

**Republic of Lebanon**  
**Council for Development and Reconstruction**  
**Lebanon Water Supply Augmentation Project**

**Environmental and Social Panel (ESP) of Experts**  
**First Mission**  
**(March 7<sup>th</sup>–11<sup>th</sup>, 2016)**

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## Acronyms

BMLWE	Beirut Mount Lebanon Water Establishment
BP	(World) Bank Procedure
BSP	Benefit Sharing Program
CESMP	Construction Environmental and Social Management Plan
CDR	Commission for Development and Reconstruction (Lebanon)
CH	Cultural Heritage
DGA	Directorate General of Antiquities
DRB	Dam Review Board, aka Dam Safety Panel of Experts (Bisri)
DSP	Dam Safety Plan
E&S	Environmental and Social
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESP	Environmental and Social Panel of Experts (Bisri)
ICH	Intangible Cultural Heritage
IDB	Islamic Development Bank
OP	Operational Policy (of the World Bank)
PAD	Project Appraisal Document
PCR	Physical Cultural Resources
PMU	Project Management Unit
RAP	Resettlement Action Plan
SP	Safeguard Policy (of the World Bank)
ToR	Terms of Reference
WB	World Bank
WSAP	Water Supply Augmentation Project

# Environmental and Social Panel (ESP) of Experts

## First Mission (March 7-11, 2016)

Jean-Roger Mercier & Anna M. Kotarba-Morley

### 1. Background

1. Greater Beirut has been facing a deficit in potable water for the past forty years. The Greater Beirut “Water Supply Augmentation Project (WSAP)” aims to secure a sustainable source to overcome the existing deficit and meet the city's potable water requirements on the medium-long term, throughout the implementation of the Bisri Dam Works and associated infrastructure, taking advantage of the Awali-Beirut Tunnel and Pipeline Bulk Water Conveyor and treatment works, independently under implementation at present. This includes the improvement and rehabilitation of the water distribution network in Greater Beirut area and the northern and southern suburbs of Beirut city.
2. Given its complexity, the project is expected to have significant technical, environmental, social, and reputational risks and impacts requiring various mitigation measures and offsets. The Project was categorized by the World Bank (WB) and given a “Category A” status and followed an internal “high risk” process. The WSAP is being implemented using the Bank’s triggered Safeguard Policies (SPs):
  - Environmental Assessment (OP/BP 4.01);
  - Natural Habitat (OP/BP 4.04);
  - Physical Cultural Resources (OP/BP 4.11);
  - Forests (OP/BP 4.36);
  - Involuntary Resettlement (OP/BP 4.12), and
  - Safety of Dams (OP/BP 4.37).
3. In application of Lebanese Decree 2012, the project also needed an Environmental Impact Assessment to be conducted following Decree’s content and processing prescriptions.
4. In application of WB policies and relevant Lebanese rules and regulations, the following analytical work was carried out to identify the potential risks and mitigation measures which might arise from the project, identifies measures to respond to the WB’s SPs above, and includes:
  - Environmental and Social Impact Assessment (ESIA) study, including an Environmental and Social Management Plan (ESMP)
  - Resettlement Action Plan (RAP)
  - Dam Safety Plan (DSP).

5. Consistent with WB policies and procedures, the E&S safeguard documentation was approved by WB specialists before project appraisal and the disclosure was conducted in-country and at the WB's InfoShop before loan/credit approval.
6. The relevant processes (e.g. project categorization, decision on Safeguard Policies triggered) and documentation (e.g. ESIA report) were reviewed by the Environmental and Social Panel (ESP) of Experts and their assessment of such is presented in this report.
7. This report also contains, as per ESP's Terms of Reference, mission's findings, recommendations as well as suggested next steps.

