

Comments Template on EIOPA-CP-15-003 Discussion Paper on Infrastructure Investments by Insurers		Deadline 26.April.2015 23:59 CET
Company name:	Actuarial association of Europe (AAE)	
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<p>Please follow the instructions for filling in the template:</p> <ul style="list-style-type: none"> ⇒ Do not change the numbering in column "Reference". ⇒ Please fill in your comment in the relevant row. If you have <u>no comment</u> on a paragraph, keep the row <u>empty</u>. ⇒ Our IT tool does not allow processing of comments which do not refer to the specific paragraph numbers below. <ul style="list-style-type: none"> ○ If your comment refers to multiple paragraphs, please insert your comment at the first relevant paragraph and mention in your comment to which other paragraphs this also applies. ○ If your comment refers to sub-bullets/sub-paragraphs, please indicate this in the comment itself. <p>Please send the completed template to CP-15-003@eiopa.europa.eu, in MSWord Format, (our IT tool does not allow processing of any other formats).</p> <p>The paragraph numbers below correspond to Consultation Paper No. EIOPA-CP-15-003.</p>		
Reference	Comment	
Question 1	<p>The additional effort for administration, monitoring, controlling and reporting should be limited in line with the additional return on infrastructure investments. In particular, extensive data requirements for the calibration of risk factors and the validation of risk charges may create an obstacle for insurance companies with (partial) internal models.</p> <p>To improve supply and demand for infrastructure financing, standardized formats with similar supervisory requirements for banks and insurers (but different risk charges with respect to the</p>	

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

respective business models) should be established.

For long-term investors like insurance companies, it is also important that any illiquid investment (infrastructure equity or debt) could rely on a stable legal framework. Future changes in legislation affecting the investment should permit the undertaking to reassess the risk. An adequate adjustment or a kind of grandfathering should be possible.

Elements (other than capital requirements) which might be seen as preventing insurers from investing in infrastructure could be:

- Internal rating requirements where assets do not have a credit rating from a recognised credit rating agency, to enable these assets to be eligible for matching adjustment (backing annuity liabilities)
- Governance requirements, whereby boards, senior management and others in the company are required to evidence their understanding of the asset class, and the prudent person principle applying.
- Liquidity requirements, whereby insurers, again for matching adjustment portfolio, are required to maintain a matched cash flow position throughout the duration of their portfolio.

Again, eligibility criteria for assets to be included in MA portfolio and liabilities backed by these assets to have the matching adjustment benefit – predictability of cash flows etc. This requirement goes hand in hand with insurers' additional costs to securitise these projects, such as setting up for example an SPV that invests in infrastructure, with the finance being provided by the insurance entity to the SPV in exchange for a loan from the SPV to the insurance entity (this is of course a simplified example).

Solvency II capital requirements can prevent companies from investing in infrastructure investments. Requirements could be adapted, perhaps in not all of the areas (e.g. eligibility of the asset for matching adjustment portfolios) but for some (e.g. recognising that insurers are on a learning curve, upward sloping, and perhaps some of the requirements more specific to genuine new asset classes can be relaxed when it comes to infrastructure). Existing rules might not reflect adequately the specific risk of these investments considering the long-term character of the liabilities covered.

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

Question 2

In broad terms, infrastructure assets with underlying tangible guarantees (for example, buildings, road infrastructure, airports), or infrastructure projects where revenues are more predictable than average infrastructure projects (e.g. an university could be seen having more predictable revenues than a windmill, as these depend on less volatile source of revenues – number of students vs. number of windy days in a year).

There is evidence available from rating agencies suggesting that brownfield investments are safer than greenfield investments.

There is perhaps a whole literature supporting how various infrastructure assets could benefit from a more beneficial treatment under Solvency II, given their characteristics discussed above.

An approach under the standard formula SCR would be to introduce a new sub-spread risk module within the spread module, which would recognize that, for a specific set of infrastructure a more beneficial capital requirements can be required (thus recognizing that for equivalent bonds and infrastructure the latter could benefit more under Solvency II). The particular risk factor should be fixed considering the specificities of the affected investments.

Both infrastructure debt and equity have different risk profiles compared to non-rated bonds and loans or equity type 2.

For the selection of low risk infrastructure this should be complemented by a short list of criteria depending e.g. on regulated/non regulated infrastructure, financial ratios, financial structure, (internal) rating, alignment of interest (in particular if external service providers are involved). An additional important criterion is an appropriate legal framework, since enforceability of claims and contractual agreements as well as grandfathering clauses with respect to contractual, political and legal agreements are essential for the risk profile.

The availability of public data on the past performance of infrastructure investments is limited. There is evidence from a Moody's study published in March 2015 (*Default and Recovery Rates for Project Finance Bank Loans, 1983-2013*) and S&P Capital IQ Project Finance Consortium database that unrated loans used to finance projects are a resilient class of specialized lending (under Basel II definition.). They are structured to be highly robust to a wide range of potentially severe risks and to minimize post-default losses.

In particular, unlike for corporate debt, default rates for project finance loans improve markedly over time. Furthermore, recovery rates on project finance loans are largely independent of the economic cycle, unlike recovery rates for corporate loans that tend to fall when default rates rise.

