While there is a role for private advisors in pursuing PPPs due to the complexity of the contracts, the public sector should be able at least to adequately provide oversight of the consultants to secure the public interest.

- **Standardization and Dissemination.** In a PPP arrangement, the teams of bidders have to deal with myriad statutes and government regulations. Moreover, these regulations differ from state to state, in the case of a federal government structure. This contributes to substantial transaction costs related to the procurement of PPPs, for both the private sector and the government, estimated to be 10 percent of a project’s capital costs.

- **Promotion.** The creation of a PPP unit increases the credibility of the government’s commitment to PPPs. Further, a PPP unit may act as a consolidator of information on PPP opportunities, given that investors are not always aware of the projects that the government would consider ripe for PPPs. Both developed and developing countries have used PPP units as means to increase private interest in PPPs. The Flemish PPP Knowledge Centre provides the private sector with information on PPP policy and possibilities. Partnership, BC also serves as a resource for the private sector interested in PPPs in British Columbia. The Philippines’ PPP Unit—the Philippines Build Operate Transfer Centre—has among its functions the promotion of the PPP Program to potential investors.

**C. Institutional Design of a PPP Unit**

From an organizational point of view, PPP units represent a way to delegate operational responsibilities regarding the provision of government services. While PPPs represent the most complex form of outsourcing government provision of public goods, the PPP unit is a devolved organization for the operational responsibilities. Based on the model of devolution of government responsibilities in the provision of surface transportation, the structure of a PPP unit may vary from that of an office in a ministry to a private corporation. The institutional structure of PPP units worldwide reflects a number of priorities: the goals of the PPP unit, the existing administrative structure in that country/state and the level of development of the country/state’s PPP market.

(“Moving Forward on Public Private Partnerships: U.S. and International Experience with PPP Units”, pg. 6)
The PPP process should comprise four phases:

1. **Operation and Maintenance.** In this model, the public authority contracts with a private partner to operate and maintain a publicly owned facility.

2. **Design–Build–Operate–Transfer (DBOT).** In this model of PPP the private party is responsible for the design, building, and operation of infrastructure, which is used by the public sector. The ownership of the assets has to be transferred to the public sector at the end of the contract. Regular payments to the private sector are made for the provision of services in compliance with initial specifications.

3. **Build–Operate–Transfer (BOT).** This model of PPP is similar to the DBOT described above, with the only distinction that the public sector provides a drawn up design of the necessary infrastructure for the provision of services by the private partner.

4. **Build–Transfer–Operate (BTO).** This option for PPP is close to BOT, but in the present case the public sector becomes the owner of the infrastructure from the very beginning of the contract.

5. **Build–Own–Operate (BOO).** Here, the private party provides for the construction, financing and operation of the infrastructure. A BOO differs from a BTO in that the private party does not have the obligation to transfer the ownership of the assets to the public sector. There is an opportunity for the public sector to acquire the assets, by purchasing them at their residual balance value, after the end of the contractual period.

6. **Concession.** In the large sense of the definition given by the interpretative communication of the EU Commission, under a concession “the public authority entrusts to a third party … the total or partial management of services for which that authority would normally be responsible and for which the third party assumes the risk.” The ownership of assets remains usually within the public sector, while the private party is entitled to cover its expenditures through imposition of user fees.

PPPs are often confused with privatization. There is a clear difference between these two forms of private sector engagement: privatization involves the permanent transfer of a previously publicly owned asset to the private sector, whereas a PPP necessarily involves a continuing role for the public sector as
a “partner” in an ongoing relationship with the private sector. Under a PPP accountability for provision of the service is clearly in the hands of the public sector, and there is a direct contractual relationship between the government and the private sector provider. With privatization, immediate accountability for providing the service may often transfer to the private provider (although ultimately the citizen may hold government accountable): if the telephone in a privatized telecommunications utility does not work, the citizen will normally complain to the private provider, but if a PPP hospital is closed, the citizen will still hold the government immediately accountable. These distinctions can be important when governments seek to engage public understanding of and support for PPPs and begin to identify the skills and processes needed for the very different PPP processes. Some governments have deliberately sought to brand their PPP programs to distinguish them directly from privatization and in some cases even from previous forms of concessioning. In Mexico, for example, certain PPP projects are referred to as projects for the provision of services (PPS), and in Peru PPP projects have been branded in the legal framework as co-financed concessions. (“How to Engage with the Private Sector in Public-Private Partnerships in Emerging Markets”, pg. 9)

Serious consideration should be given to using a PPP approach in cases where the expertise, resources and dynamism of private partners can significantly improve a project, and where the responsibility for service delivery, along with the operational and financial risks, can be allocated across a range of public and private participants. A simple decision process to identify potential PPP projects is shown below.

Joint Technology Initiatives (JTIs) are the first experience with setting up public-private partnerships in research at the European level. They focus on key areas where research and technological development could contribute to Europe’s wider competitiveness goals and where the traditional instruments of the Framework Programme are not adequate. The European Commission has set specific criteria to identify the areas where JTIs should be set up: strategic importance of the topic; existence of market failure; concrete evidence of Community value added; evidence of substantial, long-term industry commitment; and inadequacy of existing Community instruments.

JTIs bring together EU, national and private resources, know-how and research capabilities, for a period of many years, with the aim of addressing major issues by sharing precompetitive knowledge, achieving critical mass, scale and scope in areas where global competitiveness is at stake, thus ensuring that the EU can lead the world in innovation and developing breakthrough technologies. The strategic importance
of the JTIs is significant whilst their capacity to deliver is not only essential for EU competitiveness, but also for tackling major societal challenges such as combating climate change or promoting health. JTIs define a common vision and implement a common Research Agenda through a detailed work programme, while respecting the Framework Programme principles of competition and excellence. The activities of the JTIs are co-funded under the Seventh Framework Programme for Research. Currently five JTIs exist in the areas of innovative medicines (IMI), aeronautics (Clean Sky), fuel cells and hydrogen (FCH), nanoelectronics (ENIAC) and embedded computing systems (ARTEMIS). Three of the JTIs are now autonomous and this is, in itself, a major achievement as it has taken significant efforts on all sides to reach this point. (“Designing together the ‘ideal house’ for public-private partnerships in European research”, pg. 9)

The term “public–private partnership” describes a range of possible relationships among public and private entities in the context of infrastructure and other services. Other terms used for this type of activity include private sector participation (PSP) and privatization. While the three terms have often been used interchangeably, there are differences:

- **PPPs present** a framework that — while engaging the private sector — acknowledge and structure the role for government in ensuring that social obligations are met and successful sector reforms and public investments achieved.

  A strong PPP allocates the tasks, obligations, and risks among the public and private partners in an optimal way. The public partners in a PPP are government entities, including ministries, departments, municipalities, or state-owned enterprises. The private partners can be local or international and may include businesses or investors with technical or financial expertise relevant to the project. Increasingly, PPPs may also include nongovernment organizations (NGOs) and/or community-based organizations (CBOs) who represent stakeholders directly affected by the project.

  Effective PPPs recognize that the public and the private sectors each have certain advantages, relative to the other, in performing specific tasks. The government's contribution to a PPP may take the form of capital for investment (available through tax revenue), a transfer of assets, or other commitments or in-kind contributions that support the partnership. The government also provides social responsibility, environmental awareness, local knowledge, and an ability to mobilize political support. The private sector's role in the partnership is to make use of its expertise in commerce, management, operations, and innovation to run the business efficiently. The private partner may also contribute investment capital depending on the form of contract. The structure of the partnership should be designed to allocate risks to the partners who are best able to manage those risks and thus minimize costs while improving performance.

  • **PSP** is a term often used interchangeably with PPPs. However, PSP contracts transfer obligations to the private sector rather than emphasizing the opportunity for partnership. In the mid to the late 1990s, there was a slowdown in public–private contracting in infrastructure sectors, which was largely precipitated by a social backlash against the perceived preference for the private sector over the public sector in delivering infrastructure services in developing countries. To some degree, the social backlash was rooted in confusion between PSP and privatization. Some PSP schemes were overly ambitious and the social agenda was overlooked, leading to legitimate public concerns. The critical analysis of PSP experience has led to the design of a new generation of transactions, which are now more commonly known as PPPs.

  • **Privatization** involves the sale of shares or ownership in a company or the sale of operating assets or services owned by the public sector. Privatization is most common and more widely accepted in sectors that are not traditionally considered public services, such as...
manufacturing, construction, etc. When privatization occurs in the infrastructure or utilities sectors, it is usually accompanied by sector-specific regulatory arrangements to take account of social and policy concerns related to the sale, and continuing operation of assets used for public services.

(“Public-Private Partnership Handbook”, pg. 1)

**Voluntary agreements, public-private partnerships and ESCOs**

**Preferred loans** were the most common form of public-private partnerships (PPPs) in the cases studied. Loans that account for Energy Efficiency (EE) in their provision directly target the financial barriers to initiating EE improvements. Examples include the JHF in Japan, EEMs in the US and the KfW loans in Germany. Preferred loans have been used by a large number of applicants in both Japan and Germany for improvement work that increase building EE. The conditions for these loans are clear to those applying, and clear sets of rules are established within the public-private partnerships. As a result, PPPs can potentially incite a sustainable shift in the housing loan market that favours EE refurbishments. In France and Japan for example, an increasing number of loan products include EE in their provision conditions. In Germany this has been the case since the mid-1990s, and has impacted tens of thousands loan applications yearly. In all cases studied preferential loans were implemented through PPPs. Being administered by private actors they appeared more flexible and able to adapt rapidly to changes in the market. For example, energy-efficient mortgages (EEM) provision in the US is often based on Energy Star energy performance ratings that are regularly updated in response to new technologies available on the market. The combined forces of the public and private sectors appeared to deliver the most cost-effective policy instruments.

While the case studies indicated that ESCOs are not very active in the residential buildings sector, publicly owned residential buildings could be good candidates for ESCO contracts. This is because ESCOs are more likely to work with the public sector, due to both the larger contract size and the decreased risk factor as compared with private sector housing.

(“Promoting Energy Efficiency Investments: Case studies in the residential sector”, pg. 257)

A good example is Living Cities, a USA-based innovative philanthropic collaborative of 22 foundations and financial institutions that takes a comprehensive approach to improving the lives of low-income people and revitalizing the urban areas in which they live. Living Cities works to connect city governments and private partners to ensure that key urban issues — such as green jobs, housing, education, and neighbourhood stabilization — are addressed in innovative ways. In another example, in Europe the Living Labs PPP of city governments and private companies aims to create a user-driven open innovation eco-system where users live, work, study, play and entertain.

In this real living environment, the participants—in cooperation with government institutions and private companies—co-create, experiment, and test new ideas, new products, and new services. Ultimately this approach is expected to lead to user-centric solutions and social innovation processes. Crucial drivers of the Living Labs are ICT and the Internet, which are at the heart of the open co-creation; the platforms and open connectivity, which are key facilitators; and open innovation, which is the soul of competitiveness and new services. What is more, individual cities (e.g., Oulu in Finland, Dubuque in the USA, and Beijing in China) are pursuing their own models for using PPPs for urban development. The Oulu city project is using the living lab approach to win inward investment for the city; this successful undertaking has encouraged some companies to locate research and development resources in the city. The city of Dubuque (Iowa, USA) is leveraging a PPP to amplify the potential benefits of the Energy Efficiency and Conservation Block Grant funding programme from the federal government. The PPP aims at making the city ‘smart’ by reducing energy consumption and greenhouse gas emissions, and by building up the community’s technical capacity to conduct energy-efficient retrofits of existing infrastructure, ultimately helping to foster local job creation.

The city of Beijing used the PPP model in the building and operation of the city’s fourth subway line (28 kilometres long, with 24 stations), with companies from both inside and outside of China participating. Although these efforts do help to highlight the effectiveness of the PPP model, they are hardly the rule.
The overwhelming majority of PPPs are still issue-specific, focusing on a particular area of civic engagement such as education, healthcare, the environment, or the arts. Few such initiatives are elevated to the level of an entire city, where all of the issues noted above and many more intersect. However, as cities struggle to overcome economic stress and accommodate rapid population growth, they must pursue an interconnected model of problem solving.

Innovation from the private sector can be extremely beneficial in this process by leveraging the capabilities of ICT to make all the systems used to supply the city with services smarter, more efficient, and more effective. Similarly, the public sector can explore models that have proven to be successful in corporations and other enterprises. The first step in such an innovative transformation is the creation of a city-wide strategy that allows leaders to view their cities as an interdependent system of systems, and to assess ways in which ICT can be used to improve them all. (The Role of Public-Private Partnerships in Driving Innovation, pg. 3)

The Structural Funds for the period 2007-2013 offer important opportunities to Member States to implement operational programmes through PPPs organised with the EIB, banks, investment funds and the private sector in general. Initiatives aiming to combine Structural Funds with PPP projects can draw on:

- JASPERS, a project development facility launched together with the EIB and the European Bank for Reconstruction and Development (EBRD), which aims at providing assistance as required for any stage of a PPP/infrastructure project cycle.
- The JESSICA initiative for sustainable urban investment for PPPs/urban projects included in an integrated urban development plan.
- The context of the JEREMIE initiative in support of new business creation and improving access to finance for enterprises.

