The Non-Financial Benefits of PPPs

A Review of Concepts and Methodology

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European PPP Expertise Centre

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An Overview of Concepts and Methodology

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This publication has been prepared in collaboration with some EPEC members in response to the need to more systematically approach the issue of capturing the "non-financial benefits" of PPPs. This publication should be of assistance to public procuring authorities and their advisers active or interested in *value for money* analysis and the production of business cases for PPPs.

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1. Introduction – The problem with current *value for money* analysis

1.1 Non-financial benefits

What is the problem?

Many public authorities use v*alue for money* ("**VfM**") analyses to compare delivering an investment through a PPP with implementing it through a "conventional" procurement. These *ex-ante* VfM analyses usually focus on the financial costs (risk-adjusted) of providing what is assumed to be an equivalent output. However, where there are reasons to believe that the non-financial benefits of delivery under a PPP will be greater than under conventional procurement, traditional VfM approaches will underestimate the benefits of PPPs. In fact, the incentives which are specific to PPP projects are specifically intended to deliver greater non-financial benefits than conventional procurements. Ignoring this issue could lead to an unwarranted bias against PPPs.

What is the distinction between financial and non-financial benefits?

By non-financial benefits ("**NFBs**") we mean the "socio-economic" benefits to service users or wider society from an infrastructure investment. NFBs are distinct from financial benefits (or costs) which represent cash inflows/outflows (that usually fall directly on the public sector decision-maker).

Take the example of the appraisal of a public infrastructure investment which is not revenue generating (e.g. a school, a hospital, a non-toll road):

- Stating that Option A has greater financial benefits than Option B means that for a given level/quality of output, Option A has the lower net present cost;
- Stating that Option B has greater NFBs than Option A means that the net present value of the external benefits delivered under option B exceed those of Option A.

Box 1 provides examples of the distinction between "financial" and "non-financial" costs and benefits in infrastructure investments. Note that these apply equally to both PPP and non PPP projects.

The remainder of this paper focuses on NFBs of PPPs, as opposed to "non-financial costs". This is for simplicity of presentation as, conceptually, there is no difference between costs and benefits[1]. Besides, it is difficult to imagine cases where the non-financial costs of a PPP exceed those of conventional procurement[2].

[1] Economists point out that "costs" are simply "benefits foregone".

[2] A possible example is the costs of future uncertainty regarding pension provisions for staff transferred from public sector to private sector employment as a result of a PPP. To the extent that these (or other non financial costs) are relevant they should be incorporated in the VfM analysis.

Box 1 – Examples of "financial" and "non-financial" costs and benefits

	Financial costs to the decision-maker	Financial benefits to decision-maker	Non-financial benefits to users/society	Non-financial costs to users/society
Schools	Capital and maintenance costs	Energy cost savings	Improved educational outcomes	Increased congestion around school
Roads	Capital and maintenance costs	Toll revenues	Reduced accident costs	Noise and pollution from generated traffic
Light rail	Capital and maintenance costs	Fare-box revenues	Reduced commuter time	Congestion during construction
Prisons	Capital and maintenance costs	Reduced revenue costs	Improved environment for prisoners	Negative impact on local property prices

Valuation, quantification and identification of NFBs

Throughout the paper a distinction is drawn between those NFBs that are capable of being:

- valued in monetary terms (e.g. increased property prices);
- quantified but not generally valued in monetary terms (e.g. improved educational outcomes for school students);
- identified but not quantified or valued (e.g. an improved environment for prisoners).

The valuation of NFBs is desirable where it is possible. But this paper stresses that it is inappropriate to simply ignore benefits which cannot be valued, or even measured.

1.2 Incorporating non-financial benefits into the *value for money* framework

Public authorities embark on projects on the premise that an investment is economically justified, i.e. the benefits to society of having a given infrastructure asset the costs. Once it is decided that there are net benefits from the 'baseline' investment procedure (in most countries, conventional procurement), the question is whether PPPs can give greater net benefits. Most quantitative VfM analyses rely on a public sector comparator ("**PSC**") test. This test is basically a risk-adjusted cost comparison between procurement options for delivering a service at specifically defined standards. This cost-minimisation approach implicitly assumes the NFBs associated with the different delivery models are the same. However, based on the design of PPP contracts and the incentive structures inherent in these contracts, there are good reasons to believe that this may not be the case.

To address this shortcoming, quantitative VfM analysis should be expanded to include a benefits appraisal of each procurement option which systematically takes account of (although is not limited to) the potential NFBs associated with PPPs. The results should be

presented alongside the financial cost comparison for each option in order to acquire a more complete picture of VfM. Where the net present value of NFBs is greater for a PPP option than under conventional procurement, the decision on PPP versus conventional procurement should take this into account.

1.3 How can non-financial benefits from PPPs exceed those from conventional procurement?

PPPs involve a particular set of incentives, underpinned by a sometime complex structure of contracts. This requires to the public sector to be explicit about the services it requires. The payment mechanism (and associated financial arrangements) is then designed to maximise the likelihood that the contracted services are actually delivered.

The benefits of requiring the public sector to say clearly what it wants are important in their own right. But beyond this, PPP may provide the private sector with broader opportunities to apply innovation at all levels of project delivery. These incentives, if effectively harnessed, can provide NFBs through three key mechanisms:

- accelerated delivery (delivering services earlier);
- enhanced delivery (delivering services to a higher standard);
- wider social impacts (greater benefits to society as a whole).

The remainder of this paper explores how PPP may have these three effects, and how these can be considered in VfM analyses.

1.4 Structure of the paper

Following this introduction:

- section 2 examines the three mechanisms in more detail, identifying some of the possible additional NFBs associated with PPPs;

- section 3 presents a conceptual framework for a VfM comparison between PPP and conventional procurement which incorporates both financial benefits and NFBs;

- the Annex looks at the importance developing a sound evidence base for better investment appraisals.

2. Non-financial benefits and PPPs

This section examines the incentive structures and features inherent to PPPs that may result in NFBs being associated with using the PPP model. The NFBs are delivered through three key mechanisms:

- Accelerated delivery;
- Enhanced delivery; and
- Wider social impacts.