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

<p>Question 3</p>	<p>Given the long-term nature of insurance obligations and the fact that this asset class probably forms a relatively small portion insurers' portfolios, liquidity is unlikely to be an important (at least currently) issue.</p> <p>The different funding nature of life insurance companies (very long duration for liabilities) allows the insurance company to provide the market with long term funding for infrastructure projects to earn the additional illiquidity premium.</p> <p>Liquidity management of life insurance companies is based on the whole asset portfolio. Thus, illiquidity for a part of the portfolio is not a major obstacle for insurers.</p> <p>ALM has to monitor post investment in infrastructure the matched position and the liquidity requirements.</p> <p>According to the prudent person principle – insurers are required to evidence that their asset portfolio, for matching adjustment portfolios, is well managed, used to match and matches the matching adjustment liabilities.</p>	
<p>Question 4</p>	<p>The suggestion in the CP makes sense – there is obviously a strong view across the industry that infrastructure projects are no different in nature regardless of them having a rating or not. A more favorable capital treatment can indeed be introduced for those infrastructure investments with an approved rating, recognizing there are some merits for rated projects.</p>	
<p>Question 5</p>	<p>The definitions for project finance In Basel II are in line with our understanding of these assets. The important characteristics, which in our view could be used for a separate, tailored (sub) SCR under standard formula are included in the definition under Basel II, i.e. underlying asset, concentration, and certainty and dependency of future cash flows.</p> <p>Some high level comments: The definition of a category of infrastructure investments receiving a specific standard formula treatment should consider two Solvency II basics (also relevant for Q7):</p> <p>I. Substance over Form II. Principle-based instead of rule based</p>	

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

1. A definition based on a special legal documentation or construction (e.g. PPP with in OECD country) might not be appropriate. It were too static and might be arbitrated.
However, legal documentation/construction is definitely an important tool to verify that an individual investment falls within the scope of the infrastructure investments receiving a specific standard formula.
2. BCBS definitions could be consulted but has to be adapted to the specific requirements of the insurance industry:
They have been employed by banks since their validation in IRB, i.e. for a number of years, roughly 7 years or more. The articles 219, 221 and 222 (June 2006 text) provide a definition of Project Finance, which reflect those transactions well. Indeed, we consider that project finance is the combination of 1) a structure that meets the criteria listed in paragraph 219 and 2) underlying assets, which are infrastructure ones, of which some examples are provided in paragraph 221.
CRR could also be used, in addition to BCBS definition, but does not specify the different types of specialized lending, notably Project Finance.
However, we should consider that the BCBS definitions are aimed at regulating bank, which have a different business model from life companies:
 - The Basle regulation requires high regulatory risk charges on long-term illiquid investments for banks, which to a large extend have a short-term liabilities/refinancing. Actually, these high-risk charges open the area of infrastructure investing for insurance companies.
 - On the other hand life insurance companies which write long-term guarantees are looking for long-term investments to improve their risk and return profile (closing/closing duration gap, earning illiquidity premiums)

Therefore, existing definitions from the banking sector can and should be consulted, but have to be adapted to the requirements of insurance companies considering the Solvency II regime
3. EIOPA is looking for a definition focused on possible EFSI/Juncker plan infrastructure investments. The definition should be broad enough to cover suitable transactions not covered by a classical project finance definition as well.

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

Question 6

Question 7

We prefer a wider definition of infrastructure. It is more troublesome to identify suitable criteria to characterise infrastructure investments with lower risk.

A starting point could be the combination of:

An Infrastructure Asset OECD definition	and +	A Project Finance Structure Basel II definition (art 219,221)
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Art 219: Within the corporate asset class, five sub-classes of specialized lending (SL) are identified. Such lending possesses all the following characteristics, either in legal form or economic substance:

- The exposure is typically to an entity (often a special purpose entity (SPE)), which was created specifically to finance and/or operate physical assets;
- The borrowing entity has little or no other material assets or activities, and therefore little or no independent capacity to repay the obligation, apart from the income that it receives from the asset(s) being financed;
- The terms of the obligation give the lender a substantial degree of control over the asset(s) and the income that it generates; and
- As a result of the preceding factors, the primary source of repayment of the obligation is the income generated by the asset(s), rather than the independent capacity of a broader commercial enterprise.

Art 211: Project finance (PF) is a method of funding in which the lender looks primarily to the revenues generated by a single project, both as the source of repayment and as security for the exposure. This type of financing is usually for large, complex and expensive installations that might include, for example, power plants, chemical processing plants, mines, transportation infrastructure, environment, and telecommunications infrastructure. Project finance may take the form of financing of the construction of a new capital installation, or refinancing of an existing installation, with or without improvements.

