NON-FINANCIAL BENEFITS: ANOTHER REASON TO FOSTER THE PROMOTION OF PPPS AS A VIABLE ALTERNATIVE FOR PUBLIC SERVICE DELIVERY*

ABSTRACT

This paper will discuss the ability of PPP projects to provide greater non-financial benefits than traditional procurement. It is crucial that in the undergoing process of boosting the use of PPPs within the European Union, it is taken into account that not only economic and Internal Market policy issues would be fostered under PPPs, but also other goals equally important - that can be defined as PPPs' non-financial benefits - would be efficiently promoted and developed.

Therefore, it will be highlighted that even if cost-minimization approaches implicitly consider the non-financial benefits related to the different delivery models as ultimately the same, this is not the case for PPP arrangements, as the incentives inherent to the particular configuration of these contracts can easily show. Whenever the net value of non-financial benefits is larger for PPP options than under classic procurement, than the decision on PPP versus conventional procurement should take this into account.

Thus, the focus of this research will be on the recognition of PPPs as key elements not only for the functioning of the Internal Market, but also for the promotion of non-financial benefits such as social justice issues and shared policy purposes which include climate change concerns, the promotion of energy savings, alternative energy sources, energy and resources' efficiency, sustainable development, transport, high-level and affordable health care.

Finally, in light of the current situation in Europe, it will be once more stressed that PPPs' non-financial benefits represent an extremely important reason why PPPs should be broadly exploited throughout Europe as a viable alternative in the delivery of public services and/or infrastructures.

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SUMMARY: - 1. Introduction. - 2. PPPs and their recognition at a European level. - 3. PPPs' non-financial benefits. - 4. LCC applications, environmental and social gains. - 5. Conclusion.

1. *Introduction.*

This paper discusses the ability of 'Public-Private Partnerships' (PPPs)[1] to provide greater non-financial benefits than traditional procurement. It is crucial that in the undergoing process of boosting within the European Union the use of PPPs,[2] it is taken into account that not only economic and Internal Market policy issues would be fostered under PPPs, but also even goals - that can be defined as PPPs' non-financial benefits - would be efficiently promoted and developed. It will be hence underlined that PPPs' non-financial benefits represent an extremely important reason why PPPs should be broadly exploited throughout Europe as a viable alternative in the delivery of public services and/or infrastructures. [3]

Firstly, it will be provided an overview of the recent rise of PPPs as important economic tools for the functioning of the Internal Market. This background is essential in order to identify PPPs' extent and acknowledgement at a European level. Secondly, the paper will delve into the so-called PPPs' non-financial benefits. Specifically, it will be shown how they can unfold themselves, stressing that public authorities should take them into consideration when deciding whether or not deliver a public service through a PPP project. In fact, the large majority of public authorities usually recourse to economic analysis in order to evaluate whether deliver an investment through a PPP or a 'traditional' procurement. This means that *ex-ante* analysis are undertaken. However, these mainly focus on the financial costs inherent to the provision of a considered equivalent output. If there are reasons to believe that the non-financial benefits of a certain delivery under a PPP will be larger than under a classic procurement, traditional economical approaches would anyway underestimate the non-financial benefits of PPPs.[4] Consequently, the choice would nevertheless be for the 'traditional' procurement.

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[1] See, among others, E. R. Yescombe, 'Public Private Partnerships: Principles of Policy and Finance', Elsevier, 2007; Ginevra Cerrina Feroni, '*Il Partenariato pubblico-privato*', Giappichellli, 2001; Franco Mastragostino, '*Collaborazione pubblico privato e l'ordinamento amministrativo*, ' Giappichelli, 2011; Ruggiero Dipace, 'Partenariato pubblico privato e contratti atipici, ' Giuffrè, 2006.

[2] See the Commission of the European Communities (2004): Green Paper on Public-Private Partnerships and Community Law on Public Contracts and Concessions, Brussels 30.4.2004, COM (2004) 327 final.

[3] See, for instance, Bovis Christopher, 'The Notion of Public Concession as a Component of Public Private Partnerships', European Procurement and Public Private Partnership Law Review, 2007, 1, p. 12-16; König Christian and Wetzel Julia, 'The relevance of EC State aid control for PPP infrastructure funding', European Procurement and Public Private Partnership Law Review, 2007, 5, p. 5-11; Dipl. Wirtsch and Hans Wilhelm Alfen, working paper on 'Public Private Partnership (PPP) in the sector of Public Real Estate and Infrastructure Management: an approach of defining and delimiting PPP as an alternative provision and procurement method', Bauhaus Universität, Weimar.

[4] See 'The Non-Financial Benefits of PPPs: a Review of Concepts and Methodology', European PPP Expertise Centre, June 2011, pp. 9-10, available at http://www.eib.org/epec/resources/epec-non-financial-benefits-of-ppps-public.pdf.

Public authorities normally undertake projects upon the assumption that that specific investment is economically justified. In order to decide whether to deliver the public service or infrastructure through the classic procurement option or with a PPP, costs comparisons at specific standards are usually carried out. Cost-minimization approaches implicitly consider the non-financial benefits related to the different delivery models as ultimately the same. However, it is argued that this is not the case. PPP arrangements and the incentives inherent to the particular configuration of these contracts, can provide greater non-financial benefits. Thus, whenever the net value of non-financial benefits is larger for PPP options than under classic procurement, than the decision on PPP versus conventional procurement should take this into account.

Non-financial benefits arising out PPP delivery of public services and/or infrastructures promise to overcome, *inter alia*, the public sector lack of funding giving incentives to investors and innovators to support the development and rise of sustainable and energy efficient delivery of public services and/or assets.

Therefore, this paper holds that the overall incentives specific to PPP projects are capable of providing greater non-financial benefits than normal procurement. In fact, PPPs carry along a particular set of incentives supported by a composite contract structure where, normally the agreed payment mechanism and related financial arrangements, are organized in a way that maximizes the chances for the service to be actually delivered.[5] Thus, while highlighting that PPPs allow the private sector to broaden its possibilities to apply innovation at all levels of projects delivery, it is stressed that the aforesaid incentives, if actually endorsed, can promote the outcome of various non-financial benefits such as: accelerated deliveries, the delivery of services with higher quality standards and wider and beneficial social impacts.

With the term 'non-financial benefits', any and all socio-economic benefits for service users and wider society arising out an infrastructure or service investment can be encompassed. In fact, non-financial benefits differ from financial ones essentially because they do not represent cash inflows and/or outflows. The former are also characterized by the fact that not all of them can be valued in monetary terms as an increased property price of an infrastructure. Often, non-financial benefits can be just quantified, as for instance the case of an improved education outcome for school students. It is, however, argued that the consideration of non-financial benefits in the choice of the way through which deliver a public service may be quite difficult if the non-financial benefits can be only identified, but not valued or even quantified. Being this, for instance, the case of an improved environment for prisoners. Nonetheless, it is underlined that just ignoring advantages that cannot be easily measured would represent a superficial and simplistic approach to the issue.