("Mobilising private and public investment for recovery and long term structural change: developing Public Private Partnerships", pg. 7)

3. Role, Benefits and Impact of PPP

Governments can always borrow more cheaply than the private sector. For PPPs to produce overall cost savings, therefore, the extra financing cost (estimated at between one and three percentage points in the UK) needs to be offset by savings in other aspects of the project achieved by the private sector. This argument has been echoed by numerous academics and, indeed, governments. The UK House of Commons Treasury Committee, for example, recently argued that ‘government has always been able to obtain cheaper funding than private providers of project finance’ and that the cost of capital of PPPs was currently double that of government gilts. (Alternative Ways of Financing Infrastructure Investment: Potential for ‘Novel’ Financing Models, pg. 22)

Potential Benefits:

- **Value for money:** Utilizing private sector skills and technology to deliver projects in a more efficient manner, resulting in either lower costs or a superior product for the same investment.
- **Optimization of the design and operation:** Using outputs based specification allows room for and promotes innovative solutions from the private sector on the design, operation and maintenance aspects of the project, with the intention of improving effectiveness whilst reducing costs over the whole life cycle.
- **Quicker delivery of project:** Private sector capacity and flexibility are seen to be superior to the public sector, and PPPs therefore allow projects to be finished more quickly and on schedule than those attributed to public sector provision.
- **Risk transfer:** Project risks (e.g., finance, timeframe, planning permits, community consultations) are transferred to the party best equipped to deal with it, both in terms of expertise and costs, to the stability and benefit of the project.
Increased investment in public infrastructure: Governments are able to implement projects more frequently and on a larger scale because the private sector finance element reduces its need to raise or budget additional funds, as is the case in standard procurement.

Increased budget/financing certainty:
° The transfer of responsibility (and risk) to the private sector for some of the project elements shields governments from unforeseen financial liabilities following cost overruns, delays, or operational difficulties that would otherwise impact upon the budget bottom line.
° Project finances are secured for the length of the contract and not subject to cyclical political budget adjustments, allowing for greater investment planning and efficiencies throughout the management, operation, and maintenance phases of the project.

Improved service delivery:
° Allows both sectors to operate within their sphere of expertise, the government in policy and governance, the private sector in the technical aspects of design, construction, operation, and management.
° Payments that are linked to performance targets or requirements provide an incentive to perform that is too often absent in public provision of services.

Whole of life cycle approach:
° Because the design, construction and operation are often undertaken by the one consortium there is a greater integration of the different elements and more coherence to the final product, unlike standard procurement options which may see several different subcontractors operating in loose cooperation.
° Motivated by the desire to preserve long-term value of assets and to minimize costs, whole of life cycle responsibilities encourage the private sector to choose the most appropriate technology for the long term and adequately maintain it. This may be in contrast to decisions by governments that are often guided more by short-term financial pressures and think in much shorter cycles according to political terms and budget constraints.

Access to additional capital/off-balance sheet financing: Because all or a large percentage of finance in PPP is provided by the private sector, the government is not responsible for raising funds from within its own coffers or adjusting budgets to allow for large infrastructure spending. This is particularly advantageous during times of fiscal crisis where the government is already short of funds or where the government may have a poor credit rating and is not able to raise the necessary finance. International and national accounting standards do provide some guidance as to what and how PPPs are recorded on balance sheets, but the issue is far from secure.

Political advantage: There is political leverage to be gained from PPP agreements in terms of public perception and financial management credentials, as projects are delivered on time with less impact on the budget and provide superior quality infrastructure or services.

Private sector growth and stability: PPPs provide the private sector with access to reduced risk, secure, long term investment opportunities that are underwritten by government contracts. Such agreements ensure private capital flows, provide investment opportunities, and stimulate local industry and job markets.

(“Harnessing the Power of Public-Private Partnerships: The role of hybrid financing strategies in sustainable development”, pg. 5)
PPP Benefits

Public–private partnerships combine the public and private sectors in projects that the state needs but that private companies can best deliver. Experience shows that the public sector reaps the following benefits from PPPs:

- **Fiscal benefits**: PPPs free public funds for other uses. In the past, the public purse would fund costly infrastructure projects out of revenues or through borrowing. Using the PPP model, that burden shifts to the private-sector partners, which provide substantial equity investment.

- **Risk allocation**: When properly vetted and structured, PPPs allocate risk to the party best suited to handle it. The public sector is often able to shift risks related to lack of demand and revenue, design and construction, operations and maintenance, finance, and extraordinary circumstances to the private sector.

- **Economic benefits**: PPP projects increase efficiency by accelerating the speed of delivery of services and improving service coverage and quality. They also increase time and cost reliability, and attract international and domestic capital.

- **Technological benefits**: PPPs facilitate the transfer of technology and knowhow from the private to the public sector. They improve workforce quality and promote innovation in the public sector.

- **Social benefits**: PPPs improve service coverage, quality, and timeliness. They can also increase living standards, promote environmental sustainability, and mitigate the repercussions associated with privatization.

Potential Benefits:
• **Increased efficiency, expertise, and innovation from the private sector** contribute to better infrastructure and greater cost and time savings across the construction and operation phases, increasing the value for money equation of a project.

• **Projects risks** (e.g. finance, timeframe, planning permits, community consultations) are **distributed between the public and private sectors** according to the party best equipped to deal with it, both in terms of expertise and costs.

• **Access to private sector financing** allows increased investment in public infrastructure, as governments are able to implement projects without the need to raise or budget additional funds, as is the case in standard procurement.

• **PPPs provide the private sector with access to reduced risk, secure, long-term investment opportunities** that are underwritten by government contracts. Such agreements ensure private capital flows, provide investment opportunities, and stimulate local industry and job markets. (“**Sustainable Development: Is there a role for public–private partnerships: A summary of an IISD preliminary investigation**”, pg. 3)

Governments are under constant pressure to improve the performance of public services with limited resources. In some countries presented in this publication, for example Hungary or Serbia, where legal and administrative limitations rendered public organizations less responsive than private entities, governments hoped actors from the private or the nongovernmental sector would be able to deliver more and higher quality.

Such innovations are highly necessary during periods of fiscal restriction, when pressure on the public sector to decrease public employment and overall expenditures is especially high. Under some PPP schemes public employees might be shifted to the private contractor or the concessionaire, reducing the number of public employees.

Beyond decreasing labor costs, public-private partnerships aim to attract additional resources to the public sector. One-time investment costs can be allocated over a longer period, which better fits the revenue generation rules of the public sector. In the decades before the present economic downturn the private sector was able to borrow easily for these long-term projects, generating stable revenue flow. PPPs also help public entities to comply with limitations on public debt. This is especially important among European Union member countries, where one of the Maastricht criteria is that public debt should not exceed 60 percent of GDP.

In the utilities sector, better public services were sought through technology transfer. Especially during the early years of the transition, foreign companies had better access to modern equipment and management techniques. Compared to the deteriorated assets and obsolete technology used by public service organizations, these companies could make fast and visible improvements in service quality (municipal solid waste management, water services, etc.).

Expectations are high that PPPs will create efficiency gains. Contractual obligations mean construction projects are completed on time and their costs are rarely increased during implementation. These expectations were not always met, but the carefully audited PFI program in the United Kingdom confirms the advantages of PPP. (“**Public-Private Partnerships: Successes and Failures in Central and South Eastern Europe**”, pg. 7)

PPPs, in particular those with long-term contracts, can bring significant benefits for governments in the delivery of public services, such as the following:

• **Greater efficiency in the use of resources.** By allocating the management of risks optimally between the public and private sectors, a well-managed PPP preparation and bidding process can enable a more efficient use of resources over the lifetime of the asset, as the private partner has an incentive to consider the long-term implications of the costs of design and construction quality or the costs of expansion in the
case of existing facilities. At the same time, the long-term nature of the contract can generate greater certainty (or even a reduction) in the price of service delivery, in real terms. This is especially the case for those PPPs, where the public sector is purchasing a service on behalf of the taxpayer: known prices have clear value within a highly constrained public sector budgetary system, as they greatly reduce the likelihood of surprises down the line. This also ensures budgeting for proper long-term maintenance of assets, which is often omitted in traditional forms of public sector procurement to the detriment of the asset and the taxpayer.

- **Capital at risk to performance.** The explicit exposure of capital to long term performance risk gives the private party an incentive to design and build the asset on time and within budget and to take into account the costs of longer-term maintenance and renewal. It underpins the required allocation of risks.

- **Quality assurance and scrutiny.** The PPP process usually involves a much greater level of quality assurance than the standard public procurement process as the public authority prepares its projects and engages with the market. The public authority will face scrutiny by parties outside government, such as lenders and investors, whose capital will be at risk over the long term, depending on the performance of service delivery.

- The more open scrutiny of the long-term commitment required of a PPP usually requires information about the true long-term risks and therefore costs to deliver the public service. This scrutiny can generate a more informed and realistic debate on project selection and a focus on outputs and even outcomes. Such additional quality assurance and scrutiny are often absent in conventionally procured projects. ("How to Engage with the Private Sector in Public-Private Partnerships in Emerging Markets", pg. 4)

**Greater Integration**

As suggested in the PPP Canada definition of a P3 in Section 1.0, P3s create a higher level of integration than under conventional delivery models because the public owner enters into a long-term relationship through which “a private proponent designs, builds, finances and operates/maintains a given infrastructure asset”. As will be seen in Section 5.0, not all models of P3 in Canada deliver that level of integration, but experience has shown that the public owner typically benefits from greater integration than generally occurs under conventional delivery models.

**Risk Transfer**

The concerns public owners have with respect to cost and schedule overruns, and asset performance, maintenance and operation, lead public owners to transfer those risks to the private sector. There is a clear distinction between fair risk allocation, sharing risk and reward among the parties, and unreasonable attempts to “dump” risk onto the private sector without considering the ability and capacity of the private sector to manage those risks.

When discussing risk allocation under any project delivery model, including P3s, it is important to emphasize the key principles which must govern risk allocation between the public and private sector:

- Risk must always be allocated to the party best able to manage that risk;
- Comprehensive risk analysis and a detailed risk matrix are essential tools for both the public owner and private sector in considering appropriate risk allocation;
- The party considering taking on a risk must be able to identify, quantify, mitigate, manage and be compensated for it.

**Financing**

Financing is often identified as a reason for using P3 delivery. Government can borrow at lower cost than the private sector. So how can private sector financing of P3 projects be justified? The argument supporting private sector financing on P3s is that there are costs savings in efficiencies and innovations brought to the P3 project by the private sector. In addition, risks which could result in higher costs to taxpayers in the future have been transferred to the private sector P3 partner.

The savings and the value of the risk transferred to the private sector is said to offset the additional finance costs. Some also suggest that there can be financial advantage in the short term for the public
owner in P3s because public money does not begin to flow until the asset is fully operational, which in large P3 projects is usually many years after the project agreement was executed.

**Projects May Be Delivered Faster**

Experience in Canada supports that P3s can in many cases deliver infrastructure faster when compared with more conventional models, though that isn’t always the case. P3s are a much more complex and therefore time consuming process up to the point when the project agreement is executed when compared to conventional delivery models. Once the project agreement is in place, however, time may be saved in the construction process through innovation and efficiency, and the incentive of revenue beginning to flow to the private sector P3 partner earlier than planned.

**Life Cycle Cost Considerations**

Especially where maintenance and operation of the asset are the responsibility of the private sector P3 partner on a P3 project, decisions relating to life cycle costs are a major consideration for the private sector in preparing its proposal to be most competitive. Life cycle costs are also very important to the public owner. The owner is paying for maintenance and operation through the project agreement and expects the asset to be well-maintained and efficiently operated at the lowest cost possible. The owner also wants to continue to benefit from operating efficiencies and low costs when it takes over responsibility for maintenance and operation at the end of the project agreement. In some cases, the objective of an owner may be to divest itself of the responsibility of operating and/or maintaining an asset and to transfer the long-term financial risk of operations and maintenance. While this is a legitimate cost consideration, it is not truly a life cycle consideration. ("How to Engage with the Private Sector in Public-Private Partnerships in Emerging Markets", pg. 11)

Both public and private partners contribute to the running costs (administrative costs) of the European Commission’s Joint Technology Initiatives.

These partnerships make it possible:

- To **develop commercially-viable solutions** by supporting large-scale multinational research activities in areas of major interest to European industrial competitiveness.

- To **integrate and internalize objectives of high societal relevance**, such as promoting alternative energy sources and using energy and resources more efficiently, supporting more sustainable transport, combating climate change and ensuring high quality, affordable health care.

- To **pool and leverage** (private, European and national) funding and know-how and to reduce the fragmentation created by multiple national projects pursuing similar or overlapping objectives.

- To **harness the skills and innovation of the private sector** within appropriate risk sharing arrangements. (Mobilising private and public investment for recovery and long term structural change: developing Public Private Partnerships", pg.6)

The theoretical literature on the topic suggests **four positive outcomes of the private provision of public services:**

- **PPPs can create competition in the education market.** The private sector can compete for students with the public sector. In turn, the public sector has an incentive to react to this competition by increasing the quality of the education that it provides.

- **PPP contracts can be more flexible than most public sector arrangements.** Generally, the public sector has less autonomy in hiring teachers and organizing schools than the private sector does. Public-private contracts can be a better fit between the supply of and demand for education. Flexibility in teacher contracting is one of the primary motivations for PPPs.
• Governments can **choose private providers** in PPP contracts by means of an open bidding process in which the government defines specific requirements for the quality of education that it demands from the contractor. The contracts often include measurable outcomes and clauses that specify the condition to deliver a certain quality of education, and the contractor with the best or lowest cost proposal is then chosen. This one characteristic of the contract alone can raise the quality of education.

• PPP contracts **can achieve an increased level of risk-sharing** between the government and the private sector. This risk-sharing is likely to increase efficiency in the delivery of services and, consequently, to induce the channeling of additional resources to the provision for education.

(“The Role and Impact of Public-Private Partnerships in Education”, pg.4)

**PPPs maximise the use of private sector skills**

Under traditional procurement, the private sector is responsible for delivering an asset to time and budget. In contrast, PPPs require the private sector to:

• Deliver assets on time and budget.
• Ensure that those assets deliver the service levels required by the public sector.
• Project manage the overall delivery of the project.
• Ensure that the individual assets and other elements of the project that have been procured work together to successfully deliver services. Particularly in the rail sector, such “systems integration risk”, which involves ensuring signal systems, rolling stock and track work seamlessly together, is a key project risk.
• Maintain and refurbish assets on an effective basis, so that services are delivered continuously at satisfactory levels over the long-term.