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

	<p>These criteria are well known to market participants (Sponsors, Lenders, Rating Agencies) and benefit from historical data. Effectively it's by the combination of those two criteria that project finance is currently defined by the bank regulation and by rating agencies and it's the same definition that is used by S&P and Moody's for their statistical default and recovery studies.</p>	
Question 8		
Question 9	The definition under Basel II could be consulted.	
Question 10	<p>Some of the sectors which might depend on volatile factors, which in turn may not provide stable revenues, are, for example, wind mills (will depend on the number of windy days in a year), solar power stations (will depend on the number of sunny days in a year) etc.</p> <p>Sectors which could be seen having large technological risks are those exposed to construction risk – effectively this means sectors in the infrastructure projects which are more likely to require more effort during construction phase – e.g. social infrastructure and transportation. One way to get around these risks is by using proven technologies and experienced construction firms.</p> <p>AAE is of the opinion, that the exclusion of complete sectors might be too restrictive. However, a case-by-case analysis is indispensable. This should be based on an assessment of e.g. the stability of expected cash flows.</p> <p>For example:</p> <ol style="list-style-type: none"> 1. In the CP, the port sector is mentioned as a sector with higher risk. This might be true for container terminals, which have been strongly affected by the shipping crisis. This need not be the case for ports, which benefit from diversification of revenues from a strong competitive advantage based on their location. <p>Example: Associated British ports is benefiting from a recent upgrade by Fitch from BBB+ to A- with the following statement on its analysis:</p>	

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

	<p>“ ABPA's dominant market position in a captive island market, its diversity - both in terms of client-base and geographical spread - and the strategically sound location of its facilities near key industrial facilities that underpin key cargo lines point to a 'Stronger' assessment of volume risk. Volumes were up 4.1% yoy for 1H14, driven primarily by throughput volume growth in biomass, import/export vehicles and increased container volumes following the opening of a new berth at the terminal at Southampton. Revenue - Price: Stronger ABPA's "landlord" business model features protective contractual arrangements with key customers and flexibility with respect to price. This enables them to minimise volatility related to operating risk, which leads to fairly stable cash flow comprising mostly contracted payments. Customers are strategically 'locked in' by joint project investments on or near ABP land; nearly 50% of revenue is either contractually fixed or subject to minimum guarantees as of 2014. ” (Fitch Upgrades ABP Finance PLC’s ratings to A- 08 Dec 2014)</p> <p>2. Technological risk: Those risks could be mitigated by the project finance structure of the transaction using different and often combined methods: Guarantees, Reserve accounts, Scenario analysis.</p>	
Question 11	Solvency II regime and especially the standard formula requirements should be sufficient. W Additionally criteria for Infrastructure investments, which are outlined under Basel II and CRR could be consulted.	
Question 12	A general view, supported by market research undertaken by rating agencies, is that infrastructure loans / projects benefit from an improved recovery rate than corporate bonds of a similar rating and duration. A fundamental question is, then, why infrastructure assets can have such high recovery rates and still have larger spreads than corporate bonds of a similar rating and duration – the key answer here is that infrastructure assets are linked to infrastructure, which bear significant liquidity risk. It is worth noting that the liquidity risk is on both sides of the “balance sheet”: investors need to put large amounts of money in these investments, at time zero, while borrowers need to make sure they can repay the loan in time. This is driven by the gearing ratio for these projects – they are all concentrated usually in one source of finance (the project sponsors) and in turn they usually repay back the loans using a single, and in some cases a reduced number of, income streams.	

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

	<p>Moody's report 1983 – 2012 supports these views.</p> <p>Infrastructure assets are subject to significant liquidity risk – which is the reason why they have high spreads despite high recovery rates (and arguably lower probability of default) than corporate bonds of a similar rating and duration.</p> <p>What all this suggest is that the standard formula could be expanded to have a sub-risk module which recognises the different nature of these assets – the simple answer here is that, for example, infrastructure assets could benefit from a more beneficial stress under SCR than for corporate bonds (spread stress).</p> <p>Finally, it is worth noting that infrastructure benefits from higher recovery rates due to specialist teams being usually employed to recover the assets, when things go wrong. This comes at a cost, however, and also requires specialist knowledge.</p>	
Question 13	<p>We don't think banking regulation is suitable for insurance solvency regulation. Banks are more worried on shorter term than insurers and as such, their calibrated risk factors might not reflect the same length of time as insurers are usually exposed to.</p> <p>It is also worth noting that banks are not usually much concerned with the rating of an asset, as long as it is above a certain rating (e.g. investment grade, or non-default).</p> <p>Insurers, however, especially those wishing to use infrastructure assets in their matching portfolios, will need to monitor the rating of these assets separately, and the fundamental spread requires a cost of downgrade be calculated and included in the fundamental spread.</p> <p>This seems to suggest that risk weighting / risk factors based on banking regulation may not be appropriate for this class of asset.</p> <p>Nevertheless we are of the opinion, that the criteria contained in Annex 6 on page 280 of the Basel Committee and Banking Standards „International Convergence of Capital Measurement and Capital Standards“, June 2006 could be taken as a starting point.</p> <p>Criteria in Basel II in article 219, 221 and 222 regarding the definition of PF, and as well the Slotting Criteria method indicated in appendix 6 of Basle II text for the PF risk assessment, would</p>	