[5] The legal regimes of these arrangements are diverse and display numerous different models of both financing and asset ownership. See, for instance, Burnett Michael, 'Beyond the New Public Procurement Directive – the Future for Public Private Partnerships (PPP)', Eipascope, 2005.

Finally, the paper will highlight that the application of the so-called Life-Cycle Costing (LCC)[6] approach can be fostered by PPPs. The implementation of LCC methodologies represents an important non-financial benefit of public services and/or infrastructures delivered under PPPs. It must be supported a recognition of PPPs as important elements not only for the functioning of the Internal Market, but also for the fostering of energy efficiency measures and sustainable development. The focus on PPPs should hence shift towards their capability of covering also different goals such as social justice issues and shared policy purposes which include climate change concerns, the promotion of energy savings, alternative energy sources, energy and resources' efficiency, EU LCC methodologies, sustainable development, transport, high-level and affordable health care.[7]

Specifically, LCC represents a tool that values costs of an asset/infrastructure/service throughout its life-cycle.[8] The non-financial benefits deriving from the actual employment of this approach could be largely yield by PPP projects. Thus, LCC should be envisaged as another integral component of PPPs' non-financial benefits. Accordingly, a proper evaluation of the latter should guide the decision between the delivery of an infrastructure or service through a classic procurement or a PPP, bearing in mind that a greater output of LCC benefits such as, for instance, lower maintenance costs and pollution control costs and reduced remediation costs during the use, could be achieved by PPP projects than under traditional procurement. In fact, environmental and social policy issues involve high capital outlays at the outset of an investment. These, can be more easily offset by a PPP arrangement that focuses on reduction of operating and maintenance costs and avoidance of environmental risks, than by a classic procurement.[9]

Thus, also the promotion of energy saving[10] and sustainable development must be adequately valued while considering the setup of PPPs as viable and efficient alternatives for public service and/or infrastructure delivery. Energy efficiency represents in fact a key issue within the European energy policy and one of the main goals of the Europe 2020 Strategy for smart, sustainable and inclusive growth adopted by the European Council in June 2010.[11] Especially as per buildings, which more or less concern the 40% of final energy consumption, investing in energy efficiency measures means a turnout of substantial energy savings, while supporting at the same time economic growth, sustainable development and the creation of new jobs.[12] In this direction, PPPs can assure

[6] For an overview on Life Cycle Costing see, *inter alia*, 'Life Cycle Costing, A Question of Value', White Paper from IISD, International Institute for Sustainable Development, available at http://ec.europa.eu/environment/gpp/pdf/WP-LifeCycleCosting.qx.pdf.

[7] See, for an interesting point of view, Bovis Christopher, 'Public Procurement in the European Union: Lessons from the Past and Insights to the Future', Columbia Journal of European Law, 2005-2006.

[8] See Roberto Caranta, 'Contratti Pubblici,' Giappichelli, 2012, pp. 490 et seq.

[9] On sustainable procurement see, among others, Eleanor Fisher, 'The power of Purchase: Addressing Sustainability through Public Procurement,' in European Procurement & Public Private Partnership Law Review, 2013.

[10] See, Pier Luigi Piselli, 'Il contratto di rendimento energetico: Energy Performance Contract,' (eds.) D. Crocco, L.E. Mandracchia, G. Rusconi, Codice dei Contratti Pubblici, Interpretazioni e applicazioni, Utet, 2011, pp. 127 et seq..

[11] Commission of the European Communities, 'Europe 2020 A strategy for smart, sustainable and inclusive growth,' Brussels 3.3.2010, COM (2010) 2020.

[12] In this regard see, for instance, 'Guidance on Energy Efficiency in Public Buildings', European Expertise Centre, available at http://www.eib.org/epec/resources/epec_guidance_ee_public_buildings_en.pdf.

a larger use of energy efficient appliances and technologies that, together with renewable energy, represent non-financial and cost effective benefits capable of ensuring the security of energy supply.

Thus, PPPs can effectively support and promote savings in the public sector which can in turn generate remarkable non-financial benefits. They can, for instance, assure the optimization of the energy efficiency of an existing building or pool of buildings, particularly with regard to PPP accommodation projects such as hospitals and schools. The expected output can be measured in terms of the reduction achieved. Unquestionably, an important issue that has to be dealt with is the creation of a methodology that measures and calculates the effective energy saving at the outset, in order to adequately allocate risk sharing between the public and the private sector that work in partnership to deliver public infrastructure projects such as roads, railways, airports, schools, hospitals or prisons. Within this picture, new policies[13] have been developed at the European level to achieve ambitious goals in the field of sustainable development and energy efficiency, the promotion of renewable energy and hamper of GHG emissions.

2. PPPs and their recognition at a European level.

All forms of collaborations between public and private sectors which lead to normally complex transactions, long duration and high-value contracts in high profile fields, can be defined with the broad term of PPPs.[14] These are cooperation arrangements undertaken by the private business world and public authorities aiming to achieve funding, construction, renovation, management or even just the maintenance of an infrastructure or the provision of a service.[15] Few Member States have already discovered and fully exploited PPPs, whereas most of them still have a little experience in the usage of this multifaceted legal figure.[16] In fact, PPP projects so far represent just a relatively small percentage of the European infrastructure investment. PPPs are, nonetheless, recently receiving an unexpected boost by the European Commission and other EU bodies as key tools that can ease the undergoing process of economic growth.[17]

[13] See, for instance, National Energy Efficiency Action Plans (NEEAP) under the Energy Services Directive (2006/32/EC) available at http://ec.europa.eu/energy/efficiency/end-use_en.htm.

[14] As the International Monetary Fund stated, there is no real agreement and consensus on a unique definition of PPPs. See, for instance, Burnett, Michael, 'Beyond the New Public Procurement Directive – the Future for Public Private Partnerships (PPP)', *ibidem*; Craig Brian and Wilson Colin, 'PPPs in the European Union', in Avery Nicholas and Harwood, Stephenson (eds.), Public-Private Partnerships: A Practical Analysis, London, Globe Law and Business, 2010, 2nd ed.; Teisman Geert R. and Klijn Hans E., 'Public-private partnerships in the European Union', in Osborne, Stephen P., Public-Private Partnerships: Theory and practice in international perspective, London: Routledge, 2007.

[15] See the European Commission, Green Paper on Public-Private Partnerships and Community Law on Public Contracts and Concessions, COM (2994) 327 fin.

[16] See, Administrative Law Collection, Director Jean-Bernard Auby, 'EU Public Contract Law, Public Procurement and Beyond,' (eds.) Martin Trybus, Roberto Caranta, Gunilla Edelstam, Buylant, 2014, pp. 285 et seq.; Nina Budina, Hana Polackova Brixi, Timothy Irwin, 'Public Private Partnerships in the New EU Member States: Managing Financial Risks,' World Bank Working Paper n. 114, 2007, The International Bank for Reconstruction and Development/The World Bank Washington D.C.

