SREP Mali – SEGOU SOLAR PV PROJECT – ISSUES LIST			
#	**Comment / Issue**	**Made by**	**Answer**
1	This project generally seems quite high risk and we can see why concessional finance is required. It appears that with regard to the off-taker risk, EDM is in a weak fiscal position with a low credit rating, which means further TA/capacity building support is needed to ensure EDM is able to take forward their obligations under this proposal. The proposal mentions some technical assistance that has been provided previously (1.12-1.18) but doesn't make clear that there is specific TA available for this project and given it is the first of its kind in the county it seems that there could be a need for it. Is this the case?	UK	The Credit Risk Note issued by AfDB's Credit Committee received an Obligator Risk Rating of 5 – Moderate Risk. This note reflects the experienced sponsor with a good track record, the high demand for electricity and the Take-or-Pay nature of the Power Purchase Agreement (PPA) supported by a sovereign guarantee, which properly mitigates off-taker risk. In addition, the Partial Risk Guarantee (PRG) being sourced from the World Bank (WB) will further mitigate this risk. No Technical Assistance was considered in the project for the following reasons: (i) there is an ongoing USD 120 million WB project entitled "*Mali Energy Support Project*". The project was supposed to be concluded this June 2016 but was extended for another 2 years and will also deliver activities for capacity and institutional strengthening of key sector institutions including EDM, (ii) the Government of Mali (GoM) is progressing with the unbundling of EDM by putting all owned generation assets into a separate vehicle, and by establishing cost-reflective electricity tariffs. This is expected to improve the balance sheets of the companies and reduce the need for annual subsidies from the GoM, (iii) as part of the PRG being proposed in the context of the project, the WB is continuing dialogue with the GoM on the overall status of the energy sector and encouraging the development of a realistic roadmap for the next 5 years for EDM reform and resolving other sector issues. (iv) the SREP amount allocated for the project was sourced from the SREP private sector set-aside competition for which the beneficiary is a private sector entity. Allocating any amount of the total envelope for Technical Assistance to a public sector entity is not feasible from an implementation point of view, and (v) the PAPERM project approved in the context of the SREP Mali Investment Plan, and which implementation is progressing well, includes a component that supports the improvement of the policy, legal, regulatory and institutional framework and associated capacity building workshops to all renewable energy stakeholders

			(including staff from EDM) for scaling up renewable energy investments.
2	We would suggest that support for EDM and also for the government could be required as it highlights that although the GoM does have regulatory support in place, there are key policies missing (e.g. feed in tariff or other market supporting policies). It seems that with additional support, the impact of this project could be much greater. Is this the case?	UK	The PAPERM project as mentioned in answer #1 financed in the context of the SREP Investment Plan has the objective of improving the policy, regulatory and institutional framework for renewable energy investments in Mali. The project is currently under implementation. However, for the Segou project, the commercial bankability does not depend on the establishment of a feed-in tariff or other market supporting policies, the project's stakeholders (e.g. project sponsor, AfDB, IFC, GoM and EDM) have decided that any support to the Public Sector to enhance the regulatory and policy framework is undertaken outside the scope of the project.
3	Can the project team clarify how and why this particular site has been chosen? The proposal mentions that the site is some 240km north-east of Bamako, is 2.8km from a nearby substation. While linked to the national grid, we assume that it will provide power to a local communities (Segou and others?) and hence the public consultations in the project area?	UK	The site selection was done based, inter alia, on technical, security, environmental and social criteria. From a technical point of view the following criteria were considered: (i) availability of solar resource for maximum generation capacity, (ii) proximity to sub-station owned by EDM (2.8 km away), and (iii) security. While the solar resource is higher in the northern area of the country vis-à-vis the southern area, security appears to be more challenging in this area. As such, a compromise between these two criteria has been found and a site was selected in the central part of the country (Ségou). Besides the availability of the required land (87ha in the land reserves of the state), the choice of site was also dependent on the following environmental and social factors: (i) the favorable local topography (uniform and flat), (ii) the absence of rivers or large depressions that may complicate the installation of the solar panels or increase the site environmental sensitivity, (iii) the ease of access to the site from the RN6 (1.9 km away from the site); (iv) the absence of sensitive areas on the site (archeological sites, protected areas, etc.), (v) the availability of local labor, (vi) the commitment of the GoM and local authorities to secure the land for the project; and (vii) the absence of valuable biodiversity, including large terrestrial fauna and endangered or endemic species.
4	We also note that the National Energy Policy has a guiding principle based on decentralisation. We assume that the location of the site fulfils this requirement?	UK	Yes, the location of the site fulfills the National Energy Policy, the National Policy on Decentralization and the National Land Development Policy. The main objectives of these policies include, inter alia, ensuring: (i) a greater involvement of local authorities in regional development activities, (ii) a fair distribution of basic infrastructures across the country, and (iii) that regional and sub-regional inequalities in terms of access to basic services, resources and employment opportunities are reduced.