## 2. Terms of Reference (ToR) of the Environmental and Social Panel (ESP) of Experts

8. According to individual experts' contract, these Terms of Reference consist in *"...ensuring that the components of the [WSA] Project, as designed and built, comply with international standards of excellence and safety for water resources infrastructure as reflected in the World Bank Safeguard Policies and the GoL's legislations, regulations and guidelines. The ESP's oversight is comprehensive and extends to project siting, design, construction and operation, impact mitigation and monitoring plans and resettlement instruments."*

## 3. First mission narrative

9. It should be noted that the first mission of the ESP did not include the Social Specialist, whose presence in later ESP missions will be mandatory. The absence of the Social Specialist is temporary and due to the practical timing constraints. Because of this absence, however, detailed comments and recommendations on resettlement and other key social issues to be handled by ESP's Social Specialist when he does his first field mission (see further for recommendations on the timing of that field mission). In the meanwhile, and as far as this first ESP mission is concerned, observations on resettlement and other key social issues are limited to superficial aspects (funding, process, timing) that, the ESP felt, need to be urgently addressed, even before the Social Specialist's future sovereign judgment.
10. The first ESP field mission comprised of the Environmental Specialist Dr Jean-Roger Mercier and the Cultural Anthropologist Dr Anna M. Kotarba-Morley. During the course of the mission, Environmental Specialist was designated as the Panel Chair by WSAP's CDR Project Director Mr Elie Mousalli.
11. The mission started on March 7<sup>th</sup>, 2016 with a field visit organized by CDR's Project Director Mr Elie Moussalli, where the two members of the ESP were accompanied and guided by him and representatives from the World Bank team (Dr Sally Zgheib, Dr Dan Petrescu), Dr John Duffy E&S Consultant from Dar-el-Handasah consulting company, which prepared ESIA, and the Technical Consultant from Dar el-Handasah who did geological fieldwork in the Valley. The rest of the week was spent in meetings with CDR, the World Bank team and her leader Mrs Amal Talbi, the Dam Safety Review Board (DSRB), the Beirut Mount Lebanon Water Establishment (Director General), academics, Director General of Antiquities (DGA) and the Ministry of Environment and with local academics. The mission ended on March 11<sup>th</sup>, 2016 with ESP (and DRB) presenting their preliminary findings and recommendations in a meeting chaired by the CDR President.

12. The list of meetings held, persons and institutions’ representatives met is attached to this report.

#### 4. Supporting documentation

13. The documentation provided to the ESP is listed in the bibliographical section of this report. Several documents were also proposed by the ESP as reference documents to help CDR and the donors improve and accelerate the implementation of the ESMP in its various components.
14. The ESP has noted that, in spite of the amounts spent on upstream analytical work to identify and prescribe the management of the operational E&S (including Cultural Heritage) risks of this project, **CDR needs to continue investing in more analytical work to operationalize the general conclusions and recommendations provided so far.**

#### 5. Mission findings

##### ***5.1. Application of Lebanese rules and regulations and of Donors’ Environmental and Social Safeguard Policy requirements***

15. It is EPS’s understanding that the existing disclosed ESIA/ESMP/RAP reports form the basis and the reference for environmental and social compliance of the project with Lebanese rules and regulations as well as with donor policies.
16. The precise reference is the documentation cleared by the WB as a condition for appraisal. That documentation has been disclosed in country and at WB’s InfoShop on June 2<sup>nd</sup>, 2014. This is compliant with WB information disclosure and project processing policies.

##### ***5.2. E&S Process Diagnosis***

17. The Panels of Experts are in place: DRB has conducted its 6<sup>th</sup> mission, whilst ESP its 1<sup>st</sup> mission (albeit incomplete for practical scheduling reasons and there is a serious prospect that ESP’s first mission will be complete around May 2016 after the planned field trip by ESP’s Social Specialist).
18. ESIA/ESMP/RAP have started implementation, with field actions likely to build momentum with the recruitment of the Supervising Engineer, the Dam Contractor and Technical Assistance to the Project Management Unit (PMU, located in CDR) on E&S matters, as planned (see recommendation below).
19. It is ESP’s opinion that the operationalization of ESMP/RAP needs further urgent and substantive action. The ESIA report analyses correctly the need for safeguard policies compliance and identifies, in general terms, which WB policies are triggered (with the possible, but minor exception of the Pest Management OP/BP 4.09, see further). However, the section on ESMP contains a number of general prescriptions but lacks the plan of action that is needed to turn these general recommendations into a manageable and monitorable set of specific activities. A key example of such limitation is the lack of adequate specifications for the **preparation of the central Construction ESMP (CESMP) that will gather a majority of the E&S risk management measures of the Bisri Project.** Other limitations are addressed hereafter. The PMU, with the assistance of concerned

donors and of the Panels of Experts (ESP), **needs to urgently and forcefully take action to make the WSAP project compliant for safeguard policies.**