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

	<p>be useful to distinguish the PF asset class and to assess the risk of the different projects.</p> <p>We underline that the current revision of the Standard Method by EBA at this stage does not provide relevant criteria for risk assessment of project finance. The Standard Approach, too simplistic by nature, is not appropriate for Project Finance where risk has to be assessed based on a number of criteria, both qualitative and quantitative.</p> <p>At this stage, the proposed criteria are <u>leverage</u> (defined as total assets / equity) and <u>revenues</u>. Revenues are not relevant because Project Finance repayment depends on Cash flows, which are quite different from revenues and are determined without supply costs, operating expenses, maintenance capital expenditure costs and taxes. For an equivalent amount of revenues, the level of cash flows available for debt service can be very different between two projects.</p> <p>Leverage also is not sufficient. The level of equity injected is one of the risk drivers of Project Finance but it has to be assessed when analysing the risks of the project, which are amount of cash flows, expected, potential variability of them depending on the existence of contracts for off-take and supply, quality of off-takers and suppliers notably. Projects with greater risk require more equity. <u>For the same level of equity proportion, two projects can have a very different final level of risk.</u></p> <p>Finally, as they are too simplistic and lacking discriminatory power, the proposed criteria for the revised Standard method could even lead to the choice of the most risky transactions. These might be the most remunerative ones if an adequate amount of regulatory capital is not taken into account.</p> <p>In general, Basel II and CRR criteria and definition are a valid starting point, but should be adapted to the insurance companies' specific needs, since the funding conditions of banks and credit institutions are fundamentally different from the funding conditions of insurers.</p> <p>It is of utmost importance to avoid that insurance undertakings had to apply automatically regulations developed for banking institutes. Due consideration of insurance regulation and especially the Solvency II regime is required beforehand.</p>	
Question 14	The list in the Basel regulation is comprehensive and it does look difficult to implement in practice under the standard formula.	

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

	<p>Perhaps insurers, who develop an internal model and, possibly, have an internal rating system in place, would find the list useful. There are also other issues to consider here – for example, there may be external / third party asset managers who not only manage the infrastructure projects for an institutional investor (e.g. an insurance company), but also provide internal ratings to these projects. It might be difficult in this case, to rely on Solvency II requirements to impose third parties (who are not insurers, but asset managers) when they provide ratings to these assets. This also means that should an insurer transact an infrastructure project, which benefits from a rating given by an asset manager may need to confirm the rating against Solvency II requirements.</p> <p>For this reason, lists should be easily accessible to everyone, easy to implement in practice.</p> <p>We underline that the risk on a Project Finance should be assessed as a whole. The level of risk of a PF can only be assessed by considering all different risks and their particular mitigating features, together with the amount of debt and its repayment profile.</p> <p>The overall risk of the project finance depends on the capability of the investment to generate stable cash flows over the long run, together with the amount and profile of debt granted. Therefore, structure and quality of a project can only be assessed taking into account the different criteria altogether.</p>	
Question 15	<p>We do not think that banking criteria should be further specified for this purpose.</p> <p>(see also Q13: "It is of utmost importance to avoid that insurance undertakings had to apply automatically regulations developed for banking institutes. Due consideration of insurance regulation and especially the Solvency II regime is required beforehand.")</p>	
Question 16		
Question 17	<p>Political Risk: EIOPA suggests that one way to limit political risk in transactions would be to restrict investments to those only from OECD countries.</p> <p>This might be too restrictive. Additional criteria should be considered: legal environment of the country and possibility to mitigate risks e.g. the presence of multilateral entities in the financing, political risk insurance for example. Ratings agencies (ex: Fitch Country-Specific Treatment of Recovery Ratings), political risk insurer providers (Ex: Euler Hermes Country Risk Ratings, Aon political risk map, Coface) - or information providers (The Economist Infrascopie)</p>	

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

Structural Requirements – legal separation: EIOPA suggests that public credit performance data indicates that one of the main indicators of defaults is the lack of structural separation from the sponsor.

From a structural point of view, typically lenders and investors on a non-recourse project would seek to ringfence the loan to the SPV from the sponsor's credit even if the sponsor has a controlling interest in the project equity and the credit rating agencies consolidate the project debt at the sponsor level for ratings purposes of the parent. There will be both structural and contractual separation, for example in dividends that the sponsor can take. Lenders and investors would normally have certainty over the sponsors' shares in the SPV issuance vehicle so that the lender or investors can enforce the share security in the event of a default and take over the SPV and the project. We agree that this is an important issue; however, it is not clear whether the degree of legal separation can be quantified for capital charge calibration purposes. We believe that the degree of structural separation is already reflected.

Structural Requirements – use of derivatives: EIOPA suggests that a limitation on the use of derivatives solely for risk mitigation purposes could be use in reducing overall risk. We agree with this approach.

Structural Requirements – monitoring agent: Typically, in a loan agreement an agent normally undertakes a monitoring role and passes the information on to the various lenders or investors. The agent, normally acting on the instructions of a majority of the lenders or investors, will have the authority to contact an independent consultant depending on the specific issue/problem. There will also be a security trustee, who manages the security. In mixed bank loan/bond, transactions there will typically be an intercreditor agreement, which the security agent will monitor and act upon.

In the case of a bond-only transaction, in addition to the normal issuing and paying agent there will also need to be a security agent. Monitoring agents are available to perform this function for non-bank investors as well as banks.