PPPs therefore offer significant opportunities to benefit from private sector skills to a far greater degree because of these additional requirements.

In considering whether to use PPPs, public sector authorities should also look at their own track record of project delivery. Have projects been delivered on time and on budget? Has systems integration risk been properly managed? Have effective project management skills been introduced? Does the public sector have the skills and resources to manage and maintain the assets effectively after their acceptance from the private sector contractor?

**Public sector authorities often do not have in-house capability** to deliver projects and maintain them over lengthy periods; this is largely by design, not by omission. They may only procure projects infrequently and therefore lack the necessary skills and training to implement projects, and therefore have no need to retain such a capacity in-house. Therefore, more extensive use of the private sector throughout a project’s life gives best value, as the private sector parties have that experience and are repeatedly delivering projects internationally.

(“Delivering the PPP promise: A review of PPP issues and activity”, pg.19)
4. Constraints and Limitations of PPP

The costs of financing a particular project will be the same for public and private finance only if ‘contracts are easy to define, risks are well understood, transaction costs are low, and competition to provide finance is active’. Under certain situations, however, it may be the case that the cost of financing under PPPs is higher than under public provision. For example, misallocating risks associated with various aspects of the project may lead to a higher cost of capital under PPPs relative to public provision. This relates to the fundamental idea in financial theory that risks should be transferred to the party that is best able to manage it. Hence, if too much risk is passed on to the private sector via PPPs, investors would require a higher return in order to compensate for it.

Indeed, a feature of PPP contracts in practice has been that the public sector has looked to push as much risk as possible on to the private sector, regardless of which party is best able to manage that risk. This has seemingly stemmed from a reluctance within some public agencies to take on risks/costs, even where they have been best placed to do so. The effect of inappropriately passing risk to the private sector is that it pushes up the cost of capital, and hence the overall cost of the project. (Alternative Ways of Financing Infrastructure Investment: Potential for ‘Novel’ Financing Models, pg. 23)

PPPs have failed to overcome some of the problems of bidding that are associated with traditional procurement methods. In particular, a criticism of transport infrastructure projects has been that private sector companies have systematically underestimated the costs that will be involved in delivering these projects, or overestimated the demand for the finished product. In PPPs, this has led to overbidding in the form of inflated traffic and revenue forecasts. As noted in Oxera and RBconsult (2012), examples of overestimated demand forecasts are prevalent in studies on toll road PPPs. (Alternative Ways of Financing Infrastructure Investment: Potential for ‘Novel’ Financing Models, pg. 25)

Overbidding can also have less obvious costs. One of the intentions of competitive tendering for PPP contracts is that it should ensure that each PPP is awarded to the private sector party that can carry out the contracted functions most efficiently. However, overbidding could discourage well-qualified (and perhaps better-qualified) parties from entering the bidding process—because they understand that they will win the contract only if they pay over the odds—and could thus be particularly damaging from an efficiency perspective. (Alternative Ways of Financing Infrastructure Investment: Potential for ‘Novel’ Financing Models, pg. 26)

The lack of flexibility may be a problem if terms under initial contracts are mis-specified, which is likely in the case where future demand is highly uncertain. For example, the inflexibility of PPPs might not allow the parties to take into account exogenous, unexpected cost shocks. As argued earlier, however, PPPs needs to be sufficiently concrete to mitigate the time-inconsistency problem. Thus, a successful PPP must provide a good balance between adequate flexibility following an unexpected, exogenous event while ensuring sufficient investor protection. Another concern for PPPs is derived from the fact that the contracting takes place with inherent uncertainty about future market and macroeconomic conditions. This means that PPP contracts do not specify what actions are to be taken and the resulting consequences in all possible future contingencies—ie, PPPs are examples of incomplete contracts. This problem is magnified by long duration and infrastructure-specific issues (eg, greenfield volume risk). (Alternative Ways of Financing Infrastructure Investment: Potential for ‘Novel’ Financing Models, pg. 27)

The assumption that private sector operations will generate efficiencies (that the public sector will not) builds from the fact that private sector companies have a profit motive—that is, equity holders are the residual claimants of any additional profits which are achieved by becoming more efficient. However, debt and equity holders may have different financial incentives, regarding whether they are primarily motivated to increase the ‘gain’ or to minimise the potential for ‘loss’. Equity holders would be expected to have an incentive to achieve performance greater than that expected when the contract is
signed. However, creditors may be motivated to avoid downside risks. Since PPPs have tended to be highly geared (frequently greater than 90% gearing), equity incentives may not be as strong as anticipated, leading to fewer incentives to achieve private sector efficiencies.

The **highly geared nature of PPPs** also gives the private sector bargaining power over the government, especially for mission-critical infrastructure. Specifically, a high level of debt would imply greater financial risk, but this could be passed on to the government if it is ‘known’ that the government would not let the company go bankrupt. This occurs when the government’s cost of guaranteeing a company is lower than the cost of allowing it to go bankrupt. *(Alternative Ways of Financing Infrastructure Investment: Potential for ‘Novel’ Financing Models, pg. 29)*

Following the financial crisis there has been a widespread downgrading of the monolines, with serious implications for the PPP bond market in Europe. The demise of the monoline insurers has, to all intents and purposes, seen the closure of the wrapped bond market, and there has yet to be a viable, alternative means of tapping into the capital market. The onus on bank financing for PPPs is thus stronger than ever.

However, the current problems in the banking sector are well reported: the collapse of the inter-bank lending market has drastically reduced liquidity. Most banks, particularly those with limited deposit bases, are struggling to raise funds even on short maturities … **Project finance and PPP lending is competing for scarce regulatory capital allocations** with more attractive corporate opportunities. This is testing the viability of the current PPP model.

Going forward there remains a question of how banking sector reforms, introduced in response to the financial crisis, will affect the existing stock of infrastructure loans and banks’ capacity to supply financing. *(Alternative Ways of Financing Infrastructure Investment: Potential for ‘Novel’ Financing Models, pg. 30)*

Even the **UK government, historically the biggest proponent of PPP projects**, has acknowledged the potential need for such alternatives:

The **Government shares** some of the **commonly identified concerns** that PFI contracts can be too costly, inflexible and opaque … The Government now intends to undertake a fundamental reassessment of PFI and wants to develop a **new delivery model** that **draws on private sector innovation** but **at a lower cost to the taxpayer** and **offering better value for our investment in public services**. This has been the result of a number of contributing factors, including:

- high transaction costs;
- inherent inflexibility and incompleteness of contracts and payments;
- limits to cross-fertilisation of ideas across the public sector;
- private sector opportunism, inflated demand forecasts and forced renegotiations;
- inappropriate risk transfer raising the perceived risk to investors, and resulting in a high cost of capital; and lack of bank financing following the recent turmoil in the credit market.

The second and the third point, in particular, mean that when undertaking especially risky infrastructure investment, PPPs may not be the best procurement method. This leaves scope to discuss possible alternative financing methods in circumstances where PPPs are generally ineffective. *(Alternative Ways of Financing Infrastructure Investment: Potential for ‘Novel’ Financing Models, pg. 32)*

**Potential Disadvantages:**

- **Higher cost:**
  - The borrowing rates given to the private sector may be higher than those typically available to governments.
  - An expensive tender and negotiation process, including higher contract transaction costs paid to legal and accounting firms, can neutralize any savings made in design and construction phases.
Transferring risk from one party to another has its price, and the private sector will expect guarantees of income proportionate to its risk burden.

- **Reduced competitiveness:**
  - High tender and transaction costs, along with complicated and long-term contracts reduce the pool of private sector companies with the capacity to apply for certain projects, reducing the government's choice and competitive tender processes.
  - Exclusivity agreements awarded to winning companies lock them into guaranteed profits and, in reality, creates monopoly markets, reducing competitive pressure to reduce costs and enhance services.

- **Complicated and lengthy tender process:** PPP contract and negotiation periods are often more complex and protracted due to the nature of the multi-party, financially intricate, and long agreement terms inherent in the relationship.

- **Lack of capacity:**
  - It is necessary for both the public and private sectors to possess **PPP-specific capacity for an agreement to be signed and administered successfully.** Such capacity is absent from many jurisdictions, both at a national and regional level, and it takes both time and experience to establish it.
  - An over-reliance on external consultants also leads to an expertise flight, where any knowledge gathered throughout projects is not retained by public bodies or private companies, but rather lost to external sources, making it difficult to build knowledge and lessons for the future.

- **Rigid/inflexible/long contracts:**
  - In order to provide stability and security over time, long contracts can become rigid and inflexible, reflecting point-in-time circumstances and then locking them in over the contract period.
  - It remains difficult for governments to adequately structure contracts that take into account future unforeseen events or circumstances, and it is often difficult to adapt and change contractual responsibilities as the context changes.
  - Future generations cannot respond to their individual circumstances but must adhere to outdated operations from previous decades.
  - Building flexibility into contracts is an expensive proposition because as the investment become less secure it may become necessary to further incentivize the private sector.

- **Delays and holdups:**
  - The private sector is not impervious to project stoppages, and the complicated nature of the agreements between PPP partners can increase delays, as disputes take longer to be settled and any unforeseen eventualities that takes place in future years involve a lengthy renegotiation of the contract.
  - The start of projects is also delayed by complex partner negotiations, sometimes further exacerbated by the political debate and public opposition that can surround PPP projects.

- **Higher consumer prices:**
  - Driven by a need to cover high levels of cost plus make a return on investment, market-driven pricing can see services cost the consumer more than if delivered by the public sector.
  - The issues of competitiveness and monopolies also mean there is potential for abuse in regards to user fees.

- **“Double taxation”:** The general public may perceive user fees as a form of “double taxation” whereby they are paying for services they feel their taxes should be providing or already have paid for. This will be noticeable in the case of toll ways, for example, where tolls have not existed under previous public sector provision and where there was no tangible cost to the user.
Less accountability/transparency:

- Project transparency is weakened under the PPP model because of the difficulty in accessing private sector information, now considered of commercial value or commercial-in-confidence by the consortium.
- Whole of project evaluation becomes problematic for similar reasons, as data is spread over numerous sources, compiled differently, and not always available for public scrutiny.

("Harnessing the Power of Public-Private Partnerships: The role of hybrid financing strategies in sustainable development", pg. 6)

Overlapping rights among parties to a PPP make transaction costs particularly significant. These costs follow from the complexities of defining responsibilities among partners, writing a contract that sets them out (the infamous 'ink costs'), determining and implementing procedures to attract and select private operators, and monitoring the relationship established under the type of PPP selected. This last aspect, the ex post implementation of a contract, is particularly significant because of the many problems and adjustments not anticipated at the time a contract is established. Coordination and adaptation problems resulting from the blurred areas of decision rights generate conflicts and repeated renegotiations. There is no simple governance solution to deal with these difficulties: finding the organizational arrangement that fits the transactions at stake is a major challenge. It is so because the property rights in which decision rights are embedded are unevenly distributed, with overlapping zones. These are issues that the term 'partnership' elegantly conceals. The development of regulation and regulatory agencies to monitor these problems, a solution that is quite universal since almost everywhere the provision of infrastructure involving private operators remains highly regulated, is a complementary source of complexity, and carries associated transaction costs. ("Is Public-Private Partnership Obsolete: Assessing the Obstacles and Shortcomings of PPP", pg. 37)

Legislation, which delineates the space within which contracts are designed and implemented, is particularly relevant here. To secure transactions and provide adequate incentives, relatively comprehensive legislation is needed, with private operators looking for guarantees while public authorities need to legitimize their choice of PPP. Establishing an appropriate legal framework is not that obvious, as illustrated by its slow progress in the EU: laws regarding PPP were only recently adopted in Spain, Ireland, and France (as late as 2008) while drafts are still being discussed in most other EU members, as well as at the level of the European Commission. The existence of a well defined legal system and of a powerful judiciary can also carry ambiguous effects. On the one hand, it makes commitments credible: parties are aware that in case of diverging interpretation or conflicts, they can go to arbitration and, in last resort, address courts. On the other hand, legal support might turn into legal impediment, since it introduces rigidities in the negotiation, costly procedural obligations ex ante as well as ex post, and as it is rooted in diverging national traditions, making the task of international operators complex and costly. The success of PPP therefore depends on a delicate equilibrium between the need for a legal support and a judiciary that make commitments credible: and the risks of a system that is either incompetent, imposing arbitrariness on parties, or powerful enough to engage parties in highly procedural and costly relationships. ("Is Public-Private Partnership Obsolete: Assessing the Obstacles and Shortcomings of PPP", pg. 37)

Potential Disadvantages:

- PPP projects can prove to be more expensive in the long-term than standard procurement, due mainly to the higher costs of private sector borrowing when compared to government rates. Additionally, it is possible for prescribed government payments to the private sector over the length of the project term to exceed the costs of a comparative public sector provision.
- Accountability and transparency issues are distorted under PPP models of financing and agreements, as private sector funding components fail to appear on public spending records. Similarly, evaluation is made more difficult as private sector data on profits, costs, or lessons learnt can be considered issues of commercial confidentiality and less easily accessible.
• PPPs typically involve high tendering and transaction costs, while associated contracts are also complex and long-term. Together, these factors reduce the pool of private sector companies that have the capacity to undertake PPPs, raising issues of competitiveness.

• The inclusion of exclusivity agreements within PPP contracts can have the effect of awarding monopoly markets to private partners, further extending anticompetition issues.

• It is necessary for both the public and private sectors to possess PPP-specific capacity for an agreement to be signed and administered successfully. Such capacity is absent from many jurisdictions, both at a national and regional level, and it takes both time and experience to establish it, making it difficult to scale up PPP procurement quickly. ("Sustainable Development: Is there a role for public–private partnerships: A summary of an IISD preliminary investigation", pg. 4)

Despite all the potential advantages and broader benefits of PPPs, there have been many well-publicized and unnecessary failures in planning, structuring, and implementing PPPs. For instance, many water concession contracts signed by Asian cities in the 1990s have been plagued by legal disputes and renegotiations.