### ***5.3. Ten priorities for action and one key cross-sectional concern***

20. Urgent action is needed on the following priority areas and on the enforcement cross-sectional aspect.

- Construction ESMP
- Cultural Heritage
- Dam Safety
- Resettlement
- Biodiversity & Natural Habitats
- Public health
- Reservoir and shoreline management
- Miscellaneous
- SP, Stakeholders, Mediation
- Capacity Building
- ENFORCEMENT

21. Details on ESP's findings feature hereafter.

#### **5.3.1. Construction ESMP**

22. There is no detailed basis for the preparation of a Construction ESMP. This ESMP is critical because it will provide the assurance that the operational environmental and social risks linked to the construction of the dam and associated infrastructure (conveyor/pipeline, transmission line, new hydroelectric plant, Employee's camp, etc.) will be managed in compliance with national and donors' requirements. As the tender documents are close to being ready, both for the Contractor and the Supervising Engineer, the raw elements contained in the approved ESIA/ESMP need to be turned into detailed terms of reference that will allow the selected Contractor to prepare and later implement the dozen or more of specific management plans (solid waste management, traffic management, cultural heritage, hazardous waste management, relationships with local communities, etc.) that are required. The contractor should also propose and develop the monitoring and reporting systems that the Supervising Engineer, Project Director, Donors and Experts Panels will use in order to check compliance and/or intervene in real-time as required. The terms of reference are typically a 100 page or so document spelling out, for the prequalified contractors, what will need to be in their final proposal (including the profiles and work schedules of the Environmental and Social Specialists that they will need to include in their team).

#### **5.3.2. Cultural Heritage (CH)**

23. CH is rightly recognised as a critical component of this project and it is clear that the significance, magnitude and quantity of remains expected to be preserved in the valley was severely understated during preparation of the ESIA. The area of Wadi Awwali (also known as Wadi Bisri or Eshmoun Valley, hereinafter referred to as the 'Valley') is recognised as possessing high potential for future research in terms of CH dating from prehistoric to modern times.

24. Important archaeological and sacrificial sites are already known to exist in the Valley based on previous surveys, including work undertaken in 2004, 2005, and 2008 by the Polish-Lebanese survey team, conducted by Krzysztof Jakubiak, Michal Neska and members of the University of Warsaw and DGA; a number of surveys conducted by Wissam Khalil of the Lebanese University; and a Spanish epigraphic survey. No doubt, more sites will be discovered in areas yet to be surveyed, and through chance finds procedures.
25. To date at least 83 archaeological sites are known in the upstream area, with 29 recognised downstream (Buffer Zone – see below), with Polish, Lebanese and Spanish surveys attaining approx. 85% coverage (Jakubiak, *pers. comm.*). A number of plots are already on the legal protection register under Lebanese Law (see below figure with a map provided by DGA, not included in ESIA).