Other criteria which could be used are guarantees offered under the projects (e.g. buildings, road infrastructure etc.), ability to use the infrastructure for other purposes, stability of revenues etc. All these criteria can be expected to come across from the definition of infrastructure assets.

Comments Template on EIOPA-CP-15-003 Discussion Paper on Infrastructure Investments by Insurers		Deadline 26.April.2015 23:59 CET
Question 18		
Question 19		
Question 20	<p>Risk mitigation techniques cover a wide range and some of them will be project specific.</p> <p>Similar to other type of investments subject to a "construction phase", construction risk is usually mitigated via financial arrangements to guarantee the beneficiary that he will be able to recover at least in part his investments, should the construction of infrastructure fail.</p> <p>("construction risk is always very effectively passed on to the builder and very rarely returns to haunt the project company" (in "How much construction risk do sponsors take in project finance"- Blanc Brude- Makovsek Edhec-Risk Institute- August 2014))</p> <p>Construction risk in project finance is managed through a network of contracts and passed on to construction firms under fixed price date certain contract. Those construction companies are bearing the real construction risk. Therefore, one of the critical aspects is the assessment of the contractor's quality both in its technical capacity to deliver but also in its financial capacity to support the financial consequences of cost overruns and delays. If the contractor financial strength is considered weak by the lenders a higher level of liquid guarantees (1st demand bond guarantee) will be requested by the lenders in order to cover the liquidated damages due by the contractor to the SPV in case of delays.</p> <p>The level of complexity of the construction is also a criterion, the financial strength of the contractor requirements will increase with the degree of complexity as well as the level of cap of liability of the contractor and the level of guarantee as it is considered more difficult to substitute the contractor for complex construction works.</p> <p>The ramp-up period is usually mitigated through contingency funding (ex some transactions includes a ramp-up reserve account, which allows the SVP to pay its interest even if the expected traffic is taking longer to materialize.</p>	
Question 21		
Question 22	Construction risk is mitigated best by a good structure of the project. Credit enhancement is no longer relevant in transactions (or only on very specific case) both because Monolines are no longer	

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

	<p>in business following the financial crisis but also because investors have now realised the interest to finance the construction period. (See Blanc Brude - Who is afraid of construction risk? - Edhec Risk Institute - July 2013)</p> <p>Credit enhancement (such as the EFSI will provide under the Juncker plan) could have benefit, when banks and investors because of the credit rating of the contractor, the nature or the not yet proven technology or design could not take the construction risk.</p> <p>Once an infrastructure asset benefits from an enhanced level of "protection" or "guarantees", its price will most likely be adjusted to reflect this, which in turn will also be reflected in the asset's rating and eventually in the Solvency capital requirements.</p>	
Question 23		
Question 24		
Question 25		
Question 26	<p>An individual non-public off-taker should be Investment grade and the size of the transaction should not represents a too important size compared to its turnover.</p> <p>The easy answer here is that the non-public off takers to have a low revenue risk would be governments, and these will be the rating of the country, which the associated risks attached to the credit rating.</p>	
Question 27	DSCR, LLCR, PLCR	
Question 28	<p>Considering the nature of infrastructure projects, it may be difficult to make use of a single financial ratio based on which to investors measure financial risk. It is typical that these projects are valued / priced via complex mark to market models. In lack of suitable trading indices for infrastructure projects, making use of mark to model to price these assets, it may be even more difficult to make use of simple financial ratios to assess suitability of these projects.</p>	
Question 29	<p>Many investors are willing to do extensive credit analysis to understand the various cash flows of infrastructure transactions. They should be capable of funding both senior as well as mezzanine exposures. The capital charge for mezzanine debt should be between Senior debt and Equity.</p>	
Question 30	<p>The existence of a refinancing risk should be part of the credit risk analysis and should not be limited per se.</p> <p>Some projects are financed on medium term basis (7 years) as this period could correspond to the</p>	

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

	<p>normal cycle of capex investments or to the length of tariff review (ex: OFWAT regulatory period in the UK for water companies). Typically, criteria for measuring reinvestment risk are in relation to relative duration (of asset cash flows vs. liability cash flows). In this case, it is about the tenor of the loan vs. useful life. There are numerous examples in S&Ps Lessons Learned from 20 years of rating global project finance debt of projects, which failed because of counterparties / parents not being able to finance the projects. This may suggest that refinancing may become an issue especially in an environment where projects do not meet their expected useful life and therefore there is a need for additional financing to ensure the project remains viable.</p>	
Question 31	<p>Infrastructure loans can be structured in various ways, with calls, puts, and prepayment penalties for early repayment. In some cases, there is a full mark to market of a prepaid position (a "spens" clause) or in some cases there is an agreed prepayment penalty.</p> <p>Prepayment risk can be mitigated through a number of mechanisms. An example would be the requirement that investors are compensated, should prepayment occur, for the loss of additional yield over the outstanding duration of the project.</p> <p>In addition, prepayment risk can occur more often in retail type arrangements. For large projects between institutional investors and counterparties, prepayment risk is reduced. Considering in addition the Solvency II requirements (Pillar 2) a limitation seems to be not necessary.</p>	
Question 32	<p>This is a difficult criterion to articulate in practice, unless third party / external assurance can be given on a technology or design system that it is "proven". However, the data may be relatively scarce, and it could be argued that in practice this is difficult to achieve – such a service requires providers which may not be available now in the market. We do however note that in their paper, S&P do talk about how they assess this risk and note that their rating system does account for:</p> <ul style="list-style-type: none"> - The degree to which the technology is proven - The extent of design completion - The difficulty of the schedule - The availability of cash set aside for contingencies 	