[17] See, *inter alia*, Commission of the European Communities (2003) A European Initiative for Growth. COM (2003) 690 final/2, 1; On PPPs and the development of energy infrastructure and high speed internet broadband services see, for instance, Commission of the European Communities (2009): Communication from the Commission to the European

PPPs started to be actively part of the European agenda more or less from the Commission's 2001 White Paper on *European transport policy for 2010: a time to decide*.[18] PPPs, however, began to be taken into account exclusively as another measure capable of fostering the functioning of the Internal Market. The economic advantages of PPPs were considered as the only *ratio* lying behind their promotion within the European Union.[19] Specifically, limits on governments' borrowings set out by the EU, national and International Monetary Fund (IMF), cost reductions pressures, the pursuit of better revenue collection and the limited resources available for public financing of infrastructure investments, increased the use of PPPs as economically beneficial means of public services delivery within the Internal Market.[20]

PPPs are now seen as economically positive means thorough which public authorities can take advantage of the private sector know-how and working methods getting acquainted with management skills which can be widely applied for a more effective delivery of public services. PPPs can in fact be used in a broad range of public services and in various sectors such as transport, public health, education and national security.[21]

The combination of the 2008 financial crisis and the EU budgetary rules revision brought to a significant restraint of PPPs funding and to the encounter of severe difficulties for many PPPs.[22] Nevertheless, at the European level the stress was auspiciously kept on the important role – at least as per the functioning of the Internal Market[23] – played by cooperative public-private structures in the delivering of infrastructure projects and provision of services to the public. Remarkably, in 2009[24] the European Commission - with the purpose of promoting PPPs - published a Communication '*Developing Public Private Partnerships*' stressing their importance specifically in connection with climate change fighting and renewable forms of energy and sustainable transport promotion. Outlining new paths of concern for potential EU intervention, this document of the Commission defined PPPs as '[…] interesting vehicles for the long-term structural development of

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Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Mobilising private and public investment for recovery and long term structural change: developing Public Private Partnerships, Brussels 19.11.2009, COM(2009) 615 final.

[18] Commission of the European Communities. White Paper. European transport policy for 2010: time to decide, COM (2001) 370 final.

[19] See Petersen Ole H., 'Meta-Governance of Public-Private Partnerships in the European Union', Copenhagen Business School, Stanford Seminar Series, 2009.

[20] See, for instance, Burnett Michael, 'Beyond the New Public Procurement Directive – the Future for Public Private Partnerships (PPP)', Eipascope, 2005, 3, p. 22.

[21] See the Commission of the European Communities, the Green Paper on Public-Private Partnerships and Community Law on Public Contracts and Concessions, Brussels 30.4.2004, COM (2004) 327 final, 1.1.1.4.

[22] See, for instance, Sieglinde E. Pommer, in Administrative Law Collection, Director Jean-Bernard Auby, 'EU Public Contract Law, Public Procurement and Beyond,' *ibidem*.

[23] See the Commission of the European Communities (2003) A European Initiative for Growth. COM (2003) 690 final/2.

[24] See the Commission of the European Communities (2009): Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Mobilising private and public investment for recovery and long term structural change: developing Public Private Partnerships, Brussels 19.11.2009, COM (2009) 615 final, 10.

infrastructures and services, bringing together distinct advantages of the private sector and the public sector, respectively.'[25]

3. PPPs' non-financial benefits.

Inherent to PPP arrangements are both financial and non-financial benefits. While the former represent cash outflows and/or inflows, the latter generally refer to socio-environmental benefits enjoyed by services' users and broader society. Non-financial benefits arising out PPPs unfold themselves along the same lines of the relevant associated gains, hence in accelerated or enhanced deliveries and/or in wider social impacts. Overall, some PPPs' non-financial benefits can be estimated in monetary terms while others can be just quantified or identified. They vary according to the specific structure of the public-private model adopted, to the public service or infrastructure delivered and ought to be included - through benefit results' assessments - in the cost comparison analyses normally undertaken by public authorities when deciding whether deliver a certain service by means of a PPP or a classic procurement. PPP projects have in fact features and an incentive structure that allow the unfolding of potentially numerous non-financial benefits than otherwise expected under traditional procurement.

The first group of PPPs' non-financial benefits considered relates to events of accelerated deliveries. These benefits encompass all advantages connected to an earlier availability of a public infrastructure and/or service. It is the case of roads, schools or hospitals which are delivered earlier than normally expected or planned under traditional procurement. In this event, the broader society can earlier profit of the estimated socio-environmental benefits arising out the anticipated functioning of transports, education and health services. Thus, accelerated delivery benefits vary according to how quickly services are made operational as well as to the inherent non-financial benefits of the specific public service provided.

PPP models are capable of accelerating the delivery of an infrastructure and/or service by, for instance, assuring on-time construction performances,[26] hence providing services that actually start to operate at the prearranged date. On-time construction performances are mainly achieved thanks to the particular financial incentives provided by the terms and conditions of the PPP contract. Thus, whenever it is arranged that payments occur only when the planned service gets

[25] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions - Mobilising private and public investment for recovery and long term structural change: developing Public Private Partnerships/COM/2009/0615 final.

[26] See, for example, the following studies NAO, 'PFI: Construction Performance' (2003); NAO, 'PFI: Construction Performance' (2009), available at http://www.nao.org.uk/report/pfi-construction-performance/;
Standard and Poor's, 'The Anatomy of Construction Risk: Lessons form a Millennium of PPP Experience' (2007), available at http://www.robbain.com/The%20Anatomy%20Of%20Construction%20Risk.pdf; EIB, Andreas Kappeler and Mathieu Nemoz 'Public Private Partnerships in Europe–before and during the recent financial crisis', (2010) available at http://www.eib.org/epec/resources/efr_epec_ppp_report1.pdf; University of Melbourne, 'National PPP Forum, Benchmarking Study, Phase II,' Report on the performance of PPP projects in Australia when compared with a representative sample of traditionally procured infrastructure projects, (2008), available at http://www.infrastructureaustralia.gov.au/publications/files/National_PPP_Forum_Benchmarking_Study_Ph2_dec08.pdf.

actually delivered, the private partner is highly motivated to deliver it on-time. Empirical data have shown that this happens also if the private sector must shoulder additional costs for the fulfillment of an on-time delivery contractual obligation.[27] In this regard, it can be underlined that on practical grounds one of the main purposes of undertaking, before the execution of PPP contracts, financial projecting and due diligence activities is to identify the precise conditions that can guarantee an on-time delivery of the planned infrastructure. In fact, PPP projects are usually set out in way that easily foresees and/or handles unexpected developments or events of delay.

