Haiti SREP IP
SREP Sub-Committee – May 13, 2015
Matrix of Comments and Answers

Comments received from: Swiss Delegation (SECO/WEIN/mnd)

1. Component 1: RE for Port-au-Prince metropolitan area, connected to main EDH grid

1a. (Q) The technical and financial recovery of EDH is a critical condition for the success of a PPP. It is noted that the WB and IDB are supporting a comprehensive recovery program for EDH. It is also noted that uncertainty about the PPP option is addressed in the IP with the consideration of an EPC plus O&M contract. What is the appraisal of the involved MDBs (WB and IDB) regarding the chances of success of their EDH recovery program and the proposed PPP?	Regarding knowledge and capacity to prepare and implement PPPs, the Ministry of Finance has a team dedicated to accompany any Government institution in this kind of process; this team has been trained, in part, by the World Bank experts on PPPs, and has since its creation in 2013 managed several partnerships. In addition, the IDA Energy project will provide technical assistance to MTPTC if needed. Regarding EDH recovery program, the Government of Haiti (GoH) has already put into effect a comprehensive program to reduce EDH technical and commercial losses (sustained improvements in number of clients and bill recovery rates have been observed since EDH has started implementing its plan, in February 2015) and improve its performance. In addition, substantial ongoing rehabilitation of electricity infrastructure (7 distribution circuits in Port-au-Prince almost rehabilitated, Peligre 54MW hydropower plant coming back to the grid progressively starting July 2015, Peligre 115kV transmission line to be upgraded in 2016-1017) will substantially improve the level of technical losses, allowing EDH to deliver – and bill – more electricity. The Government acknowledges that this coordinated effort on all fronts is needed in order to integrate successfully additional electricity from renewable energy sources, and is monitoring progress on all fronts.
1b. (Q) In case an EPC plus O&M contract needs to be selected, what alternative financing sources are foreseen to substitute to the private sector investment? Who will guarantee debt and the O&M contract?	The PPP remain the preferred and most likely option. However, in case this option turns impossible, Government would consider the EPC +O&M contract option. In this case, the available funding would result in a smaller project, as it would not be able to leverage private sector investment. There would not be any debt in that case. Specific arrangements would be made to

	ensure the O&M payment, e.g. setting up an escrow account for this specific purpose.
1c. (C) At the stage of the project approval, the choice of RE technology and financing/contracting mechanism must be defined.	Yes. The technology and financing/contracting mechanism would be decided before the project appraisal.
2. Component 2: RE for Port-de-Paix remote grid	
2a. (Q) What is meant by wind-solar hybrid? Is this a hybrid between wind and solar or a hybrid between diesel and wind or solar?	It is a hybrid between wind and solar that would feed into the existing diesel system.
3. Component 4: Rehabilitation of small hydro power plants	
3a. (Q) What is the reason to include this in the SREP investment plan if no contribution from SREP is requested or expected?	It is one of the Government priorities and thus, an inherent part of the Government's renewable energy plan which was developed with SREP resources. Due to limited SREP resources, however, Government has decided not to fund this component through the SREP envelope and, instead, to use the Investment Plan to seek additional funds from other sources, e.g. Green Climate Fund.
3b. (Q) What alternative financing from public and private sources are foreseen or targeted for this component?	It is one of the Government priorities and thus, an inherent part of the Government's renewable energy plan which was developed with SREP resources. Due to limited SREP resources, however, Government has decided not to fund this component through the SREP envelope and, instead, to use the Investment Plan to seek additional funds from other sources, e.g. Green Climate Fund. Other potentially interested partners are the private sector and bilateral donors.
4. Component 5: Enabling framework, capacity and skills for RE scale-up	
4a. (Q) What measures is the Government of Haiti planning to build-up the enabling environment for RE, notably in terms of legal and regulatory framework?	In its Energy Directions Paper endorsed in 2013, the Government clearly stated that a profound reform of the regulatory framework is needed in order to allow the energy access expansion and the development of the power system. Donors are currently supporting these tasks, and the next