Comments Template on EIOPA-CP-15-003 Discussion Paper on Infrastructure Investments by Insurers		Deadline 26.April.2015 23:59 CET
	<p>- Experience of the construction management team.</p> <p>Some of these criteria / or all could be taken into account when setting out requirements for “proven technology and design”.</p>	
Question 33	<p>This question seems to be looking for an overarching answer to address rating of infrastructure projects.</p> <p>The answer is not easy and there is always the option / alternative that these are either shifted towards local regulators (but this then means that regulators will need to ensure they have the necessary skills and knowledge) or companies (prudent person principle, risk management, Pillar 2 etc.).</p> <p>Alternatively, a simplified approach to credit rating, similar to those adopted by established credit rating agencies, could be adopted for projects undertaken by small / medium insurers, who, arguably, lack the financial resources to enable them to obtain external credit rating for infrastructure projects.</p> <p>An important consideration here is economies of scale – there are not many insurers currently (and perhaps in the future) who could rely on internal resources to rate these asests, assuming they don’t have yet a solid business case to employ a separate function for credit rating internally.</p>	
Question 34	<p>The risk profile is dominated by the infrastructure sector. There is perhaps not much evidence to date, other than that available from rating agencies, however research to date seems to suggest that equity type infrastructure projects could benefit from a better rating in the equity SCR and infrastructure debt could be subject to less stringent spread risk SCR under the standard formula, than the corresponding corporate bonds.</p> <p>The main characteristics which would recommend infrastructure debt (which arguably is something insurers will have more appetite for in the context of their liability portfolios, as opposed to equity infrastructure investments) are recovery rates, ratings, spreads / yields and duration – given their very long duration, and spreads. The recovery rates on infrastructure debt is far superior to that seen on corporate bonds of a similar rating.</p> <p>This however needs to be seen with care, as the higher recovery rate is, as noted by S&P in their paper, a result of specialist teams employed to recover as much possible once an infrastructure project goes into trouble.</p>	

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

	Alternative risk charges cannot be proposed by today.	
Question 35	<p>A partial internal model approach could be a more practical solution in order to allow the insurer to set its own internal model risk charges for infrastructure investments. However, the costs associated with internal model approval processes could act as an obstacle, as the existing requirements for IMAP approval are arguably quite onerous in some member states.</p> <p>In the situation whereby all other risks are modelled on standard formula basis (and only the infrastructure assets are modelled using internal model approach) the insurer would need to apply for a PIM and go through the full IMAP process in order to achieve this treatment. This may be disproportionately burdensome when infrastructure forms only a small portion of the asset portfolio. Possible pragmatic alternatives could include:</p> <ul style="list-style-type: none"> - Modifying the PIM processes and governance for the special case where an insurer allows for all risks on standard formula basis except one specific risk module. In this situation, the firm could apply for internal model treatment of that specific risk module (demonstrating that the IMAP 6 tests are met in respect of that risk module) and the IMAP review by the supervisor could focus on that specific risk module alone (and waive consideration of the wider elements). - Extending "Undertaking Specific Parameters" (USP) to infrastructure. <p>However, we note that the focus should be put on the standard formula. A PIM or IM usually comes with their own complexities, including those related to interaction with other parts of the SCR, which presumably would be on standard formula, or alternatively a PIM approach to infrastructure projects might "force" insurers to apply for PIM/IM for their entire business or market risk.</p>	
Question 36		
Question 37		
Question 38		
Question 39		
Question 40	<p>It is important to recognise the strategic importance that infrastructure assets have within the economy.</p> <p>JP Morgan: "Infrastructure: By definition, infrastructure assets are essential to the economic health</p>	

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

	<p>and productivity of communities. We believe that they are also an essential component of a diversified investment portfolio. Investments in infrastructure typically exhibit low volatility and low correlation to the traditional asset classes of equity and fixed income. They also provide essential yield to investors and pure play access to developing economies.” Source: https://am.jpmorgan.com/us/institutional/investment-strategies/alternatives-global-real-assets/infrastructure Given this, and considering that listed equity type investments feature improved financials, equity type investments in infrastructure projects should be assigned typ1 equity charge (or alternatively a new scope SCR is created for listed infrastructure equities).</p>	
Question 41	<p>Data on the correlation to equity type 1/2 is in general not available except for evaluations of certain countries or markets. Thus, a qualitative risk analysis has to be applied to derive correlation assumptions. Since infrastructure equity mostly is an unlisted investment, for low risk infrastructure equity, which often is regulated, a risk charge similar to strategic participations is reasonable. Typical risks for low risk infrastructure depend on availability of the asset and on technical aspects, which have a low correlation to market risk. We are supportive to the idea in the preamble to question 41. The question, whether e.g. a lower correlation between the value of certain infrastructure equities and other risks can be applied, needs further investigation.</p>	
Question 42	<p>Project bond spreads are available through services such as Bloomberg. However project bonds represent a small proportion (estimated <10%) of all project financing and tend to be focussed on lower risk projects (government related large project) in OECD countries, therefore their use as a proxy for all project financing is more than doubtful. Under the assumption that infrastructure debt exhibits larger spreads than similar corporate bonds, and higher recovery rate, this could be seen as being the result of increased liquidity risk. There is a lack of spreads data on infrastructure project bonds, as most of them are a result of mark to model valuations, which are usually private information.</p>	
Question 43	<p>The spread - defined as the difference of the yield on infrastructure debt and the riskfree rate - can be decomposed into the credit risk spread and the risk premium. The volatility of credit risk spread is dominated by the migration and default risk combined with the variability of LGDs. The volatility of the spread however is mainly driven by the volatility of the risk premium, which is a measure for risk aversion of investors (and therefore a behavioural / emotional factor). Volatility of risk premium is</p>	