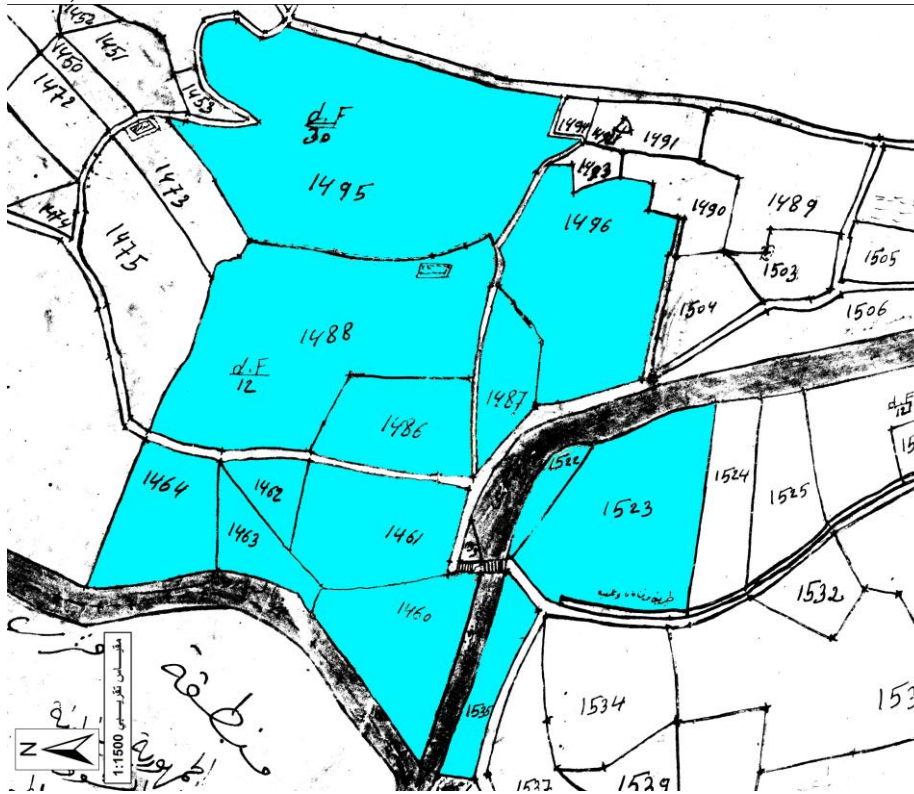


Figure 1 An old map of legally protected sites in the Bisri Valley around the Marj Bisri Sanctuary

26. Accordingly with Lebanese and International law, as well as Bank's Safeguard policies the Cultural Heritage of the Valley and the buffer zone (both Intangible and Tangible) are protected under:
- Lebanese Law** esp. [Law N.37 regarding Cultural Property](#) (updated in 2008); [Law N.37 regarding Cultural Property \(official translation\)](#) † (2008)
  - [UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage of 1972](#) (ratified by Lebanon on 03/02/1983)
  - [UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage of 2003](#) (accepted by Lebanon on 08/01/2007)
  - [UNESCO Recommendation on the Safeguarding of Traditional Culture and Folklore of 1989](#)
  - [UNESCO Universal Declaration on Cultural Diversity of 2001](#)

f. [World Bank Safeguard policy on Physical Cultural Resources OP/BP 4.11](#)<sup>1</sup>

27. It is envisaged that a number of collaborating specialist teams of archaeologists, anthropologists, conservators and vernacular architects will be instrumental in safeguarding, documenting, recording and ‘resettlement/relocation’ of Cultural Heritage in the Valley.
28. It cannot be overstated that this project can only be completed to deadline and in compliance with the World Bank Safeguard Policies if all Stages (see suggestions for an operational Action Plan in Annex 1) are undertaken in a timely fashion, and are implemented and enforced swiftly and effectively. **It is therefore of the utmost importance that survey and some archaeological works start immediately,** and ideally prior to the commencement of the project by the Contractor, running parallel to the project throughout its lifetime and beyond.
29. The selection of teams to be employed to carry out the activities described below should take place not only under consultation with the DGA, but also with independent researchers and relevant members of the academic community with research interests in the region whose opinions should be valued. This is not to say, however, that any early work that needs to be initialised as soon as possible as part of this project in order to be completed within deadline should be delayed due to unnecessarily extensive discussions with such experts.
30. It is a key consideration that the provisions, resources (both financial and human) and infrastructure will be made available by the project for management, maintenance, conservation and curatorship of sites, finds and monuments of archaeological and heritage importance, as well as for post-excavation analyses, publication and dissemination of results. These should be included in the budget and in the Action Plan. This issue was not clearly addressed in the ESIA and therefore the addition is necessary.
31. There is a clear need for the introduction of a ‘Heritage and Environmental Buffer Zone’ around and along the affected area. **Further archaeological survey as an inventory/recording mission should be undertaken downstream (in case of potential dam breaching) and upstream (liable to flooding).** The dam breaching and overflowing model proposed by the Dam Safety Review Board below illustrates the potential flooding area.