5	Also, the proposal briefly mentions that the project site is currently being farmed by 55 people (households?) and that it has been agreed that they will be given land-for-land. Can the project developer/AfDB ensure that these people have been fully consulted and have freely agreed to the compensation as proposed. Is there a reason why this specific site is required by the project? Were there alternatives and if so, why were they not chosen instead?	UK	It is worth mentioning that land acquisition for the project was done according to AfDB and IFC standards which require, inter alia, evidence of public consultation and consultation plans with key stakeholders, including Project Affected People (PAP). It is also worth mentioning that this project does not involve physical displacement (no houses/homes are affected). The affected assets include farm land (50 individual PAP) and unused land (5 individual PAPs). Several compensation packages were proposed including land-for-land and were extensively discussed with the concerned stakeholders. The consultations activities with the PAP were carried out in four stages as follows: (i) General assembly information and consultation meeting on the resettlement issue. This step was carried out before the census and involved bringing together populations from the villages of *Pélengana Wèrè, Soro Wèrè*, *Bougouni* and *Sido Sonicoura*, as some people are within the area of influence of the project. This meeting was held on January 7th, 2016 and aimed to inform people, discuss their concerns regarding resettlement issues and possible compensations measures; (ii) Individual consultations during the census of the PAP. These consultations were conducted through the census questionnaire with each PAP being surveyed. The questionnaire had, among others questions, asked PAP to choose the preferred options for the various compensation package available and the type of support they would need to secure or improve their livelihoods; (iii) Consultation with local authorities of potential host villages (*Fahira* and *Tiguini*) in case of land-for-land compensations. The authorities were consulted to better consider the possible hosting of PAP farmers (in the cases of land-for-land compensations); (iv) ARAP Results Workshop. The preliminary version of the ARAP was presented during two workshops (February 24th and 25th 2016). Comments were received and included in the final version of the ARAP that was disclosed locally and on AfDB's website. The links to the ESMP and ARAP summaries are included in the respective words. They provide further details on the consultation process. Different alternatives were analyzed in terms of technology and sites. Two

			sites were selected in the project area (the *Pelengana Wèrè* and the industrial area). However, from an environmental and social point of view, the *Pelengana Wèrè* displayed the minimum potential impacts and was therefore selected.
6	It is unclear what the significance of the peace-keeping roles that women play in relation to this project?	UK	In the document AfDB established a link between the social, political and economic participation of women and the promotion of a culture of peace, in alignment with the UN discourse and research on this matter. A speech delivered by the Deputy Executive Director of UN Women attempts to addresses the issue at a generic level. It states: "*Women as mothers, grandmothers, and other family members - often being the first teachers of children, can play a vital role in educating young people to value peace and not war. Therefore women's empowerment are crucial to advancing the culture of peace in all its vectors — education, sustainable economic and social development, human rights and equality, democratic participation, advocacy based on true knowledge but also wisdom, tolerance and understanding at all levels — in the family, community, country, region and globally.*" At the project level, as stated in section 13 of the proposal "gender consideration", the project will: (i) promote equality in employment opportunities and in equal access to income, training and special programs/activities to support women in sectors or areas that are traditionally male-dominated, (ii) stimulate substantive participation of women's organizations in the implementation of activities, including those ex-ante and ex-post, (iii) empower women also through campaigns of functional literacy, and life skills including access to information and services of reproductive health and prevention of early marriage and gender violence, (iv) provide for training to develop hard, soft and life skills for women with a view for them to develop business and entrepreneurship skills thanks to increased access to electricity.
7	How have the figures for the number of people with improved access to electricity been derived?	UK	The figures were derived from the Mali Demographic and Health Survey (MDHS-III 2001) undertaken by the *Cellule de Planification et de Statistique* (Planning and Statistics Unit) of the Ministry of Health and the *Direction Nationale de la Statistique et de l'Informatiqu* (National Directorate of Statistics and Computer Science) which provides information on the average size and gender breakdown of Malian households. In addition to the above, the team consulted the Lenders' Technical