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

	<p>idiosyncratic for individual assets and as infrastructure projects by definition are quite individual, there is strong evidence that volatility of spreads of infrastructure projects debt differ from corporate debt.</p> <p>There is evidence suggesting that spreads on infrastructure has been relatively stable over years, c200-300bps (JP Morgan Asset Management studies).</p> <p>Moody's reports and JP Morgan reports indicate lower volatility of infrastructure projects vs. equity markets.</p> <p>There are also diversification benefits (correlations less than 1) with other asset classes and within infrastructure projects universe.</p>	
<p>Question 44</p>	<p>Given the individual nature of infrastructure project debt and the fact that risk premiums fluctuate idiosyncratically, there is no evidence of suitable proxies from the corporate world.</p> <p>Perhaps the most obvious evidence is that recovery rates for infrastructure debt being relatively better than that on corporate bonds. This suggests that a dedicated spread risk module could be developed and implemented under standard formula.</p> <p>Another approach is the use of the counterparty default module, however, as indicated in the preamble to Q45 in the consultation paper, this module is not linked to the duration of the underlying asset, and therefore this may be seen as not recognizing the extent of (liquidity) risk within the infrastructure debt.</p> <p>The advantage of infrastructure debt within the counterparty default risk module over other assets is the loss given default being relatively better.</p> <p>However, we feel that a better representation for the capital charge for infrastructure debt would sit in the spread risk module, as this would:</p> <ul style="list-style-type: none"> - Allow these assets be treated similarly to corporate bonds (which many see as being equivalent to) - Would not require any changes to the matching adjustment / fundamental spread, as these are linked to the spread risk – this would benefit regulators and annuity writers, who would enjoy more stability of the Solvency II framework. 	

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

Question 45	<p>Simplistically, a risk factor within the infrastructure debt sub spread risk module could be similar to that for corporate bonds, adjusted for lower default rate on these assets vs. corporate bonds.</p> <p>We note that the recovery rate specified in Solvency II rules for corporate bonds is 30%. Credit rating agencies reports suggest for infrastructure debt this is in the range of 70%.</p> <p>Long-term investments when hold to maturity are not exposed to any spread risk coming from the volatility of the risk premium.</p> <p>This could even lead to an elimination of spread risk.</p>	
Question 46	<p>The condition which ensures that insurer are in a position to hold the infrastructure investments to maturity is that they are not exposed to fire-sale risk by the structure of its asset-liability profile. It is important to consider the liquidity requirements of the whole in-force-business.</p> <p>Key aspect to consider is, given the high illiquidity of these assets, what negative impacts a forced sale of these assets could have on their market value – this would result in insurers stay away from considering holding these assets as available for sale. However, there are also Solvency II rules around matching adjustment portfolios which require insurers to adopt a hold to maturity approach their asset portfolio.</p>	
Question 47	<p>Corporate debt like SME loans are exposed to additional risk compared to infrastructure project debt. Corporates are operating companies with material entrepreneurial risk whereas projects are run as autopilots and therefore generate a different risk profile. This is why a special category for project in general and infrastructure projects in specific could be justified.</p> <p>However, if the condition for an adjustment factor is the hold-to-maturity, i.e. no fire-sale situation criteria all matching assets shall benefit from an adjustment factor.</p>	
Question 48	<p>Infrastructure debt</p> <ol style="list-style-type: none"> 1. The assignment of infrastructure debt to the interest rate stress is obviously appropriate and even more a necessity to catch the positive effects of the duration in the ALM context. 2. The current assignment of infrastructure debt to the spread stress should be reviewed: The spread module is aiming to catch all kinds of spread risk: default, rating migration and spread movements. Spread movements are often induced by liquidity or relative value considerations in liquid markets (e.g. bonds, listed equity, rates and credit derivatives). Therefore, we think the stress factors assigned to bonds are not suitable to catch the risk of 	