This section explains these mechanisms, then summarises NFBs in a series of "generic benefits matrices". Each matrix[3] can serve as a starting point for identifying additional benefits associated with using PPP.

2.1 Accelerated Delivery

Accelerated Delivery refers to the benefits of having an asset and related services available earlier than otherwise would be the case. For instance, having a road, school or hospital delivered earlier means that society can enjoy the expected socio-economic benefits that come from transport, education and health services earlier. The value of Accelerated Delivery therefore is a function of how much more quickly services commence, and the benefits that come with these services.

It is helpful to distinguish two types of Accelerated Delivery: on-time delivery (where services start at their planned date) and earlier investment (service delivery commences earlier than would otherwise have been possible). PPPs can accelerate the delivery of an infrastructure and related services in two main ways:

- Better on-time construction performance: This is largely a result of the financial incentives incorporated into the terms of PPP contracts. These incentives apply to equity investors, lenders and contractors. The principle of "no service - no payment" ensures that the private sector is heavily incentivised to deliver to time (even where the private partner may have to absorb additional costs in the process)[4]. In practice, much of the project financial and technical due diligence carried out before contract signature is focused on ensuring the best possible conditions for on-time delivery of the infrastructure. PPPs impose a structure and a set of clearly defined and agreed timescales. PPP contracts also provide clear mechanisms for dealing with variants and delay events;

- Earlier delivery of a planned capital investment programme through a PPP: PPPs which involve the use of private finance can provide an important complementary, and additional, source of capital to traditional budgetary funds. This, in itself, can help to accelerate investment programmes. But in addition, the long term commitments that governments are forced to make under PPP contracts can help to focus the public sector's attention on more rational, long term capital planning. This, in turn,

[3] The matrices provided in this paper are generic. They should be modified and adapted to specific projects in different sectors.

[4] Extensive work outlining on-time delivery in PPP construction exists: see for instance NAO, PFI: Construction Performance (2003), NAO, PFI: Construction Performance (2009) and Standard and Poor's, The Anatomy of Construction Risk: Lessons from a Millennium of PPP Experience (2007).

may allow the private sector to plan and deliver more coherent infrastructure programmes[5].

In order to incorporate a valuation of Accelerated Delivery in a VfM analysis it is necessary:

- to explain how and why a PPP may result in earlier availability of infrastructure;
- to identify, quantify and, where possible, value the resulting NFBs which are available earlier.

The evidence regarding "on time" delivery of PPPs and programme investments referenced in this paper may be helpful in respect to the former. The issue of valuing NFBs has been addressed by the MAPPP[6] in France using the method explained in Box 2 below.

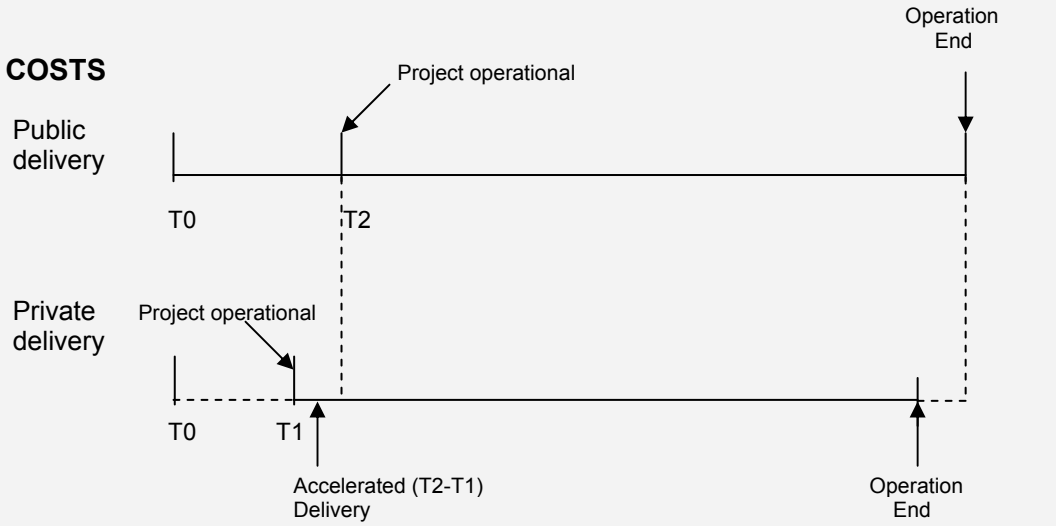
[5] For example, the 'Building Schools for the Future' or 'National Health Service Local Infrastructure Finance Trusts (NHS LIFT)' programmes in the UK.

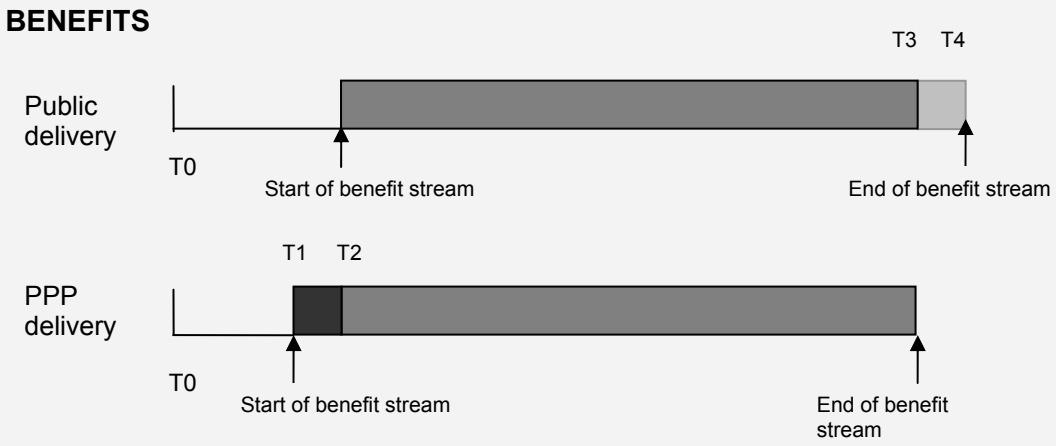
[6] Mission d'appui à la réalisation des contrats de partenariat.