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<sup>1</sup> Note: OP/[BP 4.11](#), *Physical Cultural Resources*, were revised on April 2013 to take into account the recommendations in “*Investment Lending Reform: Modernizing and Consolidating Operational Policies and Procedures*” (R2012-0204 [IDA/R2012-0248]), which were approved by the Executive Directors on October 25, 2012. As a result of these recommendations, [OP/BP 10.00](#), *Investment Project Financing*, have been revised, among other things, to incorporate [OP/BP 13.05](#), *Supervision* and [OP/BP 13.55](#), *Implementation Completion Report*, (which have accordingly been retired). [OP/BP 4.11](#) have consequently been updated to reflect these changes, as well as to reflect the updated title of the Bank’s policy on access to information. [OP/BP 4.11](#) should be read in conjunction with [OP/BP 4.01](#), *Environmental Assessment*.





Figure 2 Dam flooding model (Dam Safety Review Board).

32. It will be necessary that a clear definition of the ownership of sites, monuments and artefacts, and the responsibilities necessarily entailed, will be established before the commencement of the project.
33. It is clear that approved budget for CH based on the ESIA, including 0.5 mln USD for Archaeological investigations is far from enough and should certainly be revised in consultation with DGA and independent Consultant. It is also the opinion of the Expert that the provisioned 2 mln USD for the relocation of Mar Mousa church seems to hold ground and could even create contingency for other relocation projects.
34. There is a high risk of looting, theft and vandalism of CH and trade in illicit antiquities on site. A number of contributing factors include, amongst others: the large scale of the project; the presence of international teams with experience on other large construction projects, with potential history of heritage theft, looting and trade; a lack of safeguard from the already expropriated local community; and an increase in accessibility of sites of cultural and heritage interest in the Valley. It is recognised that the theft and looting of CH sites and archaeological material is a common problem within large projects similar to WAS, and the proximity to the Syrian and **Israeli markets** makes the area much more vulnerable. Potential interest from already existing vibrant illicit antiquities market in the country and beyond will emerge as soon as the scope of the project, and the importance that CH plays within it, becomes publicly known. Training and reporting procedures, as well as information about legal implications of such activities, should be a key component of the Contractors' contact and should be included in ToR for Supervising Engineer. A number of measures should be put in place to safeguard antiquities and sites and artefacts of cultural, heritage, historical, traditional and archaeological interest from abuse. These should include:
  - training of contractor's on-the-ground staff and workers in the Chance Findings procedures;
  - training of contractor's on-the-ground staff and workers on potential artefacts and sites of heritage and cultural interest that might be found during the construction so that the Chance Findings procedure is not an 'empty term' but could be successfully implemented if necessary;
  - training of contractor's on-the-ground staff and workers on the legal implications for looting and vandalising of sites and monuments as well as looting and trading in artefacts,

monuments and other objects of cultural, historical, archaeological, traditional or heritage value that might be found on the construction site or in the Buffer zone;