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

	<p>infrastructure debt. In addition, different recovery rates and default cycles should be considered. A possible solution is to create a table of risk factors for infrastructure debt, where not applicable effects, especially liquidity related, are factored out.</p> <p>We would also consider the treatment in the counterparty risk modul instead of the spread stress as a suitable solution, for which it might even be easier to gather data. An approach similar to the treatment of mortgage loans seems to be implementable.</p> <p>Infrastructure equity</p> <ol style="list-style-type: none"> 1. Infrastructure equity that has a long pay-out period, e.g. in a structure to align interests of equity and debt capital, could be considered as a strategic investment with a participation character. It should be checked whether a treatment similar to the treatment of participations is possible. 	
Question 49		
Question 50	<p>Infrastructure debt looks more like equity release for the purpose of the counterparty default risk module, i.e. Type 2 exposures.</p> <p>To our mind, one of the key reasons assets like equity release are not included in the spread risk module, but in the counterparty default risk module is that it is difficult to obtain a rating to these assets (and they might also be exposed to risks which are not accepted under the spread risk module – e.g. prepayment risk).</p>	
Question 51	<p>All activities required by ORSA, Pillar2 - requirements, Prudent Person Principle, etc. should be taken and documented. All available information should be used.</p> <p>This could also encompass internal ratings produced by banks for the internal credit analysis of insurers.</p> <p>The suggested approach is sensible and we welcome EIOPA’s suggestions.</p> <p>A possible approach is to use a set of qualitative criteria that would be similar to a reduced credit rating. A possible source of factors is available in S&P’s paper: Project Finance Framework methodology.</p> <p>However, we note that the intention here is to come up with solutions to reconsider standard formula SCR to recognize infrastructure debt as a separate asset class. Introducing a list of quality criteria may be seen counterintuitive for this objective, as this would look like developing criteria similar to that of an internal model approach. This approach then would be viable only when the criteria list is</p>	

**Comments Template on EIOPA-CP-15-003
Discussion Paper on
Infrastructure Investments by Insurers**

**Deadline
26.April.2015
23:59 CET**

	<p>unambiguous, relatively easy to apply and comply with in practice.</p> <p>Perhaps EIOPA's alternative suggested approach (i.e. using banks' approved IRB approaches) is more sensible.</p> <p>Solvency II Level 2 articles 259-261 on Risk management (especially article 261 which specifically addresses requirements for insurers issuing loans) contains additional requirements for insurers. A balance should be achieved when including any additional requirements for infrastructure debt.</p>	
Question 52	<p>Basically we can agree with EIOPA's list of areas for consideration for these assets. However, we note that the list is more common as requirements for institutional investors looking to invest in new asset classes, but over time this may become indeed a routine type investment and we would encourage EIOPA to separate the "learning phase" from the "routine" phase of an insurer investing in infrastructure debt.</p> <p>One area which we have not seen mentioned in the consultation paper, but we believe is paramount for successful implementation of infrastructure is the underwriting and debt recovering capability – crucially for two phases of an infrastructure project:</p> <ul style="list-style-type: none"> - Investing (underwriting of the project is key to ensure success) - Forced sale under default (specialized debt recovery teams) to ensure maximum recovery rate. <p>Larger asset managers proposing infrastructure projects to institutional investors typically require an external audit of infrastructure projects.</p> <p>A better approach to infrastructure debt investments during the acquisition phase is the IPV (independent price verification) capability. This might be a function for the investors (insurer) which attempts to replicate and independently check and assess the value of the project through development of independent cash flow models and critical thinking on the specifics of the project.</p> <p>Generally, insurers should be expected to go through the same sort of upfront and ongoing risk management processes that a bank experienced in project finance would go through, albeit the insurer is likely to need to out-source some of these activities (and/or partner with experienced banks) unless it builds its own dedicated team. When outsourcing part of the risk management</p>	

Comments Template on EIOPA-CP-15-003 Discussion Paper on Infrastructure Investments by Insurers		Deadline 26.April.2015 23:59 CET
	function the undertaking needs to take care of a proper alignment of interest with the third party.	
Question 53		
Question 54	<p>Up to now, infrastructure investment in insurance undertakings is in a very early phase. Therefore, an industry standard can hardly be available.</p> <p>Financial models have to consider the whole business. They may be to a large extent project specific, and therefore each project could have their own model. Respecting the principal-based approach of Solvency II a separate far reaching regulation should be avoided.</p> <p>Considering the portion of infrastructure investment in the portfolio and the cost related to an audit process of the model this could prevent undertakings to invest in these assets.</p>	
Question 55	<p>Usually information contained in prospectus is of a sufficient detail and granularity to enable an institution investor to decide whether to pursue specific infrastructure projects or not.</p> <p>Additional information might be required for insurance companies to enable them to comply with their specific regulation. It is likely that Solvency II requirements would ensure that project managers make any required information available.</p> <p>The EDHEC Risk Chair has published a reporting template for data collection. The European Financial Services Forum (EFR) has developed model standardised reporting templates for disclosure and reporting as well.</p>	
Question 56	<p>This might be an interesting option, however arguably any requirements will usually be seen as "de minimis" requirements. Any additional Solvency II requirements with respect to information for investors aids standardization. It could represent a benefit leading to a more favorable treatment of the asset under Solvency II, This benefit might outweigh the related cost. However, it cannot replace due analysis of the investment. Existence of a specified list is not automatically an indicator for quality.</p>	
Question 57		
Question 58		
Question 59		
Question 60		