Box 2 – New approaches to measuring Accelerated Delivery: the MAPPP approach

MAPPP has developed an interesting approach towards measuring the value of Accelerated Benefits which we present below with a number of simplifying assumptions.

Let us consider a large schools project, which if delivered by the public sector will cost €140,000,000 in net present cost terms. The same project if delivered by PPP will cost €150,000,000 in net present cost terms. If delivered by PPP the infrastructure will be operational in 3 years, whereas under public sector delivery it will take 5 years. Let us assume that once built, the infrastructure has an asset life of 30 years with no residual value at this point, and that at this point the PPP contract ends. Can we justify the PPP option even though it costs and additional €10,000,000? Put differently, is Accelerated Delivery worth an additional €10,000,000? The diagram below outlines the timelines of the cost and benefit streams associated with the project.





An innovation in the MAPPP approach is the following: If the political willingness to pay is equal to €140,000,000 for a project that becomes operational in 5 years, then the net present benefits of the project is at least equal to €140,000,000, otherwise the project would not go ahead in the first place. By applying the public sector's discount rate we can estimate the value of bringing these benefits forward by 2 years. This means calculating the difference between the present value of earlier benefits under PPP (between T1 and T2) and later benefits under conventional procurement (between T3 and T4). Let us assume the social discount rate for this project is 4% per year. The estimated value of accelerated delivery can then be calculated as:

$$€140,000,000\ (1+0.04)^2 - €140,000,000 = €11,424,000$$

Given that the value of additional benefits from PPP (€11,424,000) is greater than the additional costs (€10,000,000), the PPP option is justified on efficiency grounds.

The Generic Benefits Matrix 1 which follows helps identify some of the potential additional NFBs associated with Accelerated Delivery under PPPs.

Generic Benefits Matrix 1 – Accelerated Delivery

PPP feature	Sub-category	Examples	Usually included in PSC test?	Potential NFBs	Can they be quantified?	Can they be valued?	Potential approaches
Accelerated Delivery	Earlier investment and delivery[7]	Hospital, school, road, etc. delivered earlier. Results in earlier (and therefore increased) output of public services (e.g. healthcare, education, transport)	No	Yes. Accelerated socio-economic benefits during the early delivery period	Yes. At a minimum we can quantify how much earlier the PPP should deliver compared to alternative (e.g. one year, two years).	Easier to estimate the value of Accelerated Delivery benefits where a cost-benefit analysis has been conducted. Cost benefit analysis methodology is more reliable for economic infrastructure (particularly traffic) where good estimates of valuation of time savings, accident prevention, congestion reduction already exist[8], as opposed to social infrastructure, where benefits are less tangible.	Where a full cost-benefit analysis has been conducted (i.e. where the value of benefits is directly measured), the value of Accelerated Delivery benefits can be readily calculated by applying the appropriate discount rate. Where a cost-benefit analysis has not been conducted the value of Accelerated Delivery benefits can be estimated based on the political "willingness to pay" (see Box 2).
	On-time delivery[9]		Risk of delay probably in PSC test but social costs of delay / benefit of on-time delivery are not				

[7] Evidence / examples cited above: see NAO 'Department of Health – Innovation in the NHS: Local Improvement Finance Trusts' (2005) and 'Building Schools for the Future'.

[8] The following sources provide a good starting point for applied cost benefit analysis. They do not attempt to incorporate the benefits associated with any procurement type but rather NFBs per se. Where we have an indication of NFBs in a cost benefit analysis, however, we can then estimate the value of accelerated benefits (as outlined in the potential approaches above) should they exist. See DG Regio, Guide to Cost Benefit Analysis of Infrastructure Projects (2008) for an overview of approaches and estimates. See also HEATCO, Developing Harmonised European Approaches for Transport Costing and Project Assessment, Proposal for Harmonised Guidelines (2006) which provides extensive data for valuing socio-economic impacts.

[9] Evidence / examples: Construction performance: NAO (2003) *op. cit.*; NAO (2009) *op cit.*; Standard and Poors (2007) *op cit.*; EIB, *Public Private Partnerships*, (2009) Unpublished; University of Melbourne , National PPP Forum, Benchmarking Study, Phase II (2008).

2.2 Enhanced Delivery

The second set of benefits refers to the additional quality of infrastructure assets and related services delivered in PPP projects[10]. Unlike Accelerated Delivery (which results in bringing forward NFBs), Enhanced Delivery benefits are independent of when the infrastructure is delivered. In other words, Enhanced Delivery refers to a higher level of service quality from a given infrastructure asset.

Enhanced Delivery may be due to at least three structural features of PPPs:

- Applied lifecycle approach and assured maintenance: the contractual commitment to maintenance results in better asset conditions and higher residual values[11];
- High service quality: developing contractual commitments to defined service standards results in both better designed and higher quality service delivery;
- Clearly defined governance structure: the benefits associated with increased external scrutiny/due diligence by lenders and investors, better management of service delivery and the public sector concentrating on its core tasks.

The incentive to provide innovative solutions in the delivery of public services is an important benefit of PPPs and has been a VfM driver in several PPP programmes. This may come in the form of innovation in infrastructure design and/or the delivery form of the service[12]. The fact that the public sector specifies the outputs it wants, not how to deliver the service (inputs) should facilitate innovation[13].

PPPs that promote innovative design generate an important economic and social value. A well-designed school for instance may improve the educational attainment of students. A well-designed hospital could help patients to get better more quickly. Given that PPPs are long-term contracts and PPP companies have strong incentives to focus on the lifetime of an asset, one can expect sizeable returns to design innovation. Furthermore, the benefits of good design in a project are not project specific but can be replicated in the future.

Doing something different, or innovative, inevitably involves risk. There is a natural tendency to avoid taking such risks unless there is an incentive to do otherwise. The public sector typically prefers to use what has worked in the past or what a previously selected solution as this involves less risk. For the private partner in a PPP, including innovation in a bid will frequently make the difference between securing or losing a long-term contract. In this case, innovation is heavily incentivised. PPPs are therefore more likely to generate new ways of delivering public services and ensuring VfM.