Problems have centered on poorly defined responsibilities in the contracts, lack of sharing of efficiency gains, and weak regulatory effectiveness. In some cases, governments have not fully understood their contractual responsibilities, especially their “contingent liabilities.” For instance, when the Asian financial crisis hit and PPPs started experiencing cash flow and profitability problems, some governments balked when risk mitigation mechanisms were triggered. Some of them repudiated their obligations, forcing projects into renegotiation or collapse.

It is important to put such experiences into proper perspective. Unsuccessful PPPs do not point to a failure in the overall concept of PPPs. Instead, they should serve as reminders that PPP projects have to be adequately structured and implemented, factoring in a range of technical, financial, socio-economic, and political issues. If done right, PPPs will very likely increase the quality and value of services to consumers. In the face of changing market realities, local authorities in developing countries should consider innovative approaches to structuring projects. At the same time, they must take a pragmatic approach, being careful not to get trapped in unsuccessful and costly projects that have not been vetted carefully enough. ("CDIA PPP Guide for Municipalities", pg. 10)

Before pursuing a PPP approach, the public sector authority should consider the following issues:

Does sufficient private sector expertise exist to warrant the PPP approach? For PPPs to be attractive, the private sector must have the necessary expertise. Private sector players must be:

• Able to provide a more efficient and effective service. For example, if there is an incumbent public sector operator, the private sector should have proven additional management skills to realise service improvements and efficiency gains.

• Sufficiently numerous, with enough potential private sector bidders to allow for an effective competition.

• Experined in pricing life cycle costs in the particular field.

• Experienced enough to allow them to manage and absorb the particular risks of the project, country or sector in which the PPP is proposed, thereby reducing the likelihood that large risk premia are included in their prices.

Where a public sector authority proposes a programme of PPPs, for instance a road building programme, any lack of expertise at the outset might be of lesser concern, because a programme of PPPs would encourage the private sector to develop expertise, and attract market entrants from other countries or sectors.

Does the public sector have sufficient capacity and skills to adopt the PPP approach? The degree to which the public sector possess the capacity, capability and skill level for successful PPP procurement differs markedly across Europe and between different entities within governments. The
precedents on which new deals must be based and the legal framework within which PPPs must be completed also vary. While these are also issues for traditional procurement, the complexity of PPPs accentuates them. ("Delivering the PPP promise: A review of PPP issues and activity", pg. 27)
5. PPP for Improving Energy Efficiency

In line with the ambitious 2050 targets, we expect that already in 2030 the entire value chain will produce advanced systems, solutions and high value services for intelligent and sustainable buildings and districts. The long term strategic objectives include:

- **Most buildings and districts become energy neutral**, and have a zero CO2 emissions. A significant number of buildings would then be energy positive, thus becoming real power plants, integrating renewable energy sources, clean distributed generation technologies and smart grids at district level.

- **Industry will employ highly skilled individuals** capable of efficiently, safely and quickly carry through construction processes. This means an extended value chain and collaborative “assembly” line delivering adaptive and multifunctional energy and resource efficient buildings and districts solutions.

- **Unemployment is kept low as skilled local jobs will be created through an effective and dynamic matching of demand and supply**. Public Private Partnerships will indeed cover the entire innovation chain, fostering performance based contracting and innovation friendly procurement practices. This will be achieved with sustainable financial incentives schemes on the demand side. On the supply side, systemic technical solutions optimised at European scale will be integrated locally.

- **Urban planning and smart cities implementation** leverage on these novel solutions at building and district scale, creating the basis for intelligent connections between buildings and districts and all urban resources.

- Such **globally competitive energy efficiency industry is able to deliver new business opportunities**, jobs and solutions. In terms of environmental impacts, greenhouse gas emissions are reduced to 80-95% below 1990 levels, as required by the Energy Roadmap 2050 (COM(2011) 885/2). In addition, the use of renewable energy and efficiency technologies is extended as required by the Strategic Energy Technology Plan, the energy efficiency plan and the recast of the EPBD.

   *(Energy-efficient Buildings PPP beyond 2013 - Research & Innovation Roadmap, pg. 19)*

Establishing a Public Private Partnership on Energy Efficient Buildings in the form of a Contractual Partnership is the option preferred by industry and the stakeholders collectively. Industry prefers an action with a strategically-managed route from research through development and demonstration to market deployment and it also favours a pre-defined budget as this allows Energy-efficient Buildings PPP beyond 2013 - Research & Innovation Roadmap July 2012 industry to make long-term investment plans. This would also encourage confidence in industry to engage in the necessary longer-term projects in cooperation with basic research organisations.

Under the present concept for a Contractual partnership, the energy efficient buildings supply and value chains (industry, SMEs, Research organisations, Public and Private promoters, standardisation bodies, users...) in consultation with the European Commission, would take the lead role in defining the programme priorities and timelines, set against commercialization targets for cost and performance – with milestones and KPIs to take strategic decisions and mobilize additional investments. Although the PPP initiative would apply the general principles of the Framework Programme regarding equal treatment, openness and transparency, there is scope for more dynamic and efficient implementation.

   *(Energy-efficient Buildings PPP beyond 2013 - Research & Innovation Roadmap, pg. 58)*

Our model suggests that default and re-negotiation are natural outcomes of PPP auctions. However, this does not result in an inefficient allocation process. It is found that the possibility of default (and subsequent renegotiation) might lead to all firms bidding more aggressively than in an unlimited liability setting, but the tender still allocates the contract to the firm with the lowest cost. This implies that the winning bid may appear unrealistically attractive to the Government if it fails to anticipate this “hold-up” problem. Rather surprisingly, the severity of this problem is increasing in the efficiency of the winning firm:
more efficient firms are bailed out more often — and extract a higher expected transfer from Government — than less efficient firms. ([Default and Renegotiation in PPP tenders, pg. 3])

Green technology, development and PPP are not mutually exclusive concepts: The Moroccan solar energy case study demonstrates the tremendous potential of PPP to contribute sustainable and environmentally conscious solutions to development-related priorities.

- **Contextual understanding and responsiveness promotes stability and sustainability:** The Moroccan example suggests the need of all parties to recognise and adapt to unique situations and circumstances of both the country and PPP context. The government acknowledged its need to subsidise the technology its population could not afford in order to attract the private sector and ensure business viability. The service provider used local know-how and approaches to tackle issues of overdue fees and public scepticism inherent to the consumer market.

- **Changes will need to be made to underlying norms of risk transfer and compensation for PPPs to serve effectively as tools for sustainable development:** This is especially important in middle- and lower-income countries where approaches and perceptions to risks need to be different if these investments are to bring real and sustainable development (as opposed to growth alone). For example, the Moroccan energy ministry recognized that standard business models would not be successful in bringing electricity to its rural low-income areas. It therefore needed to step in and subsidize the private partner in order to create a viable PPP. ("Harnessing the Power of Public-Private Partnerships: The role of hybrid financing strategies in sustainable development", pg. 22)

The power sector provides an example of this methodology in action. Power has three value chain steps: generation, transmission, and distribution. The step most amenable to PPPs is generation, because of its:

1. **Scale and long-term nature.** Generation projects involve building and operating plants. Projects need long durations and require large-scale capital expenditure.
2. **Clearly defined service needs.** Outputs are easily identifiable (e.g., megawatts of electricity).
3. **Clear risk allocation.** Projects are usually plants confined to one location run by the private investor, which usually bears the design and construction risks, while often the government bears partial demand risk because it is the off-taker (initial buyer).
4. **Well-defined costs.** Costs usually consist of capital expenditures and operating expenditures. They can be easily estimated based on similar projects.
5. **Stable requirements.** Generation plants generally require few unplanned upgrades and expansions over their lifetime. External assessment. Following the analysis of value chain readiness, an external assessment evaluates the “readiness” for PPPs of each part of the value chain based on lessons learned from international benchmarks.

**International benchmarks** yield two forms of guidance. First, they allow the authorities to see which value chain steps are most frequently structured as PPPs internationally. Second, they inform a government about relevant PPP models used abroad, such as service contracts, management contracts, build-operate-transfer contracts, and the like.

Studies of the power sector in the United Kingdom, Italy, and Australia confirm that generation is the most PPP-friendly value chain step. The main models are build-operate-transfer, whether as IWPPs or independent power projects (IPPs). The first British partnership in generation was the IPP at Corby. ESBI, an Irish state-owned company, launched a 350 megawatt gas-fired power station in 1992.

**Internal assessment.** The value chain steps identified by the external assessment then undergo an internal assessment. This prevents a government from copying mature country models that may not work in its national development context. The internal assessment uses three country-specific criteria to winnow the results of the external assessment:

- **Demand and supply:** Assesses the need for a project based on the gap between demand and supply, such as electricity production versus consumption needs.
• **Government capabilities and legal structure:** Checks that the government is able to carry out PPPs by examining its project oversight experience, and reviews local laws for possible constraints on project execution.

• **Private-sector capacity:** Evaluates whether private partners with relevant experience exist for the project under consideration.

**Project Compilation**

This **rigorous sector analysis** allows the government to compile a **national registry of potential projects**—the long list. By examining each value chain step in this comprehensive manner, the government is able to decide whether or not a project should be considered for the final road map, while simultaneously ensuring comprehensive coverage of the economy and alignment with national development plan objectives. ("Partnerships for Transformation Using Public–Private Partnerships in the GCC”, pg. 20)

**European Commission PPP support innovation in key industries:**

• **‘Factories of the Future’** (€1.2 billion), through an initiative intended “to help EU manufacturers, especially SMEs, to adapt to global competitive pressures by increasing the technological base of EU manufacturing through development and integration of the enabling technologies of the future, such as engineering for adaptable machines and industrial processes, ICT (Information and Communication Technologies), and advanced materials”;

• **‘Energy-efficient Buildings’** (€1 billion), with an initiative “to promote green technologies and the development of energy-efficient systems and materials in new and renovated buildings with a view to reducing radically their energy consumption and CO2 emissions”;

• **‘Green Cars’** (€1 billion), via an initiative “involving research on a broad range of technologies and smart energy infrastructures essential to achieve a breakthrough in the use of renewable and non-polluting energy sources, safety and traffic fluidity”. In addition, €4 billion in loans from the European Investment Bank (EIB) will be available to support research and innovation.

The Recovery Plan also includes a front-loading of €70 million of the EC contribution for the Risk-Sharing Finance Facility (RSFF), the guarantee fund for research, development and innovation which has been set up by the EIB and the European Commission under the Seventh RTD Framework Programme (FP7). This will allow an estimated additional €350 million of loan financing in 2009. ("New public-private partnerships for research in the manufacturing, construction and automotive sectors", pg. 4)

The relatively small size of energy-efficient projects compared to other investments increases the transaction costs related to energy efficiency projects. This is compounded by the relatively high uncertainty surrounding energy savings measures and the difficult replication of projects. Furthermore, financing institutions typically provide asset-based lending rather than project financing and limit the debt amount to 70-80% of marketable asset value.

Energy savings are almost never taken as collateral and asset market value does not reflect the energy (and economic) performance of those assets (i.e. buildings). Financiers are reluctant to engage in long-term energy efficiency financing contracts although they may provide a positive Net Present Value and tend to prefer shorter term and higher yield projects.

Furthermore, longer-term returns of energy efficiency investments (and their current illiquidity) are a barrier for investors compared to markets with easier and earlier exits. Combined with a significant slowdown of the secondary market (securities), energy savings-backed securities do not exist, which limits the investment size of the market and causes insufficient energy efficiency tailored financial products on offer.

Moreover, there is still a dependency on grants and a lack of a systemic approach to bundling energy efficiency investments into packages (and thereby gaining economies of scale and reduction of relative administrative costs and technical risks), is still in its infancy. Moreover, grant schemes for viable energy
efficiency projects may induce market distortions and constitute a barrier for private financing opportunities.

Indeed, the use of innovative financial instrument is still limited although Member States now have the opportunity to channel part of their Structural funds allocation in such instruments and potentially limiting their co-financing rate by attracting matching private capital. (*Financial Support for Energy Efficiency in Buildings*, pg. 11)

As part of its European Economic Recovery Plan, adopted in November 2008 to tackle the global economic downturn that badly affected key sectors of European industry, in early 2009 the European Commission launched three public-private partnerships (PPPs). These PPPs were designed to fund research and innovation in the manufacturing, construction and automotive sectors to boost competitiveness and increase employment. Progress over the past year shows the scheme is having a positive effect in manufacturing and in the automotive industry and is starting to boost energy efficiency in construction.

Working closely with industry, the European Commission proposed research actions to develop new technologies and promote the rapid conversion of the results into marketable innovations. At the same time they encourage active participation by small and medium-sized enterprises (SMEs).

Three partnerships have been implemented:

- in the manufacturing sector, a EUR 1.2 billion ‘Factories of the Future (FoF)’ PPP initiative to promote the competitiveness and sustainability of European manufacturing industry;
- in the construction sector, a EUR 1 billion ‘Energy efficient Buildings (EeB)’ PPP initiative to promote green technologies and the development of energy efficient systems and materials in new and renovated buildings to radically reduce their energy consumption and CO2 emissions; and;
- in the automotive sector, a EUR 5 billion ‘Green Cars (GC)’. PPP initiative to improve the sustainability of all European road transport and accelerate the move towards electrification of road and urban transport. The budget includes a EUR 4 billion loan facility for research and support measures from the European Investment Bank (EIB) under its European Clean Transport Facility (ECTF).

With relatively similar objectives, 'Future Internet', a new PPP devoted to information and communications technology (ICT), was officially launched in May 2011.