In addition, if the private partner recurs to private funding it can attain additional budgetary funds, representing this another way to achieve an earlier delivery[28] through a PPP planned capital investment program. Private funding can in fact foster accelerated investment programs. The typical long term commitments of these programs, to which governments are normally bound to according to PPP contracts, usually represent for the public sector an incentive to choose and invest in more rational and long term projects, and for the private partner another reason to plan and deliver more coherent infrastructure programs.[29]

However, still outstanding is the issue of identifying the best way through which include[30] accelerated delivery benefits in the e*x-ante* cost minimization analyses that public authorities undertake in order to evaluate whether to deliver an investment through a PPP or a 'traditional' procurement. In this regard, it should be stressed that the private partner should detail how and why the PPP project can offer an earlier availability of the planned infrastructure, identifying, quantifying, and where possible, evaluating the earlier non-financial benefits that could actually be available. In this regard, the French MAPPP[31] studied a way through which assess the value of accelerated delivery benefits. Thanks to numerical assumptions, diagrams and calculations comparing private and public deliveries the findings of the analysis held that the value of the

[27] See, among others, NAO, 'PFI: Construction Performance' (2003) and NAO, 'PFI: Construction Performance' (2009) available at http://www.nao.org.uk/report/pfi-construction-performance/; Standard and Poor's, 'The Anatomy of Construction Risk: Lessons from a Millennium of PPP Experience' (2007), Standard and Poor's, 'The Anatomy of Construction Risk: Lessons form a Millennium of PPP Experience' (2007), available at http://www.robbain.com/The%20Anatomy%20Of%20Construction%20Risk.pdf.

[28] See NAO 'Department of Health – Innovation in the NHS: Local Improvement Finance Trusts' (2005), available at http://www.nao.org.uk/report/department-of-health-innovation-in-the-nhs-local-improvement-finance-trusts/.

[29] As it is shown, for instance, by the 'Building Schools for the Future' or 'National Health Service Local Infrastructure Finance Trusts (NHS LIFT)' programs in the UK, available at http://www.nao.org.uk/report/department-of-health-innovation-in-the-nhs-local-improvement-finance-trusts/.

[30] See, among others, European Commission
Directorate General Regional Policy, 'Guide to Cost-Benefit Analysis of Infrastructure Projects,' Structural Funds, Cohesion Fund and Instrument for Pre-Accession, (2008) for an overview on approaches followed and evaluations undertaken available at
http://ec.europa.eu/regional_policy/sources/docgener/guides/cost/guide2008_en.pdf;
HEATCO, 'Developing Harmonized European Approaches for Transport Costing and Project Assessment, Proposal for Harmonized Guidelines' (2006), which provides, *inter alia*, extensive data on what socio-economics benefits are available at http://heatco.ier.uni-stuttgart.de/.

[31] '*Mission d'appui à la réalisation des contrats de partenariat'.* For further information visit http://www.economie.gouv.fr/ppp/accueil

additional benefits arising out PPPs is greater than the additional costs, hence the PPP option should be considered as justified on efficiency grounds.[32]

Furthermore, another group of PPPs' non-financial benefits relates to events of enhanced deliveries of public services and/or infrastructures. The latter occur when there is an additional quality of the infrastructure asset or service delivered through PPP projects, being these non-financial benefits enjoyed by assets and/or services' users.[33] Thus, given a certain infrastructure asset, enhanced delivery benefits arise out a higher level of the service quality,[34] which can in turn be generated in three cases. First of all, when PPPs apply LCC methodologies.[35] In this case, PPP contractual obligations for infrastructure maintenance guarantee its preservation overtime providing higher asset conditions and outstanding benefits. Moreover, when contractual arrangements are set out in a way that allow the application of specific service standards, better construed and higher quality service deliveries are assured.[36] Lastly, with a clearly defined PPP governance structure non-financial benefits are generated and related to the enhanced due diligence activities carried out by lenders and investors, to the better management of the delivered service and the public sector's focus on its core tasks and best skills.

Moreover, whenever the public partner identifies just the desired output, innovation gets fostered because the private sector is free to decide how to better deliver the expected service and/or asset.[37] PPPs are in fact normally designed in order to provide innovative solutions for the delivery of public services through the exploitation of specific infrastructure designs and/or service delivery methods.[38] Thus, by stimulating innovative solutions for the delivery of public services PPPs can

[32] See, 'The Non-Financial Benefits of PPPs: a Review of Concepts and Methodology', European PPP Expertise Centre, June 2011, *ibidem*.

[33] The number of users may increase if the quality of the infrastructure improves. This because better services rise the asset/service's demand, consequently having more users that profit of the enhanced delivery.

[34] See, for instance, the report entitled 'Investigating the performance of operational PFI contracts' A research study conducted for Partnerships UK on behalf of HM Treasury, Ipsos MORI, Social Research Institute, (2008), available at http://www2.vlaanderen.be/pps/documenten/Ipsos_Mori_Report.pdf; The report 'Review of operational PFI and PPP projects,' 4ps, Local Government's project delivery specialist, (2005), available at http://test.4ps.gov.uk/UserFiles/File/Publications/review_of%20_operational_PFI_PPP_schemes.pdf. Moreover, as per the quality of the services delivered see also, KPMG in collaboration with UCL, University College London, 'Operating Healthcare Infrastructure: Analysing the Evidence,' KPMG International, Audit, Tax, Advisory, (2010), available at http://www.kpmg.com/TW/zh/IssuesAndInsights/Documents/IGH/Global-infrastructure-spotlight-Benchmarking-healthcare.pdf.

[35] See, for instance, on LCC applications the Life Cycle Cost Analysis for Sustainable Buildings at http://energy.gov/eere/femp/articles/life-cycle-cost-analysis-sustainable-buildings.

[36] See, 'The Non-Financial Benefits of PPPs: a Review of Concepts and Methodology', European PPP Expertise Centre, June 2011, *ibidem*.

[37] Innovation has been achieved by PPPs in several circumstances. See, for instance, Cambridge Economic Policy Associates, CEPA report on 'Public Private Partnerships in Scotland: Evaluation of Performance' (2005), available at http://www.scotland.gov.uk/Resource/Doc/917/0011854.pdf; National, Audit Office, NAO report on 'The Operational Performance of PFI Prisons,' (2003), available at http://www.nao.org.uk/wp-content/uploads/2003/06/0203700.pdf; CBI 'Building on Success: the Way forward for PFI' (2007), available at http://www.infrastructureaustralia.gov.au/publications/files/Bldg_on_success_The_way_forward_4_PFI_UK_CBI.pdf; CBI 'The World of Public Private Partnerships' (2007), available at http://www.infrastructureaustralia.gov.au/publications/files/going_global_PPPs_UK.pdf.