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10 These benefits are enjoyed by the users of the asset or the related services. There may be a shift in the number of users as a result of the improved quality. Better services may raise the demand for the asset/service, and these new users would also benefit from Enhanced Delivery.

11 For conventionally procured projects, maintenance of the asset often has to compete with other "priorities" for public sector spending and is frequently one of the first factors to be reduced.

12 E.R.Yescombe "*Public Private Partnerships: Principles of Policy and Finance",* 2007 p. 23.

13 Several studies highlight innovation in PPPs. For example, a CEPA report on '*Public Private Partnerships in Scotland: Evaluation of Performance*' (2005) found "energy efficient designs driven by the transferred risk around energy performance and, in the schools and further education sectors, flexible layouts, and innovative location of and access to community facilities…and 'considerable evidence of technical innovation in the water sector with the introduction of techniques new to Scotland". An NAO report entitled, 'The Operational Performance of PFI Prisons' (2003) found that: "PFI has brought innovation, mainly in the recruitment and deployment of staff and use of new technology" and "promoting a more constructive staff/prisoner relationship". For examples in hospitals and other sectors, see CBI, 'Building on Success: The Way forward for PFI' (2007).

Box 3 presents some recent evidence of Enhanced Delivery associated with PPPs.

Box 3 – Enhanced Delivery: evidence from recent studies

Two recent studies published by KPMG indicate that PPPs can enhance delivery in both the education and health sectors. Whilst these studies do not explain how PPPs have this effect, evidence of potential effects is clearly set out.

Education[14]

The headline conclusions of the KPMG report are the following:

- Investment in schools leads to improvements in educational attainment;
- Schools procured via PPP achieve improved educational outcomes more quickly than those procured conventionally;
- Amongst the schools renewed through a PPP, educational attainment improved at a rate that was 20% faster than in renewed conventionally financed schools *(This result is a description of the performance of a data set including every state secondary school in England. However, the result does not pass conventional tests of statistical significance and therefore cannot be used as reliable indicator of future performance)*;
- In the subset of renewed schools that were fully rebuilt via a PPP, educational attainment improved at a rate that was over 90% faster than in fully rebuilt conventionally financed schools (*This result does pass conventional tests of statistical significance and there is a 90% chance that this relationship would apply in the future).*

Health[15]

The headline conclusions of the KPMG report are the following:

- PFI hospitals have better patient environmental ratings than conventionally procured hospitals of a comparable age, in which facilities management services are performed either in-house or contracted out[16];
- PFI hospitals have higher cleanliness scores than non-PFI hospitals of comparable age.

Interestingly, in terms of financial cost comparisons the study found that the cost of cleaning PFI hospitals is on average similar to that of cleaning non-PFI hospitals, but it is less variable.

The Generic Benefits Matrix 2 below helps identify some of the potential additional NFBs associated with Enhanced Delivery.

[14] KPMG, *Infrastructure Spotlight Report: Investment in school facilities and PFI – do they play a role in educational outcomes*? (2008). The study relies on Government statistics on individual school educational outcomes in England measured by performance in external examinations at age 16 between 1994 to 2006. It has a population size of 2,771 public sector secondary schools in England of which 2,614 had not been renewed and 157 had been renewed.

[15] KPMG and University College London, *Operating Healthcare Infrastructure: Analysing the Evidence* (2010).

[16] The patient environment rating assesses non-clinical aspects of patient surroundings and takes into account the organisations policy, cleanliness in various areas, infection control, general environment and conditions in access/external areas.

Generic Benefits Matrix 2 – Enhanced Delivery

PPP feature	Sub-category	Examples	Usually included in PSC test?	Potential NFBs	Can they be quantified?	Can they be valued?	Potential approaches
Life cycle approach to asset and maintenance	On-going commitment to maintenance, leading to better asset condition and higher residual economic value	On time investment in road maintenance leads to reductions in damage to vehicles and reduction in costs of upgrading road at later stage	Maintenance costs of PPP option included in PSC test. Not included are the risks and costs associated with public sector under-investing in maintenance	Yes	Partially	Partially	1. Residual value is clearly measurable based on elapsed projects. 2. Backlog maintenance deficit levels can be measured by reporting on infrastructure quality and valuing the cost of remediation. 3. User surveys to estimate social costs of under-investment in infrastructure maintenance.
Service quality	Better defined /controlled project scope	PPP contract discipline places some limits on over-sizing/ gold plating	No	Yes	Difficult		
	Stronger customer orientation[17]	Better and faster response to user needs	Standards specified in PSC, but difference in quality between PPP and Public sector option is probably under-estimated	Yes	Yes	Difficult	User satisfaction can be quantified via survey
	Improved output from defined service standards, better design, etc.	In hospitals, for example, lower hospital infection rates [18]	Again, may be priced in PSC at advanced stage, but possibility of difference with public sector option being under-estimated	Yes	Yes	Difficult	Reliance on publication of outputs which can be tested statistically.
		In schools, for example, better academic achievements by students[19]	No	Yes	Yes	Difficult	In case of schools and training, econometric analysis of grade obtained, length of time at school, etc.
		In roads, for example, faster accident / snow / ice clearance on motorways	No	Yes	Estimates may be possible	Existing method for valuing accident/ delay reduction	

[17] Evidence/ Examples: Partnerships UK, Investigating the performance of operational PFI contracts (2008); 4ps, Review of operational PFI and PPP projects (2005).
[18] KPMG, University College London, '*Operating Healthcare Infrastructure: Analysing the Evidence'* (2010).
[19] KPMG, Infrastructure Spotlight Report Investment in school facilities and PFI – do they play a role in educational outcomes? (2008); (2009).