Long-term approach

These initiatives are helping secure the long-term future of a knowledge-based and low-carbon EU economy, as underlined in March 2010 in the Commission Communication ‘Europe 2020: A strategy for smart, sustainable and inclusive growth’. In the near future PPPs are expected to play a strategic role in at least three of the seven EU 2020 flagship initiatives – Innovation Union, Resource-efficient Europe and Industrial Policy. The Innovation Partnerships, newly proposed frameworks to facilitate innovation, will also build on initiatives such as these PPPs. (*"New public-private partnerships for research in the manufacturing, construction and automotive sectors”*, pg. 4)

The overall EUR 3.2 billion research budgets of the three research PPPs in the Recovery Plan are based on matched funding from the Seventh Framework Programme (FP7) and the private sector. The PPPs use the current FP7 funding schemes and the calls are published annually. In addition, the Risk-Sharing Finance Facility (RSFF), a loan facility for investment in research and technological development (RTD) and innovation set up with the EIB under FP7 – as well as the measures supported under the ECTF for the Green Car PPP – has enabled companies to secure funds to take concepts to the market. Total RSFF lending in 2010 provided by the EIB and supported by the European Commission amounted to EUR 1.84 million.
Engaging industry

To achieve a fast start-up, in July 2009 the PPPs already launched the first cross-thematic Calls for Proposals under FP7. In parallel, exploration of a strategy for the longer term was also undertaken. To structure the dialogue between the public and private sides of the PPPs, the European Commission invited representatives of the industrial and research stakeholders to take part in Ad-hoc Industrial Advisory Groups, convened to determine the priorities for shared investment in research.

Following wide-ranging cross-sectoral consultations of the stakeholders, multi-annual roadmaps were published in January 2010 for the FoF and EeB PPPs. A similar roadmap was published for the GC initiative in early 2011. These roadmaps help prepare the annual Work Programmes for the PPP Calls for Proposals within FP7.

The manufacturing and construction sectors have set up dedicated non-profit associations – the European Factories of the Future Association (EFFRA) and the Energy-efficient Buildings Association (E2BA) – to facilitate liaison with the EU Commission in developing the PPPs. (“New public-private partnerships for research in the manufacturing, construction and automotive sectors”, pg. 4)

Green hubs and Green Corridors

This domain covers the development of efficient interfaces in the transport system, or ‘green hubs’. Efficiency in this context is defined as high operational performance, effective use of resources, limited impact on the surroundings and the environment. The approach to develop hubs according to this ambition has two dimensions:

• the improvement of the hub itself, focusing on operational improvements, reduction of energy use of processes in the hub, etc;
• relieving the hubs of temporary or geographically concentrated pressures by connecting the hubs with each other.

Given that corridors and hubs also involve infrastructure, the explicit development of new models of Public-Private Partnerships (PPPs), in which not only the investment but also the level of innovation is made part of the partnership, need to be considered as ways to achieve green hubs and Green Corridors. (“European Green Cars Initiative: Public-Private Partnership”, pg. 57)

Today, the construction sector is fully aware of a huge responsibility, being the highest energy consumer in the EU (about 40%) and main contributor to GHG emissions (about 36% of the EU’s total CO2 emissions and about half of the CO2 emissions which are not covered by the Emission Trading System).

In March 2007, the European Council set clear goals for 2020:

- Increase energy efficiency to achieve a reduction of 20% of total energy use (below 2005 levels);
- 20% contribution of Renewable Energies to total energy use (11.5% above 2005 contribution);
- 20% reduction of Greenhouse Gases (GHG) below 1990 emissions (14% below 2005 emissions).

In line with the European Economic Recovery Plan, further strategic targets impacting on Energy Efficiency in Buildings and its innovation potential are associated to the following policies:

- the EU Lisbon Strategy for Growth and Jobs;
- the Barcelona 3% RTD intensity objective;
- the Action Plan on Energy Efficiency in Europe – saving 20% by 2020;
- the Directive on end-use energy efficiency and energy services;
- the White book on Renewable Energy Sources (RES);
- the Directive on electricity from renewable energy sources;
• the Directive on eco-design of end-use energy consuming equipment;
• the Directive on appliances energy labelling;
• the Directive on heat demand based high efficient cogeneration;
• the European Strategic Energy Technology Plan;
• the Environmental Technology Action Plan;
• the EU Sustainable development strategy;
• the Green paper towards a European strategy for the security of energy supply;
• the Kyoto Protocol and related international agreements;
• the i2010 Strategy and Communication.

("Energy-Efficient Buildings PPP", pg. 7)

In this framework, the **structured approach** tackles all relevant domains to increase cost effectiveness, improve performance and remove technical and market barriers, developing a holistic strategy and generating appropriate business models to address economic, social and environmental requirements at building and district level. A qual-quantitative ranking of the research challenges towards the objectives of the EeB PPP has been made at AIAA level, giving priorities in terms of implementation. The overall methodology at the basis of the identification of research challenges and priorities is presented in the figure below.

**Key research areas targeting the challenges at the basis of the long term strategy**

("Energy-Efficient Buildings PPP", pg. 14)

The following set of **thirteen challenges** has been considered of **high priority** within the framework of the **EeB PPP initiative**:

• Envelope (for existing buildings);
• Systems and Equipments for energy use (for existing buildings);
• Interaction (integration) between buildings, grid, heat network, etc;
• Systems and Equipments for energy use (horizontal research challenge);
• Systemic Approach (for existing buildings);
• Knowledge transfer;
• Relationship between User and Energy;
• Retrofitting (for districts/communities)
- Envelope and components;
- Design – Integration of new solutions;
- Systemic Approach (for new buildings);
- Energy Management Systems;
- Labelling and standardization.

They will be referred to in the following of the document as Priorities. The order of these thirteen priorities does not reflect any specific ranking. The analysis also highlighted several other logical links between the overall set of Priorities and other research challenges within the framework of the EeB PPP. These connections are highly relevant for the definition of future calls for proposals by the European Commission as they identify the multi-disciplinary aspects and allow the key challenges to be tackled from a broader perspective, where technological and non-technological issues are jointly addressed. These related research challenges include:

- "Materials: embodied energy and multi-functionality", logically linked to the priorities "Envelope (for existing buildings)" and "Envelope and components";
- "Storage of energy at district level": thermal, electrical or other (chemical, hydrogen, mechanical, others)", logically linked to the priority "Interaction (integration) between buildings, grid, heat network, etc.”;
- "District and urban design", logically linked to the priority "Interaction (integration) between buildings, grid, heat network, etc.”;
- "Systems and Equipment for energy production", logically linked to the priorities "Interaction (integration) between buildings, grid, heat network, etc.” and "Systems and Equipment for energy use (horizontal research challenge)";
- "Storage of energy", logically linked to the priorities "Interaction (integration) between buildings, grid, heat network, etc.” and "Systems and Equipment for energy use (horizontal research challenge)";
- "Value Chain and SMEs focus", logically linked to the priorities "Knowledge transfer" and "Labelling and standardisation";
- "Energy Management Systems", closely linked to the priority "Relationship between User and Energy";
- "Geo-clustering", closely linked to the priorities "Relationship between User and Energy" and "Systemic Approach (both for new and existing buildings)";
- "Solutions for Cultural Heritage (including diagnostics)", logically linked to the priority "Retrofitting (for districts/communities)";
- "Quality indoor environment", logically linked to the priorities "Envelope and components” and "Systemic Approach (both for new and existing buildings)";
- "Automation & control", logically linked to the priorities "Design – Integration of new solutions" and "Energy Management Systems";
- "Diagnosis and predictive maintenance (continuous commissioning)”, logically linked to the priorities “Design – Integration of new solutions” and “Energy Management Systems”;
- "Life Cycle Analysis (LCA)”, logically linked to the priority "Labelling and standardization”;
- "Business models, organisational and financial models (including ESCOs)", logically linked to the priority "Labelling and standardization”.

(“Energy-Efficient Buildings PPP”, pg. 37)

In line with the ambitious 2050 targets, we expect that already in 2030 the entire value chain will produce advanced systems, solutions and high value services for intelligent and sustainable buildings and districts. The long term strategic objectives include:

- most buildings and districts become energy neutral, and have a zero CO2 emissions. A significant number of buildings would then be energy positive, thus becoming real power plants, integrating renewable energy sources, clean distributed generation technologies and smart grids at district level.
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such globally competitive energy efficiency industry is able to deliver new business opportunities, jobs and solutions. In terms of environmental impacts, greenhouse gas emissions are reduced to 80-95% below 1990 levels, as required by the Energy Roadmap 2050 (COM(2011) 885/2). In addition, the use of renewable energy and efficiency technologies is extended as required by the Strategic Energy Technology Plan, the energy efficiency plan and the recast of the EPBD.


Establishing a Public Private Partnership on Energy Efficient Buildings in the form of a Contractual Partnership is the option preferred by industry and the stakeholders collectively. Industry prefers an action with a strategically-managed route from research through development and demonstration to market deployment and it also favours a pre-defined budget as this allows industry to make long-term investment plans. This would also encourage confidence in industry to engage in the necessary longer-term projects in cooperation with basic research organisations.

Under the present concept for a Contractual partnership, the energy efficient buildings supply and value chains (industry, SMEs, Research organisations, Public and Private promoters, standardisation bodies, users…) in consultation with the European Commission, would take the lead role in defining the programme priorities and timelines, set against commercialization targets for cost and performance – with milestones and KPIs to take strategic decisions and mobilize additional investments. Although the PPP initiative would apply the general principles of the Framework

Programme regarding equal treatment, openness and transparency, there is scope for more dynamic and efficient implementation.

The following benefits are expected from the extension of the running EeB PPP beyond 2013, based on lessons learnt and experience so far:

- a critical mass of players is created faster to face the critical issues raised by the 2050 goals,
- the whole value chain of players is involved into the management of the programme with the concerned EC Directorates,
- new players (both large groups and SMEs) join the collective Research and Innovation projects to contribute to the new innovation waves,
- increased visibility for new business models and integration activities in support of both new and refurbished buildings having low energy demand profiles,
- a refurbishment roadmap managed by both the EC and industry, in accordance with the most recent findings at EU level.

(“Energy-efficient Buildings PPP beyond 2013 - Research & Innovation Roadmap”, pg. 59)

Based on an analysis of these barriers and the existing landscape of initiatives including existing public private partnerships, some examples of opportunities for PPPs are presented below. These are only examples based on the analysis, and there would, naturally, be other PPPs which would likewise have the potential to capture parts of the resource opportunities:
- **Food waste (high-income countries):** Development of a reverse supply chain to divert food waste to its most efficient possible end use. Existing PPPs such as FUSIONS play an important role targeting the prevention of food waste — and can be supported in these efforts — but a new PPP could also potentially play a role redirecting waste to more efficient end uses. As part of such a PPP which will need to be tailored to each specific local context, an at-scale logistics system to collect food waste from farms, wholesalers, and retailers could be developed. In similar models, logistics companies (e.g. from the waste management industry) have provided free collection on the condition that they can sell or process what they collect. From a centralised collection hub, products could either be returned to the retail market, for near-term sale, or can be linked to auction/claiming systems for food banks, composting firms, or livestock breeders. Meanwhile, centralised logistics could enable collection of granular data on food waste. If needed, anonymity could be guaranteed to donors. Regulatory agencies may also need to clarify liabilities in instances of donation, or rationalise laws surrounding animal feed, e.g. “Good Samaritan Laws”.

- **Food waste (middle- and low-income economies):** Address supply chain bottlenecks by supporting coordinated investments in supply chain development and by improving data collection. In middle and low income countries, governments and supporting multilateral institutions such as the International Finance Corporation (IFC) and the World Bank could facilitate supply chain coordination which would enable food and beverage companies to provide joint investment in supply chain improvements at a scale that often is not feasible or attractive for any single player.

- **Industrial energy efficiency (motor systems):** Establish standards for motor systems similar to those that exist for individual motors. A potential opportunity exists for a PPP focused on motor system efficiency, by driving toward the coordinated global adoption of motor system standards. A coalition of industry leaders in a range of countries could, for instance, push for the establishment of voluntary standards for common archetypes of motor systems. The development of this voluntary set of norms might in turn accelerate the adoption of a more formal set of global industry standards.

- **Urban water leakage:** A multi-local, city-focused approach to addressing water leakage. This could involve leveraging a network of cities like the existing C40 platform to make water supply efficiency a goal for member cities. The PPP could help facilitate a wide range of actions. Fundamentally, the PPP would be looking to lower risk for all parties – for the municipality in raising water rates and disrupting roads etc, and for the companies in terms of investing in new infrastructure. One or a handful of major cities with high leakage rates could be selected as pilot model cities for major urban water supply improvement projects. A group of lead “best practice” cities with experience in leakage reduction and supply improvement. The projects would hinge on the commitment and leadership of the municipal water utility of the pilot city in question. This could also be supported by development of more detailed data on water leakage, including “global league tables” and consumer data applications that can help spur action.

- **Grid integration:** Grid integration may be accelerated, mostly on regional and national levels, through a PPP to disseminate grid integration best practices around addressing issues such as public acceptance, permit process streamlining, regulatory frameworks, cost recovery mechanisms and access to finance. It is, however, important to recognise that the nature of barriers will vary in each local context and hence the approach to supporting grid integration will need to be appropriately tailored. ☝️ Industrial wastewater reuse: Matching plants producing waste water with those that could use it. WaterMatch, a free website and data portal that attempts to facilitate matches between producers and potential users of industrial wastewater, or another platform with a similar approach, could potentially be scaled up in a three step approach. First, regulators could work with local wastewater treatment plants to provide up-to-date data on wastewater availability and facilitate the matchmaking process in lead countries (chosen based on level of water scarcity, current reuse levels, and the presence of water-intensive industrial
activity). Second, the database could partner with water-intensive industries to populate the site with data of their treated effluent volumes and the related quality. Finally, a water analytics toolkit that would help water-intensive industries understand the true cost of water in their internal processes, and then determine whether and how they could re-use some of their own effluent streams. This PPP can achieve global scale by providing a cross-country database of wastewater.