[38] E.R. Yescombe, 'Public Private Partnerships: Principles of Policy and Finance', 2007, p. 23.

generate significant social benefits. For instance, a well-designed and functioning school can support the educational achievement of students. A well-structured hospital can help patients in their recovery. Moreover, since PPPs are typically shaped as long-term contracts, the private partner aims to attain in the long run the returns of the innovative design applied, having at the same time strong incentives to invest in the life-time of the delivered asset. Additionally, the innovative design solution used can be exploited for future PPP models, not limiting its beneficial effects to that single project.

Investing in innovation indeed implies a certain degree of risk. The tendency is to avoid such risk when there are no incentives or advantages to do so. The public sector in order to bear fewer risks usually picks from the solutions that once worked and adapts them to new circumstances. Instead, for the private partner the 'innovation challenge' is crucial when seeking the execution of a certain contract. In fact, for the private sector innovation represents a high valued incentive and powerful element in the fostering of competition. Therefore, in order to obtain a certain PPP project private actors are encouraged to develop new and innovative ways through which deliver the public service, which at the same time pursue the achievement of social goals.[39]

Last but not least, there is a group of PPPs' non-financial benefits connected to the positive externalities affecting people other than the direct users of the services delivered through PPPs. Thus, the wider society, the community, the environment and the Internal Market actors who can all enjoy of the beneficial effects arising out a specific PPP investment. In this regard, an *a priori* and conclusive identification of who will specifically profit of these benefits cannot be provided as it depends on the specific configuration and structure of PPPs, being otherwise difficult to quantify how widespread the said beneficial effects can actually be. Examples of non-financial benefits of this latter group can, for instance, be a learning environment from which the public sector can draw inspiration and exploit best practices, a clear cost identification and transparency approach, innovative management techniques applied by the private sector capable of being exploited for other public service deliveries or the reliance of service consumers on long-term fixed prices and specifically set out outputs.

As briefly outlined, non-financial benefits can present themselves variously and be largely yield by PPP arrangements. However, difficulties related to their weight and measurement still hamper their full consideration. Efforts have been put in finding ways through which evaluate non-financial benefits when market prices are not available.[40] Nonetheless, a lot needs still to be done. The approach largely referred to identifies the value of a certain benefit according to consumers' behavior. For instance, when it comes to buildings the amenity, peace and silence of the

[39] In this respect, two studies carried by KPMG showed that PPP projects can enhance the delivery in the education and health sector. See, KPMG's Infrastructure Spotlight Report, 'PFI in school building – does it influence educational outcomes?' (2009), available at http://www.infrastructureaustralia.gov.au/publications/files/pfi_in_schools_KPMG_UK_2009.pdf; KPMG and UCL, 'Operating Healthcare Infrastructure: Analyzing the Evidence,' (2010), *ibidem*.

[40] See, for instance, HM Treasury, 'Appraisal and Evaluation in Central Government' Green Book, available at https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-governent.

neighborhood are considered in order to allocate a monetary value to the environmental benefit. Other approaches rely on the willingness of consumers to purchase a certain asset and/or pay for the provision of a specific service. The value of the non-financial benefit is hence identified according to interviews and questioners' findings.[41]

It is usually argued that some non-financial benefits can be identified, quantified, but not valued in monetary terms. However, as per an aesthetic improvement of a local area, the value of the non-financial benefit can be monetized, for instance, by looking at the increased price of the buildings surrounding the renovated area. A complex task remains anyway the recognition of a monetary value to users' satisfaction. In this regard, scales comparing satisfaction levels could be used. Though, this would mean having the support of empirical evidence, its applicability over various investments projects of a specific sector[42] and a certain degree of consensus.

Overall, the measurement and monetization of non-financial benefits remains the subject of debate and empirical studies. Weighting non-financial benefits engages key stakeholders and more generally all users of assets and/or services delivered under PPPs. In fact, in order to quantify and monetize non-financial gains a detail of the benefits achievable through PPP projects should be provided in advance by the private sector. Thus, once quantified or at least identified, when not monetized, non-financial benefits should be considered alongside with the financial benefits. In this way providing contracting authorities with a comprehensive background that allows them to take coherent decisions for an efficient delivery of public services.

Further difficulties may arise from the incomplete data on PPPs' non-financial benefits, being them normally available after the expiration of the relevant contract, hence even over 25-30 years. In addition, while methods of evaluation of PPPs' non-financial benefits are still modest, also data on PPPs' applications of life-cycle costing methodologies are rare.[43] Thus, high can be cases of misrepresentations of costs, benefits and risks inherent to PPPs. This, should be clearly avoided if PPP projects are to be promoted.[44] Well-structured forecasting methods of non-financial benefits identification and support of empirical evidence could decrease mistakes and bias in the undertaking of PPP projects. In this regard, it would be useful to carry out evaluations by referring to classes of similar PPP models.

Therefore, as briefly highlighted, an appropriate identification, quantification and evaluation in monetary terms of PPPs' non-financial benefits is not an easy task. Nonetheless, it is a challenge

[41] See, 'The Non-Financial Benefits of PPPs: a Review of Concepts and Methodology', European PPP Expertise Centre, June 2011, *ibidem*.

[42] In this regard, see for instance, the Department of Treasury and Finance, 'Investment Evaluation: Policy and Guidelines,' (1996), State of Victoria, Australia.

[43] See, for instance, Elisabeth Hochschorner and Maria Noring, 'Practitioners' use of life-cycle costing with environmental costs--a Swedish study', International Journal of Life Cycle Assessment, 16/2011.

[44] 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.

that has to be taken in order to allow a true boost of PPPs throughout Europe and a promotion of a higher overall quality of public service and/or asset delivery.[45]

4. LCC applications, environmental and social gains.

Another reason to foster PPPs as viable alternatives in the delivery of public services is the promotion of Life-Cycle Costing (LCC) methodologies.[46] The Commission in its Europe 2020 strategy for smart, sustainable and inclusive growth[47] stressed the need to develop a more resource-efficient, greener and competitive economy that promotes high-employment, social and territorial cohesion. It is within this picture that PPPs represent one of the most important market-based instruments that should be used to achieve said objectives.

Above all, the implementation of the LCC approach could be efficiently yield by the public and private sector cooperation. Contracting authorities can in fact structure PPP contractual arrangements so as to pursue sustainable criteria in the delivery of public services and infrastructures not setting aside the so-called value-for-money principle.[48] As public authorities need to strike a delicate balance between annual revenue constraints and the provision of long-term cost-effective investments, PPPs encourage and allow to 'think outside the box'. They can, for instance, be specifically conceived in order to assure the application of LCC methodologies, hence providing sustainable-related objectives.