Generic Benefits Matrix 2 – Enhanced Delivery (continued)

PPP feature	Sub-category	Examples	Usually included in PSC test?	Potential NFBs	Can they be quantified?	Can they be valued?	Potential approaches
Governance	Due diligence	Poorly planned projects may be identified and discarded	Unlikely	Yes - better projects are built	Difficult		
	Public sector focuses on output and core business	Less time spent on administrative issues	No	Yes - teachers, doctors, managers and others can concentrate on their core business.	Yes	Yes	Surveys (e.g. amount of time saved from resolving administrative issues - time saving can then be priced based on time saved *x* value of time)
	Public sector not well equipped to manage the integration of complex contracts	Risk of weak contract management	No	Yes - problems are resolved more quickly, users get better service and public sector free to manage other duties.	Yes		Surveys (e.g. number of problems that occurred and length of time to resolve these problems)

2.3 Wider Social Impacts

The third set of potential benefits is related to the positive externalities of using the PPP model. Positive externalities capture the benefits to persons other than the users of an asset or related service. These benefits can be sub-divided into two categories:

- Wider public sector benefits, which refer to the impact of a PPP beyond a specific project to the public sector in general;
- Wider macro-economic benefits, which refer to the impact of an investment on the economy and environment[20].

The range of wider public sector benefits may be diverse and are particularly difficult to quantify or value. For example, these comprise (i) the benefits accruing to the public sector from a more explicit approach to cost identification and transparency, (ii) the planning benefits of having long-term fixed prices and output certainty under the PPP contract or (iii) the contribution that PPPs make to improving the public sector's ability to procure projects conventionally.

Innovative management practices from the private sector can be learned and replicated in future projects, irrespective of the procurement method. Both the more established PPP sectors in UK and Australia demonstrate the value of "competition by comparison"[21]. The beneficiaries of innovation are not just the users of a good or asset at present, but are extended to the broader public sector and economy. A further point is that PPPs have provided a very fertile learning environment in which the public sector has been able to draw from best practice and apply this to more conventionally procured projects. In this case, the benefits come from learning by doing, applying new techniques as well as imposed systems and disciplines. These benefits are only partially captured in the evaluation process since they will extend beyond the specific PPP under consideration.

Wider macro-economic benefits, as we consider them here, are likely to be similar for a PPP and non-PPP project. However, where these impacts are substantial and PPP ensures that they are brought forward, the Wider Societal Impact of the PPP option (based on this time differential) should be included in the analysis.

The Generic Benefits Matrix 3 below helps identify some of the potential additional NFBs associated with the Wider Societal Impacts under PPPs.

[20] Like the benefits associated with Enhanced Delivery these are incremental in nature, in the sense that they increase the size of the benefits associated with an infrastructure.

[21] This factor was specifically highlighted in the State of Victoria Audit Review of Government Contracts: Contracting, Privatisation, Probity & Disclosure 1992-1999 (2000). The Audit Review noted that the presence of private operators had brought about a form of "competition by comparison", which had assisted in improving the management of prisons and the delivery of correctional services across the system. See Linda English '*Public Private Partnerships: Modernisation in the Australian Public Sector*' (2008), University of Sydney.

Generic Benefits Matrix 3 – Wider Societal Impact

Generic project features	Sub-category	Examples	Usually included in PSC test?	Potential NFBs	Can they be quantified?	Can they be valued?	Potential Approach
Wider public sector benefits	Innovation[22]	Design, management and technology innovations may be replicated in future projects.	No	Yes	Difficult		Survey
	Pricing of Public Service	Is the project a good indicator of how much conventional public services cost? How much is this knowledge worth?	No	Yes	Difficult		The value of this information will depend on what policy makers decide to do with the information. One approach to measurement would be to use the price of contracting out this measurement exercise to a consultant as a proxy of its value.
	Competition between delivery forms	Does the PPP project potentially introduce competition with projects that are conventionally delivered? If so, will competition with PPP delivery ensure that that other services - outside of the project in question - are delivered more efficiently?	No	Yes. Competitive forces in public service delivery can improve performance. The potential benefits of choice and competition in schools, hospitals, etc. are documented.	Difficult		Problem of causality. How do we know that improvements are based on competitive pressures? Surveys provide the most likely approach.
	Fiscal programming	Whole life-cycle approach ensures better pricing and thus better allocation of resources to other projects.	No	Yes. Better fiscal programming results in better public sector investment decisions.	Difficult		
Wider socio-economic impacts	Labour market[23]	Investment stimulates employment in depressed area.	No	Yes	Case-by-case assessment		
	Environmental impact[24]	Reduced emissions due to better roads Cost of relocations, noise, impact on wildlife, etc.	Unlikely	Yes	Depends on each case	Partially	Several methods depending on impact. Some emissions may be traded on market and monetary value assessed (e.g. carbon emissions). Others can be quantified and expressed in physical units but not expressed in monetary terms (e.g. noise level).

[22] Examples / evidence base: CBI, 'Building on Success: The Way forward for PFI' (2007); CEPA 'Public Private Partnerships in Scotland: Evaluation of Performance' (2005); NAO, The Operational Performance of PFI Prisons' (2003).

[23] Examples / evidence base: no clear evidence of systematic benefits of PPP – this must be judged on case by case. As with all benefits, if there is Accelerated Delivery with PPP, then the full value of enjoying (labour market) benefits earlier should be accounted for.

[24] Examples / evidence base: no clear evidence of systematic benefits of PPP – this must be judged case by case.

3. A revised *value for money* framework

This section presents a conceptual framework for the VfM comparison between PPP and conventional procurement that incorporates NFBs.

3.1 Conceptual framework

Figure 1 presents an overview of the updated VfM framework which would seek to include the analysis of NFBs in the VfM comparison.

Both the public and PPP options are composed of a financial and non-financial component:

- The financial costs and benefits represent cash outflows/inflows (risk-adjusted) that usually fall on the public sector decision-maker;
- The non-financial component represents socio-economic costs and benefits that are delivered to service users and wider society.