	administration – and legislative power - is expected to have this task on top of Energy priorities, as of their arrival in office (planned for early 2016). The Government is currently reforming the legal and regulatory framework to build-up an enabling environment for RE (putting together a team of local and international consultants and collaborating with an expert institution (HEC Montreal) to develop the needed capacities to conduct the legal and regulatory reform and put in place and operate a regulator). It is using the expertise of MDBs and development partners in doing so. The Government is also implementing and supporting several RE pilot projects to assess and identify best business models.
5. Financial plan:	
5a. (C) It is noted that the Government of Haiti has not provided for any financial contribution to the SREP IP. In view of the large amounts of subsidies that it is used to grant notably to EDH and the expected positive impact of the SREP, also on these subsidies, a contribution from the GoH to the program would be welcome.	Government will contribute with budgetary resources for the implementation of the plan, including the staff time of the Energy Cell and other Government entities which will participate in the implementation. In addition, the Government is planning to fund the dissemination of the SREP IP; the Energy Cell has already committed to present the Plan to the IRENA Conference on Small Islands (22-24 June), the Carbon Expo Conference (25-28 May) and the Caribbean Renewable Energy Forum (October). The Government truly believes that dissemination of the IP will allow to engage discussion with new partners, get feedback from other countries for a better / faster development, and create a virtuous cycle of dialogue towards a sound and inclusive RE development. To this extent, the Government has also funded the translation in French of the IP, for dissemination in Haiti. In addition, Government is planning to contribute to the funding of the small hydro project component (under the label "other public"), for which there are insufficient funds within the SREP envelope. Subsidies to EDH are a huge burden to the national budget hence effort to progressively remove/redirect subsidies. (Efforts to improve EDH and energy sector performance)
5b. (C/Q) The projected private sector contribution of 43.5% over the whole investment plan seems very ambitious. How realistic do the MDBs consider these projections?	We agree that the IP Private Sector contribution seems high compared to similar projects. However, we are quite sure to meet this target (which we consider a conservative estimate; which can be met at high probability based

	on our scenarios), due to the large share of relatively attractive market segments covered by the SREP IP (mainly the small stand-alone PV products and the larger fuel saving PV and biomass applications), where financial analysis shows that significant user and/or investor payments can be expected, and the public share of cost is only needed to address very specific market barriers, and/or to lift market volumes above a critical threshold. Note that private sector contribution explicitly includes user payments. A probable scenario for assumed leverage private Vs public (out of several analyzed) would look like Tables I-V in the worksheet "RESULTS Simple Scenarios" of the attached Excel workbook "Haiti simple RE Results Summary" (check column Q). Obviously, there are other scenarios with varying degrees of complexity and probability (as summarized in the IP and its Annexes), and these have been considered roughly with their weighted probability when preparing the Base Case. The small household systems will be the main driver for the high overall private sector share (see IP pager 16: "Minimum leveraging estimate. Final leverage for on-grid RE, where private sector project sponsors would feed into EDH the grid will depend on the specific SREP Case (9–12) and may vary from about 1:1 (SREP to private investment for typical wind on-grid case with moderate risk-appetite investors) to 1:5 (for small distributed generation analogous to the "fuel saver" case in Chapter 2). Deal structures with international bidders will depend on the off-take risk at project development and on the debt terms they can secure in the global market.")
6- Results	
6a. (C/Q) The expected outcome in terms of increased access to modern energy services (target 1 million people by 2020) is very ambitious but also difficult to derive from the expected outcomes of the different components. What are the expected contributions of the different components that lead to this figure?	One million beneficiaries would correspond to slightly below 200000 households directly reached via SREP. In light of the immense potential unlocked by recent technology and cost changes (PAYG etc, see attached paper) and the market analysis performed independently by (i) GoH & the core project Team; (ii) Navigant et al & IDB, (iii) iiDevelopment and (iv) several local stakeholders, reaching 200k additional customers mainly via small stand-alone solar and RE-based village grids is a conservative target, yet ambitious enough to be relevant and reach the scale effects desired by SREP. Past market development has allowed about 200k of mixed quality low-end PicoPV products to reach the market (but lately slowed down due to smuggling of low quality products, increased import duties and sparse