- encouraging reporting of chance finds as well as of any misconduct carried by the staff;
  - enforcing punishments for any reported cases of misconduct.
35. Both OP/BP 4.11 and the umbrella policy OP/BP 4.01 of the World Bank recommend the building of capacity as part of the ESMP, for cultural heritage purpose or other, the proposition of an Exhibition Centre or a Local Museum dedicated to findings from the Valley and its vicinity spelled out in the ESIA is regarded by the ESP as a very valuable part of the project. Such views have also been represented by members of the local community of Jezzine Municipality interviewed by Dr Dan Petrescu. It is envisaged that training of local guides [already being conducted in *Chouf Biosphere Reserve*], workshops on CH and ICH, community participation in recording ICH in affected Municipalities, should form an indispensable component of the WSAP Project (as a part of Benefit Sharing Programme and in accordance with WB OP/BP 4.01, see Section 5.3.10). This could form part of a Community/Public Archaeology campaign – promoting the archaeological sites and generating positive publicity for the project.
36. The Community/Public Archaeology campaign should also include components such as monthly open days at excavations sites, guided site visits, and a ‘Reporting App’ that could be downloaded by anyone on their computer or smartphone and used to report chance findings and any potential cases of misconduct. Such an App should be designed to be able to be used anonymously, and should allow a user to rapidly and simply take a photograph of a site or finding, add GPS coordinates and a short note. There should be a person assigned from an Archaeological Project Team who would deal with processing of this data.
37. Sustainable Tourism development should form part of the ESMP. Apart from water activities included in the Reservoir/Shoreline Management Plans (see 5.3.7) the Exhibition Centre/ Museum can include finds not only of archaeological and intangible significance but also of engineering and technical innovations that have been a part of the Dam construction. Mar Mousa church could also be one of the sites on the train and it is envisaged that collaboration with organisations such as e.g. *Authentic Chouf* could be established to further promote CH conservation and preservation in the Construction area and Buffer Zone.
38. It is important that the archaeological investigations are conducted in the area of potential Worker’s Camp prior to its establishment and that it’s building is monitored with Chance Findings procedures in place.
39. The issue of CH has been recognised as a significant matter in terms of public relations, communication, lobbying, as well as potential public, academic and NGO pressures. It has been established by the Experts that strong feelings regarding protection of both PCR and ICH are present within the communities inhabiting the Casa’s within and around the construction zone (Petrescu, *pers. comm.*) as well as amongst the academic and professional community in Lebanon (Khalil, Seif, El Khoury, Ziade, Yasim, and others *pers. comm.*).
40. It has been recognised by the International Committee on Archaeological Heritage Management (ICAHM) that there is an alarming lack of examples of good practice from the region. Therefore WAP and Bisri Dam show high potential for this project to become a ‘good practice’ example.

### 5.3.3. Dam Safety

41. The project has in place the plans and activities that ensure compliance with WB's OP/BP 4.37 on the Safety of Dams. This is particularly the case since the PMU, with the assistance of the WB, has established a Panel referred to as Dam Review Board, which has now conducted its 6<sup>th</sup> mission and appears to have the situation well under control. The recommendations of the DRB will need to feature in the Terms of Reference of Contractor's and Supervising Engineer's responses to the calls for bids, and, in due time, the ESP will work with the DRB to make certain that the «soft» actions of the Dam Safety Plan are properly, and in a timely manner, planned, programmed and implemented. Those actions will include, amongst the others: information to downstream communities, identification of potential damage, early warning system, interventions in case of breach or accidental release.

### 5.3.4. Involuntary Resettlement

42. As stated above, the assessment of project's compliance with WB's OP/BP 4.12 on involuntary resettlement will be the sole responsibility of the Social Specialist, under the auspices of the ESP, once he is on board and has conducted his first field mission. Since, however, dealing with compliance with OP/BP 4.12 is on the critical path of the construction of the dam, the present mission of the ESP offers a few common-sensical remarks and suggestions.
43. The figures mentioned for the resettlement action plan, to be included in project funding, were 175 mln USD in consultant's RAP. This estimate includes 150 mln USD for compensation and 25 mln USD for a package that covers the Benefit Sharing Program (BSP) for 1.5 mln USD, income restoration for 3 mln USD and miscellaneous/contingency. The corresponding figure in WB's Project Appraisal Document (PAD), deemed to represent the actual provision made in project financing, is 170 mln USD. There is a need to explain discrepancy and to anchor the appropriate budget, in particular for income restoration. OP/BP 4.12 specifies, as a basic condition of compliance, that «c) Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher...». This mandatory provision has several operational implications, notably that sufficient resources be allocated to assisting displaced persons to develop productive activities once resettled and that the income of all displaced persons should be monitored.
44. In the case of the Lesotho Highland Water Project, the net income of the persons displaced by the dam was monitored for 15 years. In Inspection Panel's case on the India Coal project, the complaint related to the lack of sufficient income restored for the displaced population. «*[T]he Requesters... focus their complaint on the "key issue" of failure of income restoration. The Request explains that the basis of the PAP's former "non-formal" economy was income from (i) common property resources, and (ii) income from their own privately owned lands. But the Request asserts that income restoration has not taken place...*»  
(Source:  
<http://ewebapps.worldbank.org/apps/ip/PanelCases/23-Eligibility%20Report%20%28English%29.pdf>)