Empirical evidence showed the importance of recurring to LCC methodologies.[49] A 2007 investigation compared prices of green and non-green products in different fields such as construction work, buses and bus services, passenger cars, cleaning products and services, clothing, electricity, computers and monitors, printers and copiers, food, paper and furniture.[50] In the construction field, another 2007 analysis[51] examined the relevance of LCC in sustainable constructions suggesting a common methodology,[52] which by the way preceded a European

[45] See, among others, the European Investment Bank Evaluation Report, Operations Evaluation Department, 'Evaluation of PPP projects financed by the EIB – Synthesis Document', (March, 2005) available at http://www.eib.org/attachments/ev/ev_ppp_en.pdf; and HM Treasury, Value for Money Assessment Guidance, (2008), p. 12 available at http://webarchive.nationalarchives.gov.uk/+/www.dh.gov.uk/en/Managingyourorganisation/NHSprocurement/Publicprivatepartnership/Privatefinanceinitiative/InvestmentGuidanceRouteMap/DH_4132526.

[46] For a clear overview on LCC see, for instance, the Swedish Environmental Management Council Report, 'LCC - description of the tool and its parameters', Guide, Sweden, 2011.

[47] See the Communication from the Commission of 3 March 2010 – COM (2010) 2020.

[48] The 'Value for money' (VFM) principle overall concerns the assessment on whether or not PPPs - compared to traditional procurement - can increase efficiency or improve the service delivery.

[49] In the pumping system see, for instance, the analysis undertaken by the Hydraulic Institute, Europump and the US Department of Energy's Office of Industrial Technologies (OIT) available at https://www1.eere.energy.gov/manufacturing/tech_assistance/pdfs/pumplcc_1001.pdf.

[50] Ina Rüdenauer, Miriam Dross, Ulrike Eberle, Carl-Otto Gensch et al., 'Costs and Benefits of Green Public Procurement in Europe', Part 1: Comparison of the Life Cycle Costs of Green and Non Green Products', Freiburg, 26 July 2007, available at http://ec.europa.eu/environment/gpp/pdf/eu_recommendations_1.pdf.

[51] The study was carried out by Davis Langdon in 2007, DG Enterprise & Industry. See its report available at http://ec.europa.eu/enterprise/sectors/construction/studies/life-cycle-costing_en.htm.

[52] See DG Enterprise & Industry at http://ec.europa.eu/enterprise/sectors/construction/competitiveness/index_en.htm.

Commission proposal[53] of 2012 for a sustainable strategy in the same field. Studies on the feasibility of LCC can also be found, for example, in the telecommunications industry.[54]

As per the structure and functioning of PPP models, they can allow social and environmental goals to become less-far-reaching as they get accumulated during the operation and construction process and use stage, being LCC a tool that evaluates assets' costs throughout their life cycle.[55] Nevertheless, it has to be borne in mind that today LCC use is still far from being systematic and calculations of LCC methodologies should be developed differently for products, works and services[56] as, for instance, the life-cycle of a service embraces all stages from its projecting to the end of its provision.[57]

Anyway LCC application requires the consideration of monetary costs and expenses as well as external environmental and social benefits. Few LCC methodologies[58] are more frequently referred to by public authorities. These are based merely on financial evaluations which include four main costs components namely investment, operation, maintenance and end-of-life disposal expenses. In order to produce environmental-social benefits, PPPs have to hence include external costs related to work, service, production so that these externalities can be internalized in the costs comparison analysis and provided with a financial value.

While structuring PPP projects OECD[59] environmental indicators – such as waste generation, air quality and energy resources - could be referred to as guidelines for LCC implementation. They could represent a starting point for the development at a European level of a common frame of reference for public-private collaborations committed in the use of LCC approaches. The ISO standards set out in the ISO 14040-14044:2006[60] may represent as well a useful reference model for an effective LCC assessment. However, in this case it should be taken into consideration that according to the Commission there are calculations arising out the application of ISO standards that risk not being in compliance with the core principles of the TFEU.[61] Thus, the Commission

[53] See the Commission Communication-Strategy for the sustainable competitiveness of the construction sector and its enterprises, Brussels, 31.7.2012, COM (2012) 433 final.
[54] See, for instance, Wolfram Scharnhorst, "Life Cycle Assessment in the Telecommunication Industry: A Review", International Journal of Life Cycle Assessment 13(1)/ 2008, pp. 75-86.
[55] Oshani Perera, Barbara Morton, Tina Perfrement, 'Life Cycle Costing in Sustainable Public Procurement: A Question of Value', Winnipeg, 2009, available at http://www.iisd.org/pdf/2009/life_cycle_costing.pdf.
[56] In this respect it is interesting the case study undertaken by Elisabeth Hochschorner and Mari Noring, 'Practitioners' use of life-cycle costing with environmental costs--a Swedish study', *ibidem*.
[57] For LCC calculations and PP application see, among others, Carolien Jobse and Nicola Dimitri, "LCC-calculations and the principles of public procurement", available at https://underpinn.portals.mbs.ac.uk/Portals/70/docs/2.1%20-%20Jobse%20&%20Dimitri%20-%20LCC%20calculations%20v1%200.pdf.
[58] See, for instance, the European platform on life cycle assessment available at http://lca.jrc.ec.europa.eu/lcainfohub// directory.vm.
[59] OECD, key environmental indicators, Paris 2008. These, were derived from greater environmental concerns identified according to the political relevance, analytical soundness and measurability.
[60] These are available at http://www.iso.org/iso/catalogue_detail?csnumber=38498.
[61] See, for instance, Carolien Jobse and Nicola Dimitri, 'LCC-calculations and the principles of public procurement', *ibidem*.

provided[62] another common basis for consistent, robust and quality-assured life-cycle data and studies, with the goal of offering a well-structured, comprehensive and internationally standardized LCC assessment in order to support coherent sustainable consumption and production. In addition, in the assessment of LCC applications public-private partnerships could rely on data collected in software tools, consulting services, handbooks or technical guidelines.[63]

Furthermore, as per the sustainable requirements set out at a European level, PPPs promise to be crucial, for instance, when contracting authorities have to take into account energy consumption and emissions in the purchase of road transport vehicles.[64] Moreover, the additional funding that can be achieved by a private-public cooperation can significantly support government authorities in the procurement of office IT equipment that has to meet specific minimum energy-efficiency levels in accordance with Regulation n. 106/2008.[65] In addition, the capability of PPPs to provide larger non-financial benefits should be reconsidered by public authorities also with regard to their need to own and occupy buildings that are 'nearly zero-energy'- as it is nationally identified - pursuant to the common frame of reference provided by the Directive 2010/31/EU[66] from December 31st 2018.

Overall, non-financial benefits generated by LCC applications encompass various environmental and social gains. In this regard, PPP performance conditions promise to provide a better integration of both social and environmental considerations. Environmental benefits have been defined as the uncompensated environmental effects of production and consumption affecting consumer utilities and business' costs outside the market mechanism.[67] Social benefits - normally perceived as harder to asses - vary according to the single PPP model adopted. They entail, for instance, unemployment, fair trade benefits and reduction of health care costs. Undoubtedly, it is challenging to precisely forecast their achievement. However, there are grounds to widen the scope of PPPs as tools

[62] These can be found in the ILCD Handbook, European Commission - Joint Research Centre - Institute for Environment and Sustainability: International Reference Life Cycle Data System (ILCD) Handbook - General guide for Life Cycle Assessment - Detailed guidance, First edition March 2010, EUR 24708 EN, Luxembourg, Publications Office of the European Union, 2010.