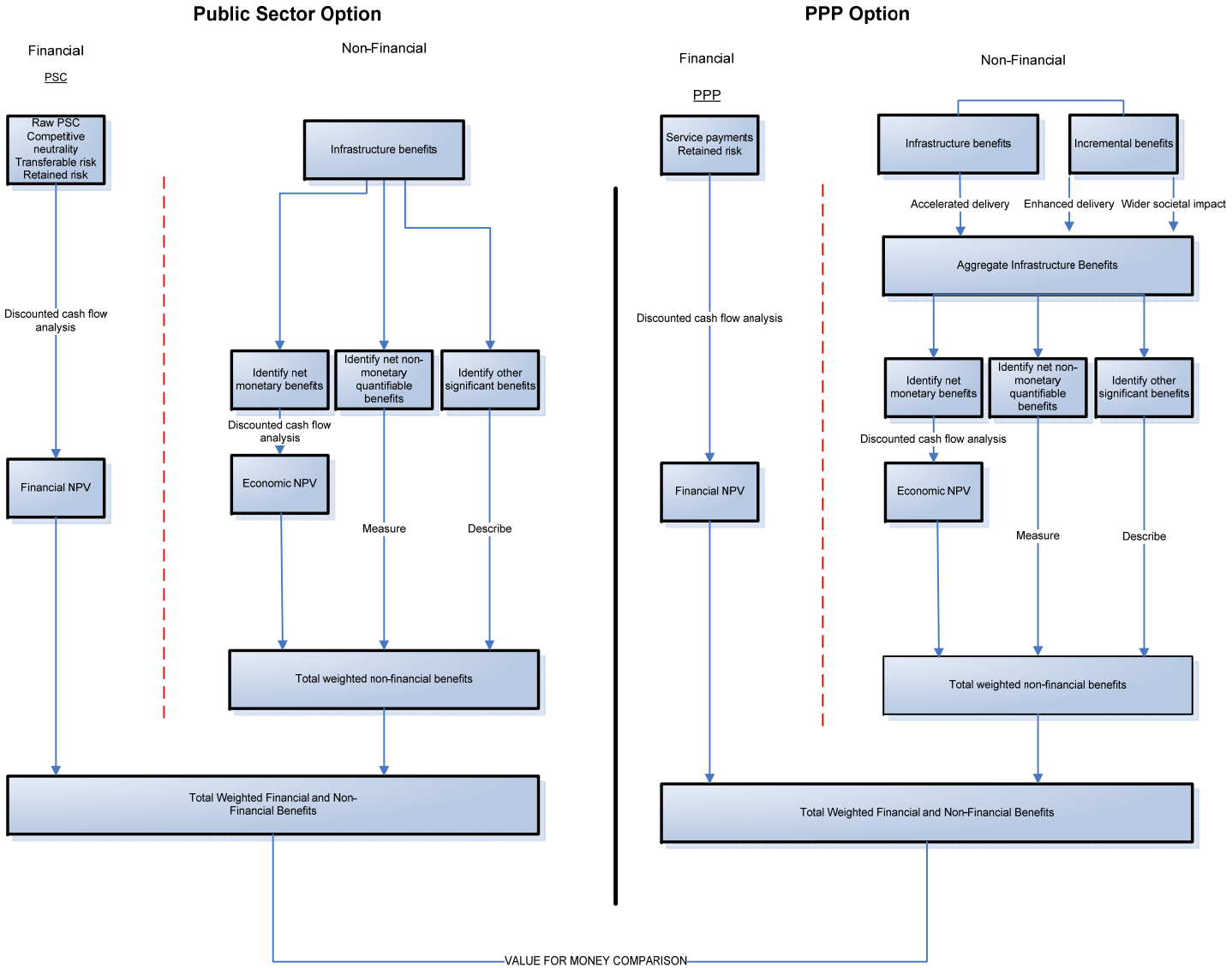
As we have seen, the NFBs associated with PPPs potentially include benefits associated with Accelerated Delivery, Enhanced Delivery and Wider Societal Impact. The total NFBs associated with the PPP option are captured under “Aggregate Infrastructure Benefits” in Figure 1.

As indicated in Box 4, some benefits may be valued in monetary terms. Where this is not possible they should be quantified, or where quantification is not possible, identified with the greatest possible precision.

In general, benefits that should be included in the matrix for appraisal will vary by project type and sector. Clearly, as projects grow in size and complexity, additional resources may be justifiably included in the appraisal, but should be proportionate to the importance of the project at hand. Moreover, benefits should cover only those factors that are affected by the project under consideration and be estimated over the lifetime of the asset.

Within this framework, the benefits appraisal results should then be presented alongside the financial cost comparison in the appraisal to assess the overall VfM of an option.

Figure 1 – A revised VfM framework



Box 4 – Benefit measurement

Benefits that can be quantified and valued

Where possible the value of benefits should be imputed from real or estimated prices associated with them. For instance, if a benefit is traded on the market, then this can be used to estimate its value, though suitable allowances may need to be made for taxes and subsidies. Where there is no market price available, then various methods have been developed to infer the value of a benefit.[25]

The revealed preference approach infers a price from consumer behaviour. For example, the relationship between house prices and levels of environmental amenity, such as peace and quiet, may be analysed in order to assign a monetary value to the environmental benefit. Another approach is based on estimating willingness to pay by imputing a price from questionnaires and interviews. For example, interviewees can be asked how much they are willing to pay for improving the quality of services, time savings, etc. or how much they are willing to pay to avoid undesirable outcomes. MAPPP's analysis (see Box 2) represents an interesting, and potentially valuable, variant of this approach.

Sensitivity analyses should be conducted to test how sensitive benefits are to changes in key assumptions.

Benefits that can be quantified

Some benefits may be quantified but not expressed in monetary terms. For example, improved educational attainment may be expressed in terms of grades obtained or numbers of years in schooling, but the value of this is difficult to assess. Similarly, user satisfaction can be difficult to monetise, though one can provide a scale for comparing satisfaction levels. Environmental impact in particular can be difficult to value. Where possible it should be expressed in established physical units but not in monetary terms should be measured in their respective units.[26] By established or accepted physical measures we refer to those that have been thoroughly tested, are sustained by empirical evidence, are consistently applied across various investment projects within that sector and about which there is a high degree of consensus. When alternative physical measures are available one must select that which is most appropriate for the particular characteristics of the impact in question and correlates well with individuals' perceptions and satisfaction/ dissatisfaction ratings. Again, where appropriate sensitivity analysis should be conducted to estimate the vulnerability of benefits to key assumptions.