### 5.3.5. Biodiversity & Natural Habitats

45. The WSAP project needs to be in compliance with OP/BP 4.04 on Natural Habitats as well as with OP/BP 4.36 on Forests. This is clearly stated in the ESIA report. For the record, OP/BP 4.36, since its transcription in the OP/BP format (after having been an Operational Directive on Forestry) have, de facto, become integrated into the requirements of OP/BP 4.04. The next stage in environmental and social policy integration at the World Bank will be the merging into the new Environmental and Social Safeguard (ESS) n°6 *Biodiversity Conservation and Sustainable Management of Living Natural Resources*<sup>2</sup>.
46. During the meeting with the Ministry of the Environment, the ESP understood that a recent **Lebanese regulation designated the 500 m corridor around rivers as protected areas.** This regulation was not provided to the ESP. If this regulation applies, the WSAP project team should provide the evidence that the Bisri dam/reservoir construction complies.
47. ESP looked at the finalization of the compliance requirements. Good practice to ensure OP/BP 4.04 compliance is to design, build and operate an Environmental Offset. Existing ESMP, basis for project approval, **does not withstand the offset test and generates vulnerability for CDR/GoL/WB**
48. « *If the environmental assessment indicates that a project would significantly convert or degrade natural habitats, the project includes mitigation measures acceptable to the Bank. Such mitigation measures include, as appropriate, minimizing habitat loss (e.g., strategic habitat retention and post-development restoration) and **establishing and maintaining an ecologically similar protected area.** The Bank accepts other forms of mitigation measures only when they are technically justified. ...In deciding whether to support a project with potential adverse impacts on a natural habitat, the Bank takes into account the borrower's ability to implement the appropriate conservation and mitigation measures. If there are potential institutional capacity problems, the project includes components that develop the capacity of national and local institutions for effective environmental planning and management. The mitigation measures specified for the project may be used to enhance the practical field capacity of national and local institutions.* » (Source: <http://go.worldbank.org/PS1EF2UHY0>)
49. The ESIA/ESMP identifies, as part of the 570 ha, only a very small fraction is presently cropped. Most of the loss will thus be natural habitats **none of the critical nature** but all with natural value, including the 82 ha of pine woodland. But all in all, practically 570 ha of natural habitats will need to be compensated for, not just using a replanting technique which is uncertain in terms of technical success and unlikely cost effective. The other proposals made in the ESMP as regards biodiversity compensation and monitoring make sense, **but fall short of ensuring full compliance with OP/BP 4.04 and OP/BP 4.36. A plan for enhancing conservation of an equivalent natural habitat elsewhere, making the "natural capital" balance positive, is urgently needed.**
50. Given the local climatic, topological and otherwise natural conditions, it would seem logical to look for a place of high ecological value, with realistic options for preserving and protecting the said value and eventually enhancing it to offset the loss of the 550+ ha of natural habitats in the Bisri Dam flooded area. It will be particularly important to ensure that the enhanced protected area is equipped with proper controlling staff to avoid negative impacts by the very frequent and active hunters in the area (as witnessed by the ESP in the field) and other human predation. Monitoring of – and periodically reporting on - effective natural habitat enhancement will be a must.