[63] See Javier Sanfélix, Fabrice Mathieux, Cristina de la Rúa, Marc-Andree Wolf, Kirana Chomkhamsri, 'The enhanced LCA Resources Directory: a tool aimed at improving Life Cycle Thinking practices', in Int. J Life Cycle Assess., (2013) 18:273–277; See the European platform on life cycle assessment available at http://lca.jrc.ec.europa.eu/lcainfohub// directory.vm; Her Majesty's Treasury (2003), 'The Green Book: Appraisal and Evaluation in Central Government', Treasury Guidance, United Kingdom available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220541/green_book_complete.pdf; British Standards and International Organization for Standardization (2008), BS ISO 15686-5:2008 PD 156865, Buildings and construction assets, Service life planning, Life cycle costing available at http://www.iso.org/iso/catalogue_detail.htm?csnumber=29430;
See the ERM case studies, available at http://www.erm.com/en/Analysis-and-Insight/Case-Studies/; See the U.S. Electronic Product Environmental Assessment Tool (EPEAT), available at http://www.epa.gov/epp/pubs/products/epeat.htm.

[64] As it is required by the Clean Vehicles Directive (2009/33/EC). In this respect there is an interesting point of view on GPP of Kunzlik, 'The procurement of "green energy"' in Sue Arrowsmith and Peter Kunzlik (eds.), Social and Environmental Policies in EC Procurement Law, Cambridge University Press 2009, p. 382.

[65] See Regulation (EC) No. 106/2008 on a Community energy-efficiency labelling programme for office equipment (recast version), OJ 2008 L 39/1-7.

[66] Directive 2010/31/EU on energy performances of buildings, OJ 2010 L 153/13-35.

[67] See, for instance, Dacian Dragos, Bogdana Neamtu, 'Sustainable Public Procurement: Life-Cycle Costing in the New EU Directive Proposal' in European Procurement & Public Private Partnership Law Review, 2013, p. 6.

capable of providing both social and environmental LCC impacts, which differ accordingly to the different asset and/or service delivered. In fact, the use of LCC methods by PPPs potentially allows the allocation of both social and environmental impacts to specific production processes and service deliveries.

It is hence held that PPPs can provide larger non-financial benefits than traditional procurement also through the application of LCC methods, generating wider environmental and social gains. Empirically supporting such statement is not an easy task since, for instance, environmental and social benefits do not always have tangible correspondents in the 'final product'. This is the case of fair trade working conditions, organic agriculture or use of energy efficient production. Nonetheless, these social policy issues must be considered and pursued in order to allow the achievement of the Europe 2020 policy objectives[68] through the PPP uptake of public assets and services with a high social value.

In advocating the use of LCC by PPPs, it has to be borne in mind that the capability of PPPs to provide significant non-financial benefits depends on the extent of their scope, on the specific methodology used and on the stages of the asset life-cycle considered. Undoubtedly, uncertainties arise also for the public-private cooperation that decides to implement LCC methods. It is in fact important to solve case by case issues such as quantification of the lower risk of environmental damages, identification of clean up-costs, and promotion of social cohesion through the creation of jobs, livelihoods and new economic activities. In addition, drawbacks due to incomplete or lack of readily-available and representative data on LCC applications exist also for PPP arrangements. However, LCC promises to be more easily endorsed by public-private contractual collaborations than by traditional procurement.

Thus, PPPs that apply LCC methods can represent a viable alternative in the delivery of public services and/or infrastructures as they promise to be more paying in long-term providing larger social and environmental benefits than classic procurement.[69]

Therefore, as briefly highlighted, one of the key non-financial benefits that PPPs can offer is the smooth endorsement of life-cycle methodologies through an *ad hoc* contract structure setting. The goal of the LCC approach is to secure the function and usage of the delivered asset and/or service for the entire duration of the contract itself. Public assets provided through PPP projects are hence potentially - especially over the long-term - in a better maintenance condition than if delivered through traditional procurement. A clear evidence of such a statement could be found if reporting activities on the conditions of public infrastructures were actually conducted on a regular basis. In this regard, empirical studies should consider and compare the foreseen maintenance, reparation and upgrade costs of an infrastructure. These would show the better mean through which maintain

[68] Commission of the European Communities, 'Europe 2020 A strategy for smart, sustainable and inclusive growth,' Brussels 3.3.2010, COM (2010) 2020.

[69] See, among others, John Cole, Chief Executive, Health Estate, 'Achieving design quality in PFI projects', Northern Ireland whose report provides evidence-based data on the high valued social and environmental gains attainable in the health sector through the use of PFI and LCC methods in the delivery of hospitals.

public buildings at a sufficiently high functioning standard, meeting at once outstanding needs and expectations.[70]

Moreover, PPPs have the capability of increasing and encouraging the delivery of renewable and non-polluting energy. Cost-reduction technologies and private sector's funding leverage can foster mature technologies, such as photovoltaic, biomass, wind and geothermal power and be rapidly and cost-effectively deployed. Within this picture, PPPs promise to promote purchase agreements, utility energy savings and performance contracts.

Thus, given the ongoing European and domestic debate on the need of innovative public services and/or infrastructures delivery, PPPs play an important role. [71] They represent a crucial part of the demand-oriented innovation policy being capable of generating remarkable social and environmental benefits. Engaging in PPP projects means also foreseeing larger LCC benefits than otherwise achievable under traditional procurement. This, hence represents another reason why PPP are worth to be spread and used throughout Europe as a viable alternative in the delivery of public services.

5. *Conclusion.*

Public authorities need of greater expertise and larger resources to undertake the long-range investments that move the Internal Market machine. PPPs pool together resources, risks, and rewards of a public agency and a private company in order to provide greater efficiency, better access to capital, and improved compliance with a wider range of domestic and EU regulations.[72]

It is within this picture that public-private partnerships have to be reconsidered as they can be designed to deliver larger non-financial benefits than traditional procurement.[73] Private and public entities can together finance projects that offer remarkable non-financial gains. The needed funds can be more easily obtained, public sector's objectives are fulfilled while the private sector is provided with significant profit incentives.[74] Thus, PPP projects while being an effective way through which deliver public services at a lower 'up front' cost, they promise to provide significant

[70] For models of accounting standards see, for instance, the U.S. Federal Accounting Standards Advisory Board (FASAB) available at http://www.fasab.gov/; the Governmental Accounting Standards Board (GASB) available at http://www.gasb.org/jsp/GASB/Page/GASBSectionPage&cid=1176163026371; and the UK's Accounting Standards Board (ASB), available at https://www.frc.org.uk/ASB.aspx.