- **Advanced bio-based fuels and chemicals**: There may be an opportunity for a PPP to help bio-based-products - such as ligno-cellulosic processes (transformation of ligno-cellulosic feedstock into biofuels or bio-chemicals), biogas (methane), biodiesel from animal fat, methanol based on biomass etc., to become commercially viable. Different nations and regions would have different motivations for supporting a PPP promoting advanced bio-based fuels and chemicals, ranging from energy independence, GHG mitigation, job creation or development of a competitive high technology industry. The PPP could cover different combinations of feedstock, processes and end-products (fuels or chemicals) depending on the objectives of the nations/regions supporting it and the nature of the feedstock available locally. It could be an objective to establish clear and pragmatic standards around environmental footprint accounting that would provide further stability to prospective investors in this field.

Successful action on PPPs like these could potentially deliver a significant share of the available resource benefits. Across each of these opportunity areas, there are a set of implications for cities, public procurement, international trade, and finance. Some of the PPP opportunities discussed here could be integrated into existing structures or existing PPPs, while others would require more of a push to develop new partnerships. 

(“**Accelerating Green Growth through Public-Private Partnerships**”, pg. 8)

The establishment of a [formal technology development plan](#), a [strong legislative framework](#) and a [clearly defined public-private partnership strategy](#) are critical policy elements to effectively promote sustainable electricity technologies. These technologies will in turn foster economic and social development and mitigate the financial risk for investors. Respondents agreed that the priority policy elements that help promote low-carbon technologies and energy efficiency measures were a clear framework of legislation and long-term regulatory clarity and certainty.

**A formal technology development plan should:**

- Establish a long-term vision with realistic goals,
- Allow a mix of technologies that are compatible with local conditions and strong up-front assessment of costs and matching subsidies that would be required,
- Develop human capacity-building for long-term operation and maintenance,
- Minimize risks for private sector investment, and
- Allocate government resources.

A strong legislative framework is considered necessary to remove barriers, stimulate investment with appropriate incentives to meet electricity demand, establish fair and stable regulations, deploy an environmental policy for clean energy sources and provide special incentives and financing for new technologies. This approach of good governance and robust community involvement helps bring projects to a successful conclusion.

The private sector makes long-term financial investments, and these types of investments require stable, longterm policies and financial incentives. An environment conducive to investment and financial incentives was rated by over 75% of respondents as extremely or very important. The priority of national energy policies should be to limit costs by providing efficient incentives to consumers and operators. A key condition for that outcome is to tailor public policies to the maturity level of technologies.
The private sector will shy away from areas with uncertain regulatory climates. If investments were made in countries with unstable governments, they would have a high probability of being lost. Survey results regarding the policies surrounding carbon capture and storage (CCS) have trended to the slightly important to not important at all; this could be based on the coal resources of a particular country. If a country does not rely on coal for electricity production either from its own resources or through imports, this will not be an important issue for them.

The report’s findings underscore the need for the public sector to institutionalize enabling financial and other policies due to the very large and long-term investments that are required to deploy technologies at a scale that will provide significant benefits.

(“Strengthening Public-Private Partnerships to Accelerate Global Electricity Technology Deployment”, pg. 8)

Mechanisms to Establish Energy Policies That Promote Public-Private Partnerships

National energy plans, national legislation and regulation were favored over other means because they provide clear direction and assured cost recovery requirements. In addition, through the legislative and regulatory development process, stakeholders can actively participate. Private companies may sense they have more control and can somewhat mitigate their exposure to regulatory and financial risk through advocacy with legislators and policymakers. This is not the case at the international level as private companies and other NGOs rarely participate in the policy process.

For many countries, international treaties and regional agreements have been ineffective or they have opted not to sign the agreement. Market-based mechanisms have been very successful in many countries, but carbon markets have failed to emerge in the United States. In recent years, there has become a mistrust of markets and fear of collapse. In addition, due to many governments’ budget deficits, there is a lack of trust of government to use the money for new technology investments instead of debt coverage.

Other effective ways to establish energy policy as provided by the respondents include:

• Coordinated aid and multilateral programs/strategies
• Energy conservation education
• Energy integration & cooperation (regional and international)
• Financial mechanisms
• Initial investment support
• Tax on carbon; fuel surcharge on all energy consumption
• International consortium of various governments delineated by energy producers vs. energy consumers
• Persuasion via public relations, public affairs, advocacy, and lobbying

While there are benefits from international agreements among countries, it is understandable that the private sector is most interested in tangible and predictable arrangements at national and local levels. The UN supports the creation of energy development plans at the national level that are strongly supported by the public sector so the pathway and schedule for technology deployment are transparent. These plans need to be based on analytical assessments of resources that can generate and deliver reliable electricity and energy efficiency at affordable prices to support energy security, economic growth through industrial and commercial users, increased environmental improvements and social benefits for citizens.

Well-designed energy development plans are also essential to guide the distribution of financial resources through technology funds. These resources need to be allocated to effectively support needed low-and zero-emitting technologies, particularly renewables.

(“Strengthening Public-Private Partnerships to Accelerate Global Electricity Technology Deployment”, pg. 9)
Germany is Europe's largest and most mature ESCO market. The development of the German market has been attributed to a good mix of governmental support (including both technical and financial support), non-governmental programs and favourable conditions such as the energy taxes (ecologic tax reform), which were increased considerably during the energy sector liberalisation along with an increase in energy prices. The implementation of a large number of municipal projects along with public-private partnerships also had a strong demonstration effect by introducing the ESCO and EPC concepts on the market. The successful implementation phase might also be attributed to the existence of a various number of competing energy service providers on the market, such as municipal utilities (Stadtwerke), manufacturers of building automation & control systems and independent players as energy agencies. Possibly due to the increasing usage of EPC and other contracting services, standard procedures, EPC model contracts, procurement procedures and contracting guidelines have been established, providing more confidence in the ESCO market place (EC DG JRC 2007).

In Germany, the predominant ESCO business model remains energy supply contracting (ESC). References will therefore be made to the general concept of ESCOs as companies offering energy services and to EPC as a "subgroup" of ESCOs.

In 2008, the total revenue of the Energy Service Market was estimated to be in the range of €1.7 billion up to €2.4 billion (BEI/Prognos/energetic solutions 2009), with more than 100,000 projects in comparison to 70,000 in 2007 (EC DG JRC 2007; Berliner Energieagentur 2009). The value of EPC projects accounts for a small part of the market, estimated to €250 million to €350 million /year. During 2007-2009, the ESCO market is perceived to have experienced a growth similar to the development in 2005-2007. The potential size of the ESCO market (energy efficiency projects in 26 the non-residential market with payback time up to 10 years) is estimated to be in the range of €7 - €12 billion.

The estimated number of ESCO providers range from 250 to 500 actors. Around 500 companies offer Energy Services while 250 to 280 companies are continuously working with Energy Services (BEI/Prognos/energetic solutions 2009), of which around 50 have more than one EPC reference (Berliner Energieagentur 2009; BEI/Prognos/energetic solutions 2009). Large national companies having ESCO as a supplementary business with a small dedicated unit are the principal actors of the market. Many SME with EPC as their main activity represent a smaller share of the market.

The market shares of different providers are approximately as follows (Berliner Energieagentur 2009, Prognos 2010):

• Energy suppliers, 66% market share (regional and association suppliers 17%, municipal energy suppliers 19% and other energy suppliers 30%),
• Building equipment and control manufactures, 26 % market share (heat appliance manufactures 14%, engineering consulting 8%, building and control manufactures 4%),
• Energy Agencies, 4% market share
• Other, 4% market share

(“Energy Service Companies Market in Europe”, pg. 9)

Energy Performance Contracting
Energy Performance Contracting (EPC) consists in procuring energy efficiency as a service. Through innovative contracts, ESCOs (energy service companies) or other providers guarantee a specified energy performance and energy savings to the customer. In exchange they share the savings with the latter. If the project does not provide returns on the investment, the ESCO is often responsible to pay the difference. Policies and incentives can be introduced to kick-start and catalyze the ESCO industry. The examples of the most successful ESCO host countries e.g. China, the United States and Germany have shown that direct and indirect governmental support to EPC as well as the exemplary role of the public sector in initiating energy-efficiency change through ESCOs is crucial to kick-start a sustainable ESCO industry. EPC in the public sector is especially important as it does not only help reduce energy costs in
this sector, but also triggers the development of the ESCO-market and demonstrates the advantages of EPC to the economy in general.

(“Energy efficiency with case studies”, pg. 12)

The German case is an illustration of the success of appropriate policy packages. The implementation of strong regulatory ordinance since the late 1970s combined with public-private partnerships led to a decrease from an average yearly household consumption of 280 kWh/m² in 1970 to an average yearly consumption of 180 kWh/m² in 2004. The US also offers an example of good policy package through a combination of direct funding for weatherisation in low-income households, improved regulations, and support for demand-side management programmes implemented by utilities. Such policy packages have been implemented successfully in certain states, such as California, where the state’s energy consumption has remained relatively flat for the past 30 years. In Japan, the successful combination of regulatory and awareness campaigns led to an overall improvement of 28% to 69% of households meeting EE standards.

Public-private partnerships

Second, public-private partnerships offer the best opportunity to meet the five evaluation criteria. They allow different barriers to be addressed concurrently and increase the impact of a policy on market transformation. As such they allow more sustainable changes. An example is the efforts of the French government, which offers fiscal incentives for the use of specific “green” savings products. These have been used by banks such as the Banque Populaire to offer preferential loans to customers putting in place EE refurbishment projects.

(“Promoting Energy Efficiency Investments: Case studies in the residential sector”, pg. 12)

Office of Energy Efficiency and Renewable Energy (EERE)

Within the DOE, energy efficiency matters are now chiefly dealt with by the Office of Energy Efficiency and Renewable Energy (EERE). This office focuses on strengthening the country's energy security, environmental quality, and economic vitality through public-private partnerships that: i) enhance energy efficiency and productivity; ii) bring clean, reliable and affordable energy technologies to the marketplace; and iii) make a difference in the everyday lives of Americans by enhancing their energy choices and their quality of life. The EERE coordinates federal government efforts in relation to the research, development, and deployment of energy efficiency measures through investing in high-risk, high-value research and development that might not be otherwise carried out by the private sector alone. In so doing, the EERE works with state and local governments, the private sector, universities and government laboratories, among other actors (DOE, 2007c).

(“Promoting Energy Efficiency Investments: Case studies in the residential sector”, pg. 81)
Research and development

The DOE activities in the area of energy efficiency include R&D grants to state and local governments, and voluntary guidelines for energy-efficient design in buildings. In particular, through the Building Technologies Program EERE works closely with the building industry and manufacturers to conduct research and development on technologies and practices for energy efficient houses and multi-family buildings, as well as research into standards for products. However, overall, energy efficiency R&D funding makes up less than 15% of total R&D funding. From financial year 1978 through to financial year 2005, the DOE spent about USD 12.4 billion in 2005 constant dollars on energy efficiency R&D. A total of 17% was allocated to renewable energy, 26% to fossil fuel energy and 42% to nuclear energy R&D.

The EERE’s Building Technologies Program includes a public-private partnership, Building America, which conducts energy efficiency R&D for new and existing housing. For existing buildings research is conducted to provide new product opportunities, implement energy-saving technologies and providing information to consumers. For new buildings, projects include system engineering research to produce energy and cost-efficient homes, from the design to the construction phase, implementing energy- and material-saving technologies (BTP, 2006). These research projects have resulted in 40 726 homes built in 36 states and across eight climate regions (BTP, 2004).

(“Promoting Energy Efficiency Investments: Case studies in the residential sector”, pg. 95)

The 2007 PNAEE reiterates most of the above strategies, while recognising the particular importance of targeting existing residential buildings. For existing buildings over 1 000 m2 undergoing significant renovation (more than 25% of the building’s price), energy efficiency standards will be imposed as for new buildings starting in April 2008. For buildings under this size, replaced individual building components (such as windows) must meet minimum energy efficiency standards as of 1 November 2007. New housing energy performance certificates now also apply to existing buildings for sale or rent as stipulated in the European Energy Performance of Buildings Directive (EPBD). Renovation measures in the social housing sector will be particularly encouraged, as these allow the government to meet two of its energy policy goals. Public-private partnerships to promote energy efficiency programmes are also encouraged.

(“Promoting Energy Efficiency Investments: Case studies in the residential sector”, pg. 151)

Deutsche Energie-Agentur GmbH (DENA)

Providing information is a major part of DENA’s activities. In 2002, the energy efficiency campaign (Initiative EnergieEffizienz) was launched. The campaign is a public-private partnership and has been undertaken in co-operation with energy supply companies. Their financial contribution is part of their voluntary commitment to CO2 reduction as agreed with the Federal Government. The programme was first focused on the household sector, it aimed at reducing the standby losses of brown goods (small household electrical appliances) and office equipment, increasing market share of high-comfort and energy-efficient lighting, and raising the EE of white household appliances (large appliances such as refrigerators). The programme then extended to the tertiary sector, where one of the goals was to improve the EE of lighting. Regarding buildings, DENA set up an umbrella trade mark called zukunft haus (future house). The aim of zukunft haus is to increase awareness about responsible use of energy in the building sector by informing principals, real estate professionals and homeowners, communities and professionals about up-to-date energy efficiency options for both existing and new buildings. DENA also showcases pilot projects aimed to influence decisions made by private and public property developers, as well as homeowners. Their message is “Save Energy – Gain Value”. For example, DENA’s “Low energy standards for existing buildings” project began in 2003 and has been implemented in 143 residential buildings. Using best practices and innovative technologies, the project was able to demonstrate that cost-effective refurbishment could reduce the energy requirements of a building by up to 80% on average.