			Advisory report that estimates that the generation capacity of the project would be sufficient to power 60.000 households. As such, by multiplying the number of households by the average size of households (rural and urban) break by gender (male and female) one was able to reach the presented figures.
8	The proposal mentions that the project will utilize 129,888 solar polycrystalline PV panels. How much scope is there for local manufacture of components such as metal frames, etc. that would create additional local jobs?	UK	As part of the negotiations and discussions on the Concession Agreement, an assessment targeting what could realistically be sourced was undertaken. Unfortunately, it was concluded that for reasons of volume and quality, manufacturers of equipment for a large-scale solar PV power plant was unavailable in Mali. There are some modules' assembly lines in the region but their size is very small compared to the volume requested for the power plan plant (around few thousand per year). The Concession Agreement captures the scope for the involvement and creation of local indirect jobs. The agreement states that local skills shall be developed during the construction and operation phases of the project and for that purpose Scatec will introduce a training program for Malian technicians with the objective of engaging local expertise in civil engineering, electronic engineering, construction, logistics and monitoring of industrial facilities. It is estimated that the project will create around 150 direct local jobs during construction and about 50 during operations. At macro level, the increase in power supply in the country could contribute to the creation of around 2000 jobs. In short, the construction and electrical installations will be entirely undertaken by local people as well as the Maintenance of the power station.
9	The proposal notes that there are no utility-scale solar PV IPPs still in operation in Africa, which implies previous solar PV IPPs of this scale have not been sustainable. What prevented these previous projects from being sustainable? Did any involve concessional support? How will this project address those challenges?	US	The document states that "*the project will be one of the first large-scale solar PV power plants in Sub-Saharan Africa and the first of its kind in Mali*". Despite the significant interest and ease of doing solar PV projects (vs other technologies) in Sub-Saharan Africa, very few have actually reached bankability to date mainly because of protracted tariff negotiations, grid integration challenges of an intermittent input into weak networks, and mitigation of off-taker risk.

			AfDB is aware of one Solar PV IPP project currently under operations in Rwanda of 8.5 MW in which Scatec Solar is a shareholder and operator and a second one of 20 MW in Senegal that was commissioned and is currently delivering power into the grid. There is little available information on whether these projects benefited from any level of concessionality but the Rwanda project, for example, benefited from a very generous tariff during the first 6 years (USD 0.20 per kWh) which suggests project's bankability without any concessionality. Ultimately, the Mali Segou project will benefit from the experience of Scatec Solar and its demonstration effects will benefit other solar PV projects under development in Mali.
10	What is meant by "*low levels of on-the-ground capacity*" as a challenge to the project, and what steps will be taken to address that challenge?	US	It refers to the low capacity of manufacturers of raw materials at the local level, as well as technicians to undertake proper maintenance during the operations phase of the project. See answer #8 above on the training programs that shall be developed by the project.
11	Technical: a. There is some confusion about the length of the planned 33 kV power line in the project. Is it 2.0 or 2.8 km? b. To what extent are the to-be-connected substation and the EDM grid prepared for receiving 33 MW (capacity)/52 GWh (annual output) of intermittent solar generated power? c. What are the storage solutions and capacities foreseen to address the intermittent character of power supply from this solar PV plant?	SWTZD	a. The length of the transmission line is 2.8 km. The report was updated to reflect this accurately. b. A grid study with the objective of modelling and simulating the impact on the Malian electricity grid of the project was undertaken during the development phase. The study main conclusions are: (i) overvoltage is not expected at the plant, (ii) limitation of power generated can be avoided as a result of the loss of the Segou's transformer, (iii) harmonic and flicker levels in the grid are within the limits of international standards, (iv) with the short-circuit contribution of the power plant, the short-circuit currents at the substation do not interfere with the existing overcurrent protection, and (v) system frequency and voltages remain stable, even for a sudden loss of the full PV power. c. No storage solutions were considered in the context of the project during its design phase. Also, the grid study shows that the intermittent character of the power plant does not negatively affect the grid and the substation.
12	The project is qualified as the "*first utility-scaled on-grid solar PV IPP in Mali*", which is a significant part of justifying the SREP contribution. Yet 3 other solar PV	SWTZD	While the SREP IP was endorsed in 2011 and a Solar PV IPP project was considered, there was little progress on the ground to ensure that SREP funds were channelled to this specific project. Currently there are