[71] On innovation see Esko Aho, Josef Cornu, Luke Georghiou, Antoni Subira, 'Creating an innovative Europe', Belgium 2006, available at http://ec.europa.eu/research/era/docs/en/creative-an-innovative-europe-en.pdf.

[72] In this regard, see the U.S. Government Accountability Office (GAO) available at http://www.gao.gov/. In the U.S., the National Council for Public-Private Partnerships (NCPPP) defined a PPP as a contractual agreement between a public agency and a public sector entity through which the skills and assets of each sector are shared in delivering a service or facility for the use of the general public; each party shares in the potential risks and rewards in delivery of the service or facility. See also the Transport Policy and Tourism Section Transport and Tourism Division, United Nations Economic and Social Commission for Asia and the Pacific, A Legal Perspective of Public Private Partnerships, available at http://www.unescap.org/ttdw/ppp/trainingmaterials/PPPs_Legal_Perspective.pdf.

[73] See, for instance, on the issue Stephen J. McBrady, 'Funding America's Infrastructure Needs: Public Private Partnerships May Help Close Infrastructure Gap', Constr. Briefings No. 2009-3 (March 2009).

[74] See Julia Paschal Davis, Public-Private Partnerships, 44-FALL Procurement Law. 9, 9-10 (2008).

non-financial benefits that include, *inter alia*, the development of green and sustainable technologies.[75]

PPPs allow the engagement of the public sector with scientists, engineers, entrepreneurs in the development of next-generation energy storage and control technologies[76] in order to attract investors, add jobs and spark the much-needed green transformation of the EU energy market.

PPPs have the potential to shape, expand, and advance non-financial benefits securing a clean energy market.[77] Private and public sectors' evolution of small-scale clean technologies into cost effective solutions to energy crises can be potentially traded throughout Europe aiming to a shared shift of paradigm towards PPPs conceived as valid alternatives in the delivery of public services.

PPP arrangements provide economic benefits in terms of functioning of the Internal Market and send positive ripple effects for the creation of a sustainable and energy efficient market-place thanks to the provision of larger non-financial benefits than otherwise attainable under traditional procurement. As it is growing the need for a European and global commitment to reduce carbon emissions and improve sustainable development, the achievement of energy efficiency goals – generally speaking non-financial benefits - should be put on the top list of the Commission's agenda.

As it has been highlighted, PPPs' non-financial benefits overall unfold themselves in accelerated and enhanced deliveries and positive externalities that affect the wider society. These, are boosted by PPPs' planning and structure, given their possibility to better influence, for instance, the operational priorities expenditures and liabilities forecast. PPP arrangements can be set out in order to specifically address environmental contingency planning, execution, risk alleviation and relevant policy issue resolution. Therefore, PPPs should be considered as an efficient alternative in delivery of public services also because of their capability of generating numerous and remarkable non-financial benefits.

Thus, PPPs' use should be yield within the EU as public authorities are asked to turn costly environmental and political liabilities into sources of energy, sustainability, innovation, cost reduction, improvement of health and welfare. The choice for PPPs means relying on mutually beneficial relationships that provide financial and non-financial benefits which can, *inter alia*, push

[75] It can be mentioned an interesting PPP case study in the U.S.. The Army's Tank-Automotive Research, Development and Engineering Center funded a project partnering the Army with two private companies, Diversified Energy and Velocys, to develop a portable energy system that converts, coal, natural gas, and biomass into diesel and jet fuel. See in this respect Prachi Patel, 'Fuel From Waste', MIT Technology Review (Dec. 21, 2007).

[76] Which are, for instance, sought for in the U.S. for war-fighting equipment by the ARPA-E's new Advanced management and Protection of Energy-storage Devices (AMPED) program. See, among other examples, the collaboration between the National Automotive Center (NAC) and the private partner, NextEnergy, aiming to developof Electronic Power Control and Conditioning Module (EPCC). Moreover, see National Automotive Center - NAC, at http://tardec.army.mil/business/national-automotive-center.aspx; John W. Lyons, Richard Chait and James J. Valdes, 'Assessing the Army Power and Energy Efforts for the Warfighter', Center for Technology and National Security Policy, National Defense Universtity, 2011, available at http://ctnsp.dodlive.mil/files/2013/07/DTP-081.pdf.

[77] See Jennifer Huang, 'Energy security, green fleets, and green warriors', in Florida A & M University Law Review Spring, 2013.

a green energy development and further increase the cost-competitiveness of the relevant technologies. The collaboration with the private sector can also effectively promote - via public-private research and development - domestic clean energy markets and in turn support the creation of new jobs.[78]

European Institutions ought to firmly embrace PPPs – foremost those with a greater cross-sector potential – as viable alternatives in the delivery of public services. They promise to provide not only economic advantages, but also larger non-financial benefits than traditional procurement. Waste-to-energy systems could be used in universities, hospitals, government complexes and other high-use large-capacity institutions to decrease their carbon footprint and preserve energy. In this respect, the United Nations Framework Convention on Climate Change (UNFCCC) encourages Member States to establish education and training programs to facilitate public awareness on environmental and social policy issues.[79]

It is within this picture that it is also envisioned a push towards a stronger and uniform support of public procuring authorities in the preparation, negotiation and implementation of PPPs projects specifically assisting them in the methodological standard setting.[80]

The use of PPPs should be hence firmly encouraged, not only for the fostering of the functioning of the Internal Market, but also for their role played in the yielding of non-financial benefits. This encompassing *ratio* should guide the choice between traditional procurement and PPPs in the delivery of public services and/or infrastructures.

[78] See, for instance, what has been held for the U.S. by John S. Applegate, Book review, 'National Security and Environmental Protection: The Half-Full Glass', Indiana University Maurer School of Law, 1999, available at http://www.repository.law.indiana.edu/cgi/viewcontent.cgi?article=1506&context=facpub; Stephen Dycus, 'National Defense and the Environment', University Press of New England, 1996.

[79] The Kyoto Protocol to the United Nations Framework Convention on Climate Change, Article 10 (e), Dec. 10, 1997, U.N. Doc. FCCC/CP/1997/7/Add.1, 37 I.L.M. 22 (1998) ("Cooperate in and promote ... the development and implementation of education and training programmes [...] in particular human and institutional capacities and the exchange or secondment of personnel to train experts in this field [...] and facilitate at the national level public awareness of, and public access to information on, climate change."); Subsidiary Body for Implementation 37, COP 18/ CMP 8, Doha, Qatar, Nov. 26-Dec. 1, 2012, Doha Work Programme on Article 6 of the Convention, U.N. Doc. FCCC/SBI/2012/L.47, Annex (2012) (promoting formal and non-formal education and training programmes focused on climate change; conducting training programmes; and designing and implementing public awareness programmes on climate change and its effects).

[80] See, for instance, the service provided by the IFC of the World Bank, visit http://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/CB_Home/Advisory+Services/Public+Private+Partnerships/.