Other benefits

In some instances, impacts cannot be monetised or quantified but can only be identified. Examples of this include the aesthetic improvement to local area, consistency of proposal with government policy, replicability of innovation in future projects. In this case, they should be described in detail so that one can make an informed decision.

25 See HM Treasury, Greenbook.
26 See Department of Treasury and Finance, Investment Evaluation: Policy and Guidelines (1996).

3.2 Weighting and scoring

When faced with a blend of monetary, quantified and non-quantifiable considerations, it may be considered important to develop a system of weighting and scoring to make data comparable. The main technique for doing this is the "multi-criteria analysis" also known as "multi-variable analysis"[27]. This technique allows options to be ranked and a preferred option identified[28].

Weighting and scoring usually involves key stakeholders, including those who will use and operate the service. Scoring should reflect how each option meets specific benefit criteria. Weights should be assigned to criteria to reflect their relative importance.

After benefits have been weighted and scored they should then be placed alongside respective financial estimates to give an overall picture of the VFM of each option. This may be complemented by a distributional analysis to identify which members of the population will be greater affected by a project. The logic behind conducting a distributional analysis is that a proposal may have a different impact on the lives of different groups (e.g. depending on age, gender, income, location).

3.3 Conclusion – A non-financial benefits checklist

The identification, quantification and valuation of NFBs from PPPs is clearly methodologically complex. Nevertheless if PPPs are able to deliver higher levels of NFBs than conventionally procured projects, it is inappropriate to ignore this issue in the appraisal.

In conjunction with the Generic Benefits Matrices presented in section 2, the following "checklist" may be of value for the public authorities wishing to include an analysis of NFBs in the submission of a particular business case.

Admissibility

- Are NFBs admissible in business case submissions?

Accelerated Delivery

- Are there grounds to believe that the PPP could lead to Accelerated Delivery? Is this based on evidence?
- Is this related to (i) better anticipated construction performance (vis-à-vis conventional procurement track record) or (ii) optimisation of capital spending (programme effects)?
- What services will be delivered more quickly, and over what period?
- Is there an empirical basis to identify and quantify the benefits of these additional services?

[27] For a good overview of this technique, see Department for Communities and Local Government Multi-Criteria Analysis: A Manual (2009).

[28] Some may, however, consider it inappropriate to explicitly weigh and aggregate different impacts leading to a definitive numerical score, particularly when there are multiple objectives. This is the case of the New Approach to Appraisal (NATA) in the UK which conducts a full cost-benefit analysis including five main criteria, environmental impact, safety, accessibility and integration, all of which have their own sub-criteria. No weighting is suggested between criteria, but a single sheet summary of principal impacts is provided for decision-makers to analyse.

- Is there an empirical basis to measure the value of these additional services?
- Is MAPPP's approach helpful in this regard?

Enhanced Delivery

- Are there reasons to believe that the PPP could lead to Enhanced Delivery?
- Are the impacts through asset quality (lifecycle approaches), service quality or improved governance?
- Who are the beneficiaries of Enhanced Delivery (e.g. students, teachers)?
- Why are these benefits truly incremental? Why would they not / could they not be delivered under conventional procurement? Does this relate to (i) the explicitness in the service specification which would not apply in conventional procurement or (ii) incentives in the PPP contract which would not apply in conventional procurement?
- Is there an empirical basis to identify and quantify these incremental benefits?
- Is there an empirical basis to measure the value of these incremental benefits?

Wider Societal Impacts

- Are there reasons to believe that the project could have positive Wider Societal Impacts?
- Who are the beneficiaries of these effects?
- Why are these benefits truly incremental? Why would they not / could they not be delivered under conventional procurement? Does this relate to (i) the explicitness in the service specification which would not apply in conventional procurement or (ii) incentives in the PPP contract which would not apply in conventional procurement?
- Is there an empirical basis to identify and quantify these incremental benefits?
- Is there an empirical basis to measure the value of these incremental benefits?

Annex – Improving the evidence base for quantifying non-financial benefits

Assessing the benefits associated with PPPs is a difficult task as:

- the full benefits of PPPs are only readily available for analysis after about 25-30 years when contracts have expired;
- data about what the alternative to the PPP would have looked like is lacking (the "counterfactual"). For example, there is a real dearth of data surrounding the whole life cycle costs and performance of conventional procurement;
- many of the benefits of PPPs are difficult to quantify and value.

Perhaps for these reasons, governments have been reluctant to include these benefits in their VfM analysis when comparing the PPP model to the public sector alternative. The fact that the benefits of PPPs as a model of infrastructure and public service delivery are difficult to quantify, however, does not diminish their importance. This annex examines the importance of improving the evidence base for investment appraisals and for verifying claims regarding the benefits of PPPs[29].

The importance of *ex-post* evaluation

Quantitative assessment in the appraisal phase of an investment is dependent on a sound evidence base, wherever possible developed from past procurement experience in both PPP and conventional procurement routes[30]. This evidence base must be continually updated to reflect the incorporation of new information from projects at all stages of procurement and operation, particularly where there are differences due to the procurement method[31]. Evidence from the operational phase must be fed back into the appraisal phase in order to improve future procurements.

Hence collecting information on actual outcomes is key to investment appraisal[32]. This information should be used in appraising all future programmes and projects and should be shared across the public sector. Responsibility for assembling and sharing evidence bases should probably rest with individual agencies, but it could be useful to have an authority responsible for overseeing the process, to ensure that information is shared both by sector and from one sector to the next, where this is relevant. *Ex-post* evaluation is conducted in a similar manner to an economic appraisal, focusing on cost benefit analysis, based on what actually occurred as opposed to what was anticipated. This is outlined in Figure 2 below[33].

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29 See, for example, KPMG, University College London, Operating Healthcare Infrastructure: Analysing the Evidence (2010); KPMG, Infrastructure Spotlight Report Investment in school facilities and PFI – do they play a role in educational outcomes? (2008); (2009): Partnerships UK, Investigating the performance of operational PFI contracts (2008); NAO, PFI: Construction Performance (2009); University of Melbourne , National PPP Forum, Benchmarking Study, Phase II (2008); EIB Operations Evaluation Department, Evaluation of PPP projects financed by the EIB – Synthesis Document, (March 2005).