	plants (Kita, Koutalia and Sikasso) with 50 MW installed capacity each are mentioned to be "under development". Also, in the endorsed SREP IP for Mali, yet another solar PV IPP was included. Please explain the order of precedence of these projects and the logic of promoting this one among all with a SREP contribution of up to USD 25 million.		discussions with the Government of Mali on the possibility of using these resources to one or more of the 3 solar projects mentioned (Kita, Koutalia and Sikasso). The African Legal Support Facility and the PAPERM project are supporting the country in negotiations with private entities to further develop new installed capacity in Solar PV technologies. It is under this framework that the 3 other Solar PV power plants are being developed. The Segou Solar PV IPP project started to be developed in 2010 before the Mali became a pilot-country under the SREP. Scatec Solar, the developer of the proposed project, applied to an amount of USD 25 million under the first round of the SREP private sector set-aside competition. The SREP Sub-Committee endorsed the project at its meeting on October 2013 following a review undertaken by an expert group that ranked the project second out of 12 proposals received. This is why AfDB has since engaged with all relevant stakeholders to make this project a reality. This project is being promoted ahead of the others as it is the first with concluded PPA negotiations and a financing structure very close to being finalised.
13	What are the status and progress made so far with the SREP co-financed PAPERM (Promoting the Scaling-Up of renewable Energy in Mali) assistance project approved in October 2014? To what extent will this mitigate the policy and regulatory risks of the Segou Solar PV project?	SWTZD	The project benefits from a strong security package and the contractual arrangements currently in place fully mitigate any policy and regulatory risk. AfDB's Credit Risk Note of "*Moderate Risk*" is a reflex of this as well. As explained in answer #1, the PAPERM project is currently under implementation. One of the objectives of the project is to improve Mali's RISE profile, or "*Readiness for Investment in Sustainable Energy*". Since beginning of implementation, the country has shown good progress and currently the RISE "traffic light" system has gone from red to yellow for two out of four indicators, "*Planning*" and "*Pricing and Subsidies*" (the other two remain in red for time being). As of today, total disbursement is around 8% and a rapid pick up on disbursements is expected during 2017. At the moment, the beneficiary is finalizing the recruitment of an independent consultant to undertake a detailed review of the existing policy and regulatory framework, as well as to undertake training, with the objective of improving further the existing frameworks and institutional capacity.

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<td>14</td>
<td>Economic and financial calculus:

a. What is the economic NPV of the project and what are the stakes of the various stakeholders? How was this derived from the expected benefits?
b. What is the financial NPV to the developers and how was this calculated?</td>
<td>SWTZD</td>
<td>a. The economic analysis of the project was carried out to determine whether the expansion of the system, by adding the power plant, was justified economically. The economic NPV of the project is a measure of how much better off the country will be if the project is included in the energy system. An integrated analysis based on the financial model was therefore conducted to assess the economic impact of the project. In terms of benefits, the project will generate revenues for the GoM while contributing to reducing fuel subsidies and energy imports. In addition, the project is expected to yield environment benefits in terms of avoided greenhouse emissions. To estimate the economic resource flow statement, financial costs were adjusted for taxes to calculate their economic equivalents. The results of the economic and stakeholder impact assessment are summarized in the table below. The benefits anticipated over the life project yield a positive NPV of EUR 4.42 million using as a real discount rate the economic opportunity cost of 12%.