<sup>2</sup> See

<http://consultations.worldbank.org/consultation/review-and-update-world-bank-safeguard-policies>

### 5.3.6. Public health

51. Compliance with OP/BP 4.01 and Good International Industry Practice requires that a Public Health Management Plan be prepared as part of the ESIA/ESMP. The approved WSAP ESIA report contains an analysis of public health issues, notably associated with the future reservoir and communities' proximity with stagnant waters, but the public health section of the ESMP lacks specificity and needs to be operationalized.
52. The starting point for a Public Health plan of action should be scenarios about induced development. These scenarios will provide the dam developer with the requirements in terms of preventive and curative medicine in project's area of influence.
53. The preparation of a specific Public Health plan of action is not on the critical path for dam construction, but there is a need to program the relevant activities ahead of the reservoir impoundment.
54. The CDR Project Director informed the ESP that, as part of the ESMP, progress was being made on the 40 mln USD village sanitation component in the watershed. **The amount of the sanitation project was increased after ESIA/ESMP approval, in which the component was costed at 23 mln USD. Attention should be given in the masterplan and in the future feasibility/design studies to the key issues of effluent quality and sludge disposal.**

### 5.3.7. Reservoir and shoreline management

55. Compliance with OP/BP 4.01 requires that all potential environmental impact of the WSAP be taken into account during the design and implementation of the ESMP. While the present WSAP ESIA/ESMP considers a series of activities that will safeguard the future dam operation from negative environment and social impacts, the present text isn't specific enough when it comes to implementing those measures. This is particularly true of the following aspects:
  - a. Ensuring and monitoring/controlling the ecological flow delivery by dam operator;
  - b. Preventing and managing the risk of large deliberate or accidental outflows from the dam;
  - c. Controlling the appropriate utilization of the water body, in particular in case of large scale development of recreation activities (a reservoir-use possibility that is correctly envisaged and described in the present ESIA/ESMP).
56. The ESP estimates that the same approach as for public health can be appropriate. For instance, it is fine to allow recreation on the future reservoir, but there is a need to establish rules and enforce them. Same for shoreline activities. Developing a reservoir and shoreline management plan is not on the critical path of dam construction, but should, however, be properly accounted for and planned for way before reservoir impoundment.

### 5.3.8. Miscellaneous

57. The ESP proposes that WSAP project management applies more broadly the precautionary principle than in the present ESIA/ESMP. The World Bank has over 60 operational policies in its books and the safeguard policies are just a sub-set of these operational policies. The World Bank's

Inspection Panel can be – and historically has been – called upon for safeguard as well as non-safeguard policies. Supervision, poverty reduction, gender, water resources are, for instance, non-safeguard policies that have formed a basis for complaints to the Inspection Panel in some of the 105 complaints registered between 1993 (creation of the Inspection Panel) and now. It is therefore recommended here to take a broad view of the operational risks of WSAP.

58. The present ESIA/ESMP estimates that the safeguard policy on Pest Management (OP 4.09) is not —*a priori*—triggered given the nature of the works involved. This may be broadly true, but the following activities linked to the WSAP may, after project approval, prove to be the contrary:
- a. Transport, storage and use of pesticides on the construction camp during construction;
  - b. Use of pesticides in the close surroundings of the future reservoir;
  - c. Transport, storage and use of other hazardous material that have environmental risks similar to pesticides.

It is thus advisable to keep an eye open on potential uses of pesticides that would not have been identified in the present ESIA/ESMP. The corresponding recommendation is provided later in the form of a contribution to the tender documents.

59. Non-safeguard WB policies that might prove to be applicable to the WSAP include gender, water resources management and poverty reduction. These aspects should be treated with a scoping effort by the environmental and social specialists providing support to WSAP's Project Director (see "Capacity Building") as part of the general scoping conducted.

### 5.3.9. Benefit Sharing Program, Stakeholders, Mediation

60. Compliance with OP/BP 4.01 and OP/BP 4.12 as well as with World Bank information disclosure policy requires that close attention should be paid to providing services to the local communities that are useful, properly described and announced and adequately implemented.
61. The present ESIA/ESMP adequately proposes a Benefit Sharing Program that is described and proposed under the Resettlement Action Plan (RAP). The ESIA/ESMP itself mentions that, priced at 1.5 mln USD, the initial funding of the BSP should be considered as seed funding and that more financing will be required. This funding gap should be identified as soon as possible, since the WSAP has little if any, unallocated funds and that some components (sanitation, for instance) have started to eat up the available unallocated funds. Also, the environmental and social risks associated with the implementation of the BSP should be identified and