(“Promoting Energy Efficiency Investments: Case studies in the residential sector”, pg. 213)
Public-private partnerships reinforce the effect of public policies

Public-private partnerships between public institutions and private companies, such as banks or private ESCOs are becoming necessary elements of public policy to account for the scarcity of public funds and the competition between diverse public needs (e.g. employment, education, health, security). These partnerships often rely on new and innovative funds that use tools traditionally used by the private sector (e.g. loans, equity participation, and venture capital). Energy efficiency services could provide a new field of activity for companies (ESCO’s). However governments need to introduce some incentives (soft interest rates, tax credits, etc.) or mandatory targets, (quotas or commitments). In addition, the involvement of private actors is only possible if there is a stable regulatory environment. Availability of funding from private sources or international donors and financial institutions is not an issue. What is more important is to convince organisations of the advantages of their involvement in energy efficiency investments and in a support to ESCO through a dissemination of positive experiences.

6. Recommendations

An important policy implication of our work is that **PPP contracts should introduce requirements on ownership structures, that are observable and contractible**, while other features may not. This is partially in line with what we observe in real world public procurement auctions, which often introduce similar requirements. An extension of such practices to PPP contracts should be taken into consideration. (*Imperfect Bundling in Public-Private Partnerships, pg. 24)*

Using the prevalence of PPPs as an indicator of a broader interest in involving the private sector in development programs, European nations have neither a consistent nor a uniform approach to these issues. Furthermore, what constitutes private-sector involvement in development differs greatly across nations. It is also evident that each examined nation has different impetuses for engaging the private sector.

Based upon these divergences, it will be useful for the United States and those European countries that most effectively employ PPPs to share best practices with those European governments that appear reluctant to explore working more fully with the private sector. For example, the United Kingdom’s DFID is the best-in-class example of the use of PPPs in development. One also must also not be too quick to dismiss German efforts to engage in trade promotion activities although these activities should encompass the full spectrum of development activities with the private sector. Finally, Norwagian development officials—although global leaders in creating conducive climates for private sector engagement in developing countries—should be more aware of British and American efforts with PPPs in order to deepen and widen their substantial development framework. (*Leading from Behind in Public-Private Partnership: An Assessment of European Engagement with the Private Sector in Development*, pg. 11)

Ex post, conditions of implementation may also be taxing. For example, the **frequent renegotiations pointed out above involve direct administrative costs for both sides**. They also involve indirect costs, particularly those related to the weakened credibility in commitments, which is partially reflected by the evolution of risk premiums. Moreover, assessing the advantages and costs of PPPs should also take into account the costs of those projects never achieved at the very stage of their initial design, or adopted but never implemented, or initiated but abandoned en route. According to the PPIAF database, **267 projects involving private sector participation were cancelled or distressed over the period 1990-2008**, representing a mere 6 percent of the total number of projects, but 8 percent of investment and over **37 percent in the water and sewerage sector**. This might suggest that PPP, as an organizational solution, does better in sectors with low sunk investments and might be much less adapted to sectors with highly dedicated assets, for which the adequacy of institutions matters greatly, since it mitigates or amplifies risks. (*Is Public-Private Partnership Obsolete: Assessing the Obstacles and Shortcomings of PPP*, pg. 33)

While no revolution is required, **reforms aimed at delivering greater legal certainty, consistency and predictability should be considered as a necessary prerequisite to address our respondents’ greatest concerns:**

- Deepening and clarifying the pipeline of work, particularly in making clear which projects will be funded as PPPs;
- Introduce greater centralisation in each jurisdiction of procurement, including the creation of a central PPP unit to provide more strategic and consistent guidance across all PPP projects;
- Make efforts to simplify and accelerate the procurement process and streamline costs, in order to remove the perception that the procurement bidding process is too slow and costly;
- Encourage greater flexibility in public sector teams to deal with unforeseen events;
- **Introduce measures to encourage project finance**, in particular through the tax system, but also through adopting measures such as the issuing of infrastructure bonds;

- **Make greater efforts to maximise revenues from PPP projects.** This will necessitate efforts to remove the widely acknowledged barriers to user-charging in some areas and should be accompanied by government-led efforts to build greater public support.

("Public Private Partnerships: Evolution or revolution", pg. 45)

**Policy recommendations**

- **An independent institutional structure for handling of PPP program:** With the express objective of meeting the PPP targets, an independent institution should be set up to act as nodal agency with the responsibility of creation of PPP data base, best practices, model documents for all sectors and coordination with all departments.

- **Development of sector-specific regulatory mechanism:** In order to protect the interest of users, private developers, the social community and lenders and sector-specific regulators should be established. The independent regulators can make the dispute resolution mechanism effective especially in cases where public authority is also an operator, for example in railway, where the Indian Railway is the concessioning authority and at the same time compete with private train operator (through Concor).

- **Dissemination of information on PPPs:** There exists a need for the creation of specific information policy for PPPs wherein all bid documents, feasibility reports and current status of the projects are published on a dedicated contract portal. The international policy models such as Partnerships Victoria (Australia) can be referred to in this case.

**Project development recommendations**

- **Capacity building measures for the government:** There is a need for capacity building at the Centre and more particularly at the state governments and local bodies level. The PPP nodal agencies at the Centre and state level should take the responsibility of creating awareness about the PPP program in all departments and wherever required, the services of the technical and financial consultant for training of the staff should be taken. The multilateral and bilateral agencies can also provide technical and financial assistance for the PPP projects and to provide best global practices to be followed in PPPs.

- **Role of consultants:** For development of PPP project the role of technical and transaction advisors is most critical. Hence, it is imperative the utmost care is taken in appointment of consultants. Generally the consultant fee is a small proportion of the project cost and the value addition by a good consultant could be much higher. For the success of the project, consultant's quality is more critical as compared to the cost implications. Hence, the preferred model for selection of the consultant should be either “quality based” or “quality-cum-cost based” with higher weightage to quality.

- **Project development activities:** The lack of project preparation by the relevant development authority such as, inaccurate scope definition, land acquisition, utilities, environment clearance, no public consultations etc. can result in poor bid response and also at the execution stage delays in commencement of construction, compromises on the design quality to reduce costs or attempt to change scope resulting in abnormal increase in project cost leading to disputes. The authorities should try to get all approvals and latest feasibility reports with technical scope of work before awarding concessions.

- **Optimal allocation of risks, authority and accountability:** There is a need for effective distribution of responsibility, costs and risks between the public and private sector. In many cases, due to lack of proper project development, public authorities are not able to fulfill their responsibilities such as land acquisition, environmental clearance, state support etc., due to which project gets delayed. However, even in cases where government is not able to fulfil its part, the private sector has to suffer the losses due to delay, as there is no appropriate framework for compensation.
• **Selection of private sector partner:** To get best technical and financial offer, the authorities should start interaction with private sector from the project development activities stage, and concerns of the private bidders should be taken care of in the best possible way. For selection of private partners there is an excessive focus on highest financial bids. The speculative bids can hamper the project in the long run, as the developer will find it difficult to get funding and service the obligations. The authorities should evolve a policy on the speculative bids and other selection methods such as competitive dialogue process for complex projects should also be used.

**Financing recommendations**

• **Developing corporate bond market:** There is an immediate need to develop the corporate bond market. The proposal to set up Infrastructure Debt Funds (IDFs) is a step in the right direction. Further, in order to jumpstart the corporate bond market in infrastructure projects, the large Indian commercial banks while funding the project can compulsorily fund some part of debt by subscribing to bonds. These bonds can be listed on exchanges. The large commercial banks and NBFCs can also play the market makers in infrastructure bonds for initial years.

• **Encouraging participation by pension funds and insurance companies:** Given the fact that the commercial banks are concerned about asset liability mismatches and concentration risks, the GoI should alternately consider domestic institutional investors for investment in infrastructure. The GoI should make the investment policies and regulatory guidelines of the insurance companies and pension funds more conducive and flexible toward investing in the infrastructure sector. The regulations such as rating requirements and treatment of investments by insurance companies in infrastructure sector can be reviewed.

• **Stimulating PE investments in infrastructure sector:** Global and domestic private equity funds have the capability to provide finance for infrastructure growth in India. To attract PE funds for bidding in infrastructure projects, the eligibility criteria should be suitably amended, and apart from the financial networth, the "Funds under Management" for PE and Venture Capital funds should also be included.

• **Hedging mechanism for external borrowings and investments:** The Indian companies have been raising external commercial borrowings for infrastructure projects. IDFs also aim to tap international insurance and pension funds for investment in infrastructure in India. The hedging of foreign currency exposure eats up a large part of interest rate arbitrage through foreign funding. The GoI can use a part of its foreign currency reserves to give a less expensive currency hedging mechanism for foreign currency borrowings and investments in the infrastructure space. ("Accelerating public private partnerships in India", pg. 41)
Key elements that local governments must bring to a PPP process include the following:

- **Commitment to, and capacity to handle the procurement process.** This starts with a pre-feasibility study and initial programming of the PPP component(s) of the project, through contract negotiation and award, and all the way to monitoring of day-to-day operations;

- **Commercial, financial, and economic issues.** For instance, traffic and demand forecast must be reliable, and all parties must be able to abide by the PPP contract, etc.

- **Technical issues.** This includes reliable engineering and other technical assessments.

- **Legal, regulatory, and policy framework.** A clear and transparent framework helps govern both the pre-transaction stage (e.g. selection, screening, structuring, tendering, and evaluation) and the posttransaction stage (e.g. regulation and monitoring). Most important is the PPP contract itself, which will govern the partners in the project.

(“CDIA PPP Guide for Municipalities”, pg. 17)

The survey indicated that, although most of the surveyed countries test PPP candidates against the alternative of a public sector option, many countries still do not have clear criteria to identify how projects get to be either PPP candidates or TIP candidates. In some countries, it is left to the discretion of line departments and so-called project champions to identify PPP candidates. With the above analysis as background, this article developed **three sets of recommendations:**

- With regard to ex ante value-for-money assessment, the article suggested that **early in the procurement process a project should be subjected to a procurement option test.** This test is meant to guide the government in selecting which mode of procurement is likely to deliver the most value for money. The article set out a list of criteria that should be considered in a procurement option test: drawn from the discussion in Section 5, Box 2 highlights the issues addressed by the criteria.

- With regard to ex post value-for-money assessment, the article suggested that:
  - Data are recorded and reported on a **whole-of-life project-by-project basis and that subsequently an ex post assessment of both PPPs and traditionally procured projects is made.** This should be done not only to establish and compare performance in terms of construction cost and time delays, but also in terms of outputs (and outcomes) and operating and maintenance cost.
– Furthermore, to deal with optimism bias and to ensure a more robust comparison between procurement options, both traditionally procured and PPP projects should ex ante include an adjustment for possible cost and time overruns and revenue shortfalls.

This should be done for the construction phase as well as the operating phase. Where possible, the estimated degree of the optimism bias should be based on empirical evidence collected from similar projects. The inclusion of such adjustments will render ex post value-for-money assessments more reliable – i.e. if a PPP outperforms a TIP, it would be clear that this is not due to an optimism bias but to the actual improvements in value for money and efficiency.

• The article also suggests a unified framework within which to deal with the choice between procurement options. As such, the article suggests that governments could shift the value-for-money assessment to earlier in the procurement process and place it prior to the procurement option test. This ensures that the public sector option always represents value for money no matter which procurement method is selected. As argued above, the public sector option might form part of a broader cost-benefit analysis. However, the focus of the public sector option (PSO) is narrower, because narrower, more direct costs and benefits are easier to define and measure. The PSO will then merely become the public sector comparator should the procurement option test that follows the estimation of the PSO indicate that a PPP might deliver more value for money than traditional procurement. Should the received PPP bids outperform the PSO, the project becomes a PPP. Should the received bids fall short of the PSO, the project reverts back to the traditional procurement stream since the PSO already indicated that it represents value for money (assuming, of course, the existence of the necessary funds and political will that identified the project as a priority).

(“How to Attain Value for Money: Comparing PPP and Traditional Infrastructure Public Procurement”, pg. 49)

Following on from the above the Sherpas propose the following recommendations regarding the legal structure and governance of the future JTIs. Joint Technology Initiatives (JTIs) are a new way of realising public-private partnerships (PPPs) in research at the European level.

Recommendation 1.1
JTIs are designed to address major issues that impact on Europe’s competitiveness. Recognition of PPPs as special bodies under the revised Framework Financial Regulation would make them fit for purpose and allow them to deliver in an efficient and effective way.

Recommendation 1.2
Seize the opportunity of the current Triennial Review of the Financial Regulation in recognising PPPs, including JTIs, as special bodies in order to develop tailor-made provisions for them. In this context the opportunity to develop a framework regulation for PPPs under EU law should be explored.

Recommendation 1.3
Move towards a more risk-tolerant and trust-based approach, which would be in line with the Conclusions of the Competitiveness Council of 3 December 2009. This would be an essential pre-condition for effectiveness and efficiency and for the division of responsibilities as proposed in the following section.

Recommendation 1.4
To maintain momentum the European Commission should continue and strengthen its cooperation with the legal entities representing the private sector within the research PPPs under the European Economic Recovery Plan. This should allow for visibility of the cooperation activities and ensure long-term commitment from the public and private sectors, keeping in mind the need for long-term sustainability of these PPPs.

Operational Modalities
Recommendation 2.1 Each partner should have its own specifically defined role. In this context, the private partner should be responsible for the operational management, respecting the principles of openness, transparency and sound financial management. The public partner should be responsible for oversight and protection of the public interest and should ensure the necessary long-term stability of the programme. The development of objectives and strategy is a shared area of responsibility.

Recommendation 2.2 Ensure that the staff recruitment process is transparent, but also sufficiently flexible to allow the JTIs to respond rapidly to changing needs. It should be the role of the private partner to select the staff and the role of the public partner to ensure that the principles of open competition and transparency are respected so that the best possible staff can be recruited.

Recommendation 2.3 Put in place clear and simplified reporting requirements, including proportionate audit and related procedures. These requirements must be defined at the outset so that the JTIs know exactly what is expected and that this is fixed so that they can take the necessary measures to meet these requirements.

Recommendation 2.4 Develop and implement a sound and transparent proposal evaluation system based on both scientific/technological excellence and industrial relevance.