Table: Stakeholder Assessment

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<tr><th>Stakeholder Impact Assessment</th><th>PV @ 12% DR (000' Euros)</th></tr>
<tr><td>Global</td><td>67,693</td></tr>
<tr><td>Environmental benefits</td><td>5,307</td></tr>
<tr><td>Mali</td><td>62,385</td></tr>
<tr><td>Government</td><td>19,833</td></tr>
<tr><td>Net VAT impact</td><td>2,011</td></tr>
<tr><td>Income taxes</td><td>3,015</td></tr>
<tr><td>Forex impact</td><td>(695)</td></tr>
<tr><td>Duties</td><td>14,320</td></tr>
<tr><td>CREE levy</td><td>466</td></tr>
<tr><td>Withholding taxes</td><td>714</td></tr>
<tr><td>Local community</td><td>743</td></tr>
<tr><td>Energy sector</td><td>34,330</td></tr>
<tr><td>Local investor</td><td>1,309</td></tr>
<tr><td>Foreign Investors</td><td>6,170</td></tr>
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			b. The financial model does not calculate the financial NPV to the developers. It rather calculates the Equity Internal Rate of Return which is set at 12.86% and measured at a production level of P50.
15	Loan conditions: a. What are the interest rates and conditions of the two MDB loans (AfDB and IFC)? b. What is the seniority among the three loans (AfDB, IFC and SREP)? c. It is mentioned that the AfDB loan should be approved by the Board during October 2016? Is/was this possible without the previous approval of the SREP contribution (concessional loan)? If not, when should the decision now be scheduled for AfDB board approval? d. What about the approval procedures for the IFC loan and the IFC Infraventures equity contribution?	SWTZD	a. The interest rates of the two MDB loans have not yet been finalized. AfDB's interest rate will be a function: (i) a fixed base rate calculated as the swap market rate corresponding to the principal amortization schedule of the loan plus a premium to reflect the AfDB's refinancing risk, and (ii) a lending margin based on the project specific credit risk (moderate risk – see answer #1). b. All three lenders will be senior lenders meaning that they will all be repaid *pari passu* and benefit equally from the security to be established as part of the project. c. AfDB's Board of Directors approved the Bank's loan on the 2nd November 2016. Since the SREP loan approval got delayed, AfDB will submit to the Board of Directors an Addendum to the Bank's Project Appraisal Report requesting approval of the SREP loan once the SREP Sub-Committee's official approval is circulated. d. IFC loan and IFC Infraventures equity contribution are currently going through IFC's internal process. These approvals are expected before the end of 2016 and shall be a pre-condition to the finalization of the loan documentation.
16	Expected results: a. Please provide the results framework of the project. b. To what energy mix does the marginal emission factor of 0.5433 tCO2/MWh correspond? What is the logic behind this mix/factor?	SWTZD	a. AfDB's Results Framework is an annex to AfDB's Appraisal Report. Under the Disclosure Policy of AfDB, such document is confidential and therefore its disclosure can only be done if in accordance with AfDB's rules and procedures. That been said, the SREP loan document presented to the SREP Sub-Committee is in line with SREP Results Framework. b. The team revised the marginal emission factor. Instead of using a marginal emission factor of 0.5433 tCO2/MWh, the team uses now a marginal emission factor of 0.1673 tCO2/MWh. This figure was extracted from a study developed by the Malian's *"Agence de l'Environnement et du Développement Durable"* and supported by GIZ and the Norwegian Embassy. The SREP appraisal report was updated accordingly and a new figure in terms of GHG emissions avoided is now provided in the revised report.
17	Who handled or is handling the transaction advisory services to the GoM and EDM for this project?	SWTZD	Orrick provided advisory services to the GoM in the context of the project.