	commercially oriented approaches), so we think to target of getting annual sales back slightly above previous level, but with better quality systems, a larger share of SHS (for higher Tier services) and the first efforts to scale-up mini-grids, with more commercially oriented firms (as others won't be allowed in the vehicles) is feasible, probable and not over ambitious. Only by reaching a scale of this order, a true transformation of the local market to prevalent higher tier, high quality, commercially oriented models and systems will be possible. Table II and IV in the worksheet "RESULTS Simple Scenarios" in the attached Excel sheet "Haiti simple RE Results Summary" show a minimum and a probable scenario for the beneficiaries.
6b. (Q) Same question regarding the expected electricity output from RE.	Electricity output (40 GWh/a) follows directly from capacity installed by vRE type and share in the project, and probable values for their respective capacity factors. While scenarios on both may slightly change, we think that we can "promise" conservative scenario shown in Table II in the workshsheet "RESULTS Simple Scenarios" of the attached Excel sheet "Haiti simple RE Results Summary" (out of several we have analyzed) with a very high likelihood. It is also worth noting that an important part of the new electricity output will come from larger commercial/industrial systems through displacement of diesel currently used for self-generation.
6c. (Q) What is the expected reduction or avoidance of CO2 emissions and how is it derived from the different components?	CO2 savings can be estimated in a straightforward way from the traditional fuels "saved" by fuel switch under the different scenarios. Depending on the segment this can be calculated by applying the usual standard UNFCCC & SREP methods, or by predicting the actual fuel savings during / post project, using the baseline information we have started to define with the digicel energy demand survey (for offgrid) and with advanced vRE modelling (as in GIZ2014) for the actual ongrid dispatch. However, for both we would need more details regarding the final PAD-level design (say, exact share of wind or solar or biomass ongrid; exact share of solar small stand-alone (mainly replacing candles, kerosene and mobile phone charging) vs larger systems (mainly replacing diesel fuel). Therefore, we would prefer to wait with CO2 calculations till PAD stage. However, we can safely assume that Carbon Benefits of RE under Haiti SREP are on the high end of Literature estimates, because (i) baseline generation in PaP and the large villages is largely diesel fuel based (not gas, see IP) which are largely used for base-load (not only

	peak load, as in other countries) generation including small and inefficient diesel gensets; and (ii) the project will support high-quality large lanterns and kits as well as SHS for the offgrid users, so that a high amount of replaced Carbon can be assumed (lowest quality solar lanterns replace around 0.1-0.2 tons of CO2 over about 2 years of life, highest quality systems have much higher t/a replacements and lifetimes up to 20 years - compare Mills 2010 and UNFCCC). A very simple back of the envelope calculation might look like this: (A) 200k high quality (sic) solar kits & SHS * conservative average weighted 0.5 t CO2 saved = about 100k t of CO2 over average weighted system life (2-20 years depending on solar kit / SHS type); plus (B) 20 GWh/a ongrid vRE * conservative 0.75 t/MWh = about 15k t of CO2 per year of on-grid feed-in (times weighted system life, and adjusted for changes in boundary conditions if and when more hydro comes on line). Separate documents: Excel sheet "Haiti simple RE Results Summary", SREP IP Annexes and BG Documents.
6d. (Q) it is mentioned that the SREP program will contribute to improve the finances of Haiti, notably by reducing the needs of subsidies for EDH and by reducing the bill for imported fossil fuels. Is it possible to quantify this?	Uncertainties on the power system's evolution (unmet demand, auto-generation and electrification rate) does not allow to precisely estimate the level of savings that would benefit to the State, as a result of the SREP plan implementation. On a standard substitution point of view, and viewing the average cost of power generation currently from diesel sources, the rational is however obvious (even if factoring in the grid losses for the mini-hydro rehabilitation). The team is ready to provide quantitative estimates on a case by case basis, but, again, an overall savings estimates is challenging to calculate viewing the rapidly evolving power system in Haiti.