30 See HM Treasury, Value for Money Assessment Guidance 2006, p.12.

31 *Ibid*.

32 HMS Treasury, Value for Money Assessment Guidance 2004, p.10.

33 Treasury in the UK recognises the following five phases to an evaluation:
1. Establish exactly what is to be evaluated and how past outturns can be measured;
2. Choose alternative states of the world and/or alternative management decisions as counterfactuals;
3. Compare the outturn with the target outturn, and with the effects of the chosen alternative states of the world and/or management decisions;
4. Present the results and recommendations;
5. Disseminate and use the results and recommendations.

Figure 2 – Appraisal and *ex-post* evaluation

	Appraisal	*Ex-post* evaluation
Aim	*Ex-ante* assessment of whether action is worthwhile and impacts	*Ex-post* assessment of whether action was worthwhile and impacts
Use of output	Project procurement, policy and programme design	Feedback for: - future procurement, project management - wider policy debate - future programme management
Application	Projects, policies and programmes	Projects, policies and programmes
Timing	Always prior to implementation	- During implementation ("formative") - After implementation ("summative")
Data	Forecasted	Historic and current, estimated and actual. Estimates of counterfactuals
Method	- Comparison of options against "do nothing" option - Estimated assessment of risk	- Comparison of results against "do nothing" option - Comparison of actual outturns against target outturns/alternative outturns - Assessment of risks that did or did not materialise
Analytical Techniques	- Cost benefit/effectiveness analysis - Discounted cash flow analysis - Multi-criteria analysis - Other statistical analysis	- Cost benefit / effectiveness analysis - Discounted cash flow analysis - Multi-criteria analysis - Other statistical analysis
Decision Criteria	- Comparison of net present value / cost for different options - Non-quantifiable factors may be included if quantification impossible	Consideration of whether correct criteria were used

Source: HMS Treasury, Green Book, p. 48

Improving forecasting techniques

In very large projects in particular, pervasive misinformation about costs, benefits and risks can be a serious problem. They can lead to cost overruns, lower than expected benefits and waste. More serious still, this information gap may be partially explained by planners and promoters misrepresenting costs, benefits, and risks in order to increase the chances of projects going ahead[34].

Better forecasting techniques based on a proper evidence base can reduce inaccuracy and bias in project appraisal. One innovative means to improve forecasting is to oblige planners to base their estimates on a reference class for similar projects, as opposed to taking a narrow project specific view (see Box 5 below).

Box 5 – "Reference class forecasting"

Reference class forecasting is a type of "evidence based forecasting" developed to compensate for cognitive bias in economic forecasting. It has its roots in the work of Kahneman and Tversky, two Nobel prize winning economists, on cognitive bias in decision making. Reference class forecasting consists of taking an outside view on a particular project to be forecast. The outside view is established based on information from a class of similar projects. It does not involve trying to forecast the specific uncertain events that will affect a specific project but instead involves placing the project in a statistical distribution of outcomes from this class of reference projects.

Reference class forecasting requires the following three steps for an individual project:

- Identifying a relevant reference class of past projects. The class must be broad enough to be statistically meaningful but narrow enough to be truly comparable with the specific project;
- Establishing a probability distribution of outcomes for the particular reference class. This necessitates having access to credible, empirical data for an adequate number of projects within the reference class to make statistically meaningful conclusions;
- Comparing the specific project with the reference-class distribution to establish the most likely outcome for the specific project.

It is officially endorsed by the American Planning Association and has shown itself to be more accurate than conventional forecasting.

Source: Flvybjerg (2007)

Report on infrastructure condition

One of the key benefits of PPPs is that it adopts a life-cycle approach aimed at preserving the function and usability of an asset for the contract period which generally corresponds to its useful economic life. This avoids the difficulties that public sector authorities have in balancing annual revenue constraints with the need to continue to invest in ensuring long-

[34] Bent Flyvbjerg, Policy and planning for large-infrastructure projects: problems, causes, cures. Environment and Planning B: Planning and Design 2007, volume 34, pp. 578- 597.

term cost effectiveness. Hence, assets (over the medium and long term) are potentially in better condition in PPP-type arrangements than in conventional procurement.

One clear way to testing these benefits would be if there were stricter standards for regular reporting on the condition of public infrastructure. Traditionally, accounting standards have been reluctant to report on provisions for deferred maintenance, presumably because these provisions do not constitute liabilities as such.[35] However, from the perspective of VfM, a strong case can be made for budgeting what it may cost to maintain, repair or upgrade an infrastructure. These costs should reflect the amount needed to maintain the public infrastructure at a sufficiently high standard that reflects current needs and expectations[36].

[35] Walker, R.G., Dean G.W. and Edwards (2004), "Infrastructure Reporting: Attitudes of Preparers and Potential Users", Financial Accountability & Management, 20(4), pp. 351-375.

[36] Indeed, some accounting standards already exist that potentially make reference to infrastructure condition. For instance, the Federal Accounting Standards Advisory Board (FASAB) and the Governmental Accounting Standards Board (GASB) in the US, and the UK's Accounting Standards Board (ASB) introduced these standards. The FASAB requires disclosures on the condition and estimated cost to remedy deferred maintenance to property, plant and equipment, whilst prohibiting inclusion of dollar values of these estimations in any financial statements. The GASB for its part in State 34 introduced *options* to accounting for infrastructure by American states and municipalities, which were either to value and depreciate infrastructure assets, or demonstrate that an infrastructure was being maintained at or above conditions set by government. In the UK, the Auditing and Standards Board introduced FRS 15 (1999), which permits but does not oblige the use of renewals accounting of infrastructure assets when (a) the infrastructure asset is to be maintained at a specified level of service standard, (b) the annual charge is calculated from an asset management plan, and (c) the asset (or network of assets) is mature or in a steady state. In these cases the level of annual expenditure needed to maintain the operating capacity of the infrastructure may be treated as depreciation charged against the carrying amount of the asset (*Ibid*.).



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