Recommendation 2.5 To increase the efficiency and effectiveness of operations, the JTIs need to have access to investment in high-performance information technology tools.

Recommendations 2.6 JTIs should implement measures to more effectively engage the SME community.

Funding
JTIs should only be set up in areas where there is a strong commitment of all the parties and on the basis of sufficient levels of funding ('critical mass').

Recommendation 3.1 Define the necessary framework in which Community funding would be made more effective due to better leverage of private investment and national public funding.

Recommendation 3.2: Ensure funding rates are comparable to those of the Framework Programme.

Recommendation 3.3: Special consideration should be given to issues such as private-public funds matching and the sustainability of JTI running costs.

Involvement of Member States (in cases where Member States are also partners)

Recommendation 4.1 Member States can be valuable partners in a JTI since they facilitate synergies with national programmes. However, only those countries that can bring added value to a particular JTI should be
invited to participate. As all partners, they should honour their initial financial commitments without delays, which has not always been the case. Set the necessary rules so that the interests of all partners are taken into account, allowing them to live up to their commitments.

Recommendation 4.2: Member States should harmonise time-to-contract periods and timing of funding so as not to delay or jeopardise the start or execution of projects.

(“Designing together the ‘ideal house’ for public-private partnerships in European research”, pg. 24)

The institutional context is key to managing PPPs to secure their benefits while containing risks. Key elements to reducing partnership vulnerability include:

• Robust public investment planning. Crucial components include a systematic approach to investment planning, project selection and prioritization, and a framework to consider future implications of projects for the budget. International experience can help identify a priori which sectors and types of projects are most suited to PPPs.

• Adequate distribution of risks between the government and the private sector. Better VfM is realized if the party that has better control over a feature of the project that drives VfM also bears the risk associated with it. Risk can be endogenous to both parties. • A sound legal framework. A strong and reasonably detailed legal framework can set the parameters for handling PPPs and also provide assurance to the private sector that contracts will be honored. The more transparent and credible the enabling environment, the less risk premium charged by private investors in PPPs.

• Regulations limiting aggregate government exposure. These might include: (i) flow limits on annual total PPP-related payments and contingent commitments, and (ii) stock limits on the overall size of the PPP program or total project liabilities, as part of a wider debt management strategy. Any rule should be consistent with the wider fiscal framework. • Good institutions. Institutions can help manage and assess risks, build government’s reputation as a good partner, and lower political and regulatory risk for private partners. This requires an allocation of responsibilities that ensures that the capacity for managing PPPs is adequate and that all agencies’ involvement in PPPs is properly aligned and supervised. The Ministry of Finance may be empowered to veto projects that are unaffordable or wasteful.

• Transparency in PPP finances. The absence of specific accounting and disclosure rules for PPPs may lead to an understatement of fiscal risks and other long-term commitments. Comprehensive disclosure of PPP-related risks and liabilities in fiscal accounts mitigates the risk of PPPs bypassing expenditure controls, either to move costly public investment off budget and debt off the government balance sheet, or to hide the high cost of contractual arrangements (such as guarantees) to secure private financing.

(“The Effects of the Financial Crisis on Public-Private Partnerships”, pg. 8)

1. Improve access to finance for PPPs through:
• Reinforcing and broadening the scope of the Community instruments currently available to support PPPs, such as LGTT and EPEC and other initiatives that, although not specifically aimed at PPP schemes, can support the implementation of PPP projects (JASPERS, JESSICA, RSFF, Marguerite Fund).
• Coordinating closely with the EIB in order to explore possible ways to increase the Bank’s participation in EU infrastructure financing, in particular regarding key initiatives in the EU with socioeconomic and European added value (e.g. cross-border projects, environmentally friendly initiatives, etc.). The EIB should also be supported in its efforts to make full use of the multiple instruments available for PPPs and to integrate PPPs as one of the core objectives of the Bank. Furthermore, the EIB is invited to further develop and implement guarantee instruments to facilitate the financing of PPPs, by promoting the role of the capital markets, institutional investors and the public sector as liquidity providers for PPP schemes.
2. Facilitate the setting up of PPPs through public procurement of PPPs by:
   • Examining the impact of the Community crisis response on the availability of finance for infrastructure investment, including the need for an adjustment of procurement programmes and processes to take account of reduced access to finance.
   • Completing ongoing impact assessment and other preparatory work with a view to considering a legal proposal in the area of concessions in 2010.

3. Ensure proper debt and deficit treatment of PPPs through:
   • Examining the implication on the ‘balance sheet’ treatment of PPP assets of revised financing arrangements and issue clarifications on the existing accounting treatment in national accounts of PPP contracts.
   • Providing guidance on the accounting treatment of guarantees provided in the context of PPP schemes.
   • Continuing to provide clear advice to Member States on the statistical recording of individual PPP contracts, should they request it.

4. Improve information and disseminate relevant expertise and know-how, by:
   • The Commission will issue guidance on the legal and methodological issues involved in combining EU funds with PPPs, in particular in the framework of the JASPERS initiative, in order to facilitate and increase the uptake of PPPs in structural funds. Guidelines on the applicability of PPPs for simpler forms of PPP such as Design-Build-Operate contracts will also be issued.
   • Pilot PPP projects that could serve as models of best practices, good governance and solutions should be developed and replicated on a wider scale with the use of technical assistance elements of relevant funding programmes.
   • Working with the European PPP Expertise Centre (EPEC) to identify means to deliver enhanced long term support to those Member States that seek to use PPP to optimise their use of structural and cohesion funds as a component of programmes of investment. EPEC should be strengthened and be developed into a platform for the exchange of information and best practices and act as a focal point for a European network of national bodies established to support PPPs. It can also complement the role of JASPERS and the Commission, both of which support individual grant applications and projects. Options to promote better project preparation and design projects that are better suited for private sector involvement will be explored.
   • Disseminating good practice, in cooperation with EPEC, in order to enhance public sector management capability and reduce PPP costs. For example, EPEC has developed an analysis of potential remedial actions to support PPP initiatives in the prevailing circumstances of the financial markets.
   • Working with Member States to identify provisions in national legislation that prevent or hinder setting up PPPs, as part of the implementation of the European Economic Recovery Plan. Where the EU funding is involved, it should be ensured that there is no discrimination in the allocation of funds to investments projects depending on the management of the project, be it private or public. The Commission will examine together with Member States the EU and national rules and practices and present its findings, accompanied by proposals for modifications, where appropriate, by the end of 2010.

5. Address the specific challenges of JTIs and financing for innovation by:
   • Moving the current JTIs rapidly to autonomy and examining the lessons learnt, while at the same time exploring options for streamlining the legal and administrative framework applicable to JTIs. While ensuring the protection of the EU's financial interests, the objective should be to strike the right balance between control and risk and be flexible enough to permit an efficient partnership with the private players, ensuring the protection of the EU's financial interests based on an equitable sharing in the costs and benefits
   • Taking a strategic perspective with JTI leaders and other stakeholders to identify what the specific obstacles are and how they can best be addressed, including changes in the Community rules that govern them, such as the Financial Regulation, as necessary. A report including policy recommendations will be presented in the coming months. On the basis of the recommendations of this report, the
Commission will propose a new framework for JTI, which could be based on private law bodies. This new framework will be taken into account in the revision of the Financial Regulation, which will be presented during the first half of 2010.

- **Working with the EIB group and other stakeholders** to see how the financial instruments could be strengthened in order to improve finance for innovation. This work should also examine whether and how the participation by the EU in private law bodies could be facilitated as a means to delivering our innovation policy goals. The output of this work could be included in Commission proposals for a new innovation policy, due to be presented in early 2010, and taken into account where appropriate, in the coming revision of the Financial Regulation.

("Mobilising private and public investment for recovery and long term structural change: developing Public Private Partnerships", pg. 12)

Periodic recontracting under PPPs is more costly than the single auction necessary to privatize an infrastructure service. This makes privatization more attractive than a PPP.

An important type of government failure is caused by the tendency of governments, prompted by the election cycle, to discount the future. As we have mentioned before, governments would like to anticipate infrastructure spending, in the expectation of increasing their chances of being reelected. Anticipating infrastructure expenditures under conventional provision is complicated by budgetary controls (e.g., congressional approval) that limit the government’s ability to impose liabilities on future administrations. By contrast, privatization by selling state-owned companies can provide resources for the current administration to spend with little oversight. PPPs can also be used to anticipate government spending, since they are often subject to laxer supervision than the budget.

**The policy recommendation is straightforward.** To make sure that the contractual form used to provide infrastructure is driven by social welfare considerations, the choice of organizational form should be independent of the possibility of anticipating spending. This can be achieved by an effective program of social project evaluation, as well as by including in the budget the future liabilities contracted during the current period via PPPs. In the case of the revenue from privatizations, fiscal rules that smooth spending of resources received on a one-time basis may help. Likewise, some countries have defined appropriate calculations for the value at risk associated with liabilities on future administrations imposed by PPP investments. ("Public-Private Partnerships: When and How", pg. 15)

We make the **following recommendations for streamlining the procurement process:**

- **Build national PPP Centres of Excellence**
  While an EU Knowledge Unit would be effective in promoting the use of PPP approaches, it should not impose a common EU-wide approach. There is clear value in having a central unit giving guidance and policy on PPP issues within each EU country. Countries that have established a central PPP unit have benefited from this investment as PPP units also offer deal experience and can promote standardisation.

- **Balance Sheet treatment should not be a key driver for undertaking a PPP**
  The balance sheet treatment of a transaction should not determine whether a PPP solution is the best form of procurement. Irrespective of its balance sheet treatment, we recommend that public sector authorities disclose their future obligations under PPP arrangements.

- **The EU Commission should provide guidance on PPPs for the public sector which includes guidance on procurement procedures**
  Until competitive dialogue is proven as a PPP procurement route (and the majority of consultation responses suggest that competitive dialogue is ill-suited to PPP procurement), such guidance should include guidance on the availability and use of negotiated procedure. The EU Commission should
also clarify its position on the State Aid implications of post-preferred bidder adjustments to satisfy lenders.

- **Shadow private sector bid model**
  Public sector authorities should **model a prospective shadow private sector bid**, including life cycle costs and costs of finance, prior to starting procurement so that the authority has a realistic view of the project’s affordability.

- **Streamline speed and cost of procurement**
  The public authority should **critically assess the number of bidders** and bid rounds necessary for a particular project. It is often better to reach financial close on a good deal rather than endlessly delay a project for the sake of a “best deal”.

- **Create an EU Knowledge Unit**
  National governments should continue to work to identify and eliminate legal uncertainties and impediments to PPPs. However, the creation of an **EU Knowledge Unit would facilitate sharing of information and best-practice** between EU countries. It could also give guidance and demonstrate international precedents for delivering projects so that Member States have the benefit of the rest of Europe’s experience. The private sector should actively contribute to this Unit’s work.

- **Sharing refinancing benefits**
  We believe there should be a **degree of debt refinancing sharing between the public and private sectors**. However, the public sector must ensure that it does not disincentivise the market with an inequitable share of the refinancing, and we do not recommend any material sharing in equity sales proceeds as this could lead to a drying up of available PPP capital. (*“Delivering the PPP promise: A review of PPP issues and activity”, pg. 70*)

**Supporting Policies for Public-Private Partnerships**

**Recommendation 1: Public-Private Partnership Strategy**
*Establish a formal national energy development plan* with a strong legislative framework and a clearly defined public-private partnership strategy. This will enable reconciling security of supply, climate change and economic growth. Sustainable electricity policies will foster economic and social development and mitigate the financial risk for its investors. Establishment of these policy elements will remove barriers, stimulate investment, establish stable legal and regulatory frameworks, and provide incentives and financing to bring clean electricity to unserved and underserved populations.

**Recommendation 2: Cost Recovery Policies**
*Provide assured cost recovery and profit potential for investors* by creating national energy plans backed by legislation and regulation that establish a commitment to the promotion of low-carbon technologies.

**Recommendation 3: RDD&D Funding**
*Provide stable, sufficient funding for research, development, demonstration and deployment (RDD&D) of a wide range of emerging clean electricity technologies.* RDD&D is very expensive. Public-private partnerships will have to change the manner of how RDD&D is financed in order to lead the way to decarbonization of the electricity supply.

**Defining Effective Public-Private Partnerships**

**Recommendation 4: Benefits of Electrification**
Maximize benefits brought to communities from new and expanded electrification. These public-private partnerships will raise the standard of living for recipients and support communities in their economic and social development through improved access to electricity.

Recommendation 5: Access to Capital
Optimize the private sector’s ability to bring many financing alternatives for electricity projects and to design, construct, operate and maintain them. Over 95 percent of respondents agreed that the private sector’s most effective contribution to a public-private partnership was in the provision of capital.

Recommendation 6: Goal Development
Set electricity development goals and timetables for long-term technology deployment under national energy plans. One of the key strengths of the public sector is the ability to develop long-term, low-risk policies that can entice financial contributors and project developers to invest in a project.

Recommendation 7: Effective Partnerships
Sustain strong partnerships with effective communication, well-defined roles and responsibilities, and continuous commitment.

Financing

Recommendation 8: Secure Income
Use power purchase agreements (PPAs) with the private sector for greatest certainty regarding long-term investments. Over three quarters of respondents stated that the use of PPA is extremely to very effective in securing financing to deploy low-carbon technologies. The responses of those surveyed from financial institutions reinforced the importance of mitigating financial risk through long-term, secure income streams.

Moving Forward

Recommendation 9: Implementation
Implement these recommendations by increasing the alignment of public, private and civil society sector practitioner efforts with willing countries. The e8 (under our new name, Global Sustainable Electricity Partnership) together with its partners pledge to assist utilities in developing countries to pursue various public and private avenues for sustainable, universal electrification. In addition, we will support participating organizations and developing countries interested in implementing the recommendations found in this report.

(“Strengthening Public-Private Partnerships to Accelerate Global Electricity Technology Deployment”, pg. 4)