18	Regarding point 4.20 (p.14), we are of the opinion that any unutilized portion of the SREP contributions should be restituted to the Trustee and not considered for further decrease of the tariff payable by EDM, as the latter is already fixed in the PPA and part of the conditions that define the project results.	SWTZD	This is noted and AfDB will respect the final decision of the SREP Sub-Committee. In case the SREP Sub-Committee does not oppose, AfDB may propose utilizing any unused amount to further decrease the tariff payable under the PPA. This will only happen in case it is feasible to accommodate this decrease in a transparent, credible and strong legal mechanism that would be considered in either the loan documentation or in an amendment to the PPA. Lowering further the tariff would contribute to the long-term financial viability of EDM.
19	The project does not foresee electricity storage facilities. This raises the question to what extent the access to energy is really improved for 60.000 households in a country where lighting is still a key element of energy benefits.	SWTZD	As stated in the SREP report "*the project will support the construction of a 2.8km the transmission line from the project's site to the closest substation. That substation will increase the voltage of the power so that the power can be integrated in the national transmission infrastructure before reaching the relevant consumption centres. Given the significant power deficit in Mali, this project is not expected to directly lead to an increase in terms of energy access as power flowing in the grid is fungible but its implementation fits well with the GoM's plans in terms of expanding the share of population with access to non-fossil-fuelled electricity and to address the current power deficit in the country*". The energy access figure of 60.000 households is an estimate based on the current power consumption level at the household level in Mali. Issues related to grid access by households and lighting will not be directly addressed by the project.
20	Do we understand it right that the implications of re-stating the marginal energy factor used to determine GHG emissions from 0.5433 tCO2/MWh to 0.1673 tCO2/MWh actually reduces the expected reduction/avoidance of CO2 emissions by almost 70% to 8'785 tCO2/y and 219'625 tCO2 over 25 years?	SWTZD	Correct. The formula used to compute the figure is *[Installed Capacity in MW x 24 hours x 365 days x 25 years x Average Capacity Factor x Grid Emission Factor]*. The emission factor used has a considerable impact on the final estimated number of GHG emissions avoided as a result of the project. If required, AfDB is ready to implement a different methodology provided there is available information on the required inputs.
21	From AfDB's answer to question #14.a, we understand that out of an economic NPV of USD 67.7 million, almost USD 20 million is for the GoM as taxes and duties and USD 34.3 million are benefits of the "energy sector". a. Is our understanding correct?	SWTZD	a. The USD 20 million includes duties, income tax, value-added tax and other taxes. b. The economic analysis calculates an estimated amount of USD 14 million to be charged to the project company in the form of duties as a cost associated with imports of the main components of the power plant.

	b. Are these duties related to the import of equipment needed to the plant construction? c. Is it correct to understand that the benefits to the energy sector are essentially lower electricity costs for EDM who would be the sole or principal beneficiary? d. What about the benefits to the people of Mali (i.e. the 60'000 households, 158'000 men and 168'500 women)? Do they have any part in this generated economic NPV?		c. Depending on the methodology used in the economic analysis, EDM can be perceived as one of the main beneficiaries of the project as power payable under the PPA will be lower than the average generation cost currently paid by EDM. Since EDM has been historically highly dependent on annual subsidies flowing from the GoM to cover for their annual financial losses (e.g. in 2013 it received USD 95 million or one third of its total income), we are of the view that both the GoM and Malian tax payers will greatly benefit from the project as well. d. The economic analysis did not consider the benefits accruing for the estimated 60.000 households that could benefit from a power plant of the size being proposed. As stated, the household number was estimated based on the current average consumption level per household in Mali. Apart from the revenues generated and savings in fuel imports accruing to the GoM, the project will yield many benefits for the people of Mali. These include: (i) environmental benefits as a result of avoided greenhouse emissions, (ii) mitigate the power deficit of the countr, (iii) promote the creation of jobs during construction and operation phases of the power plant, (iv) build capacity and expertise among a selected number of Malian people in solar PV technologies, (v) develop local skills as a direct result of the training programs in civil engineering, electronic engineering, construction, logistics and monitoring of industrial facilities to be delivered by the sponsor as part of the Concession Agreement, and (vi) at a macro level, it is estimated that the increase in power supply in the country could contribute to the creation of around 2000 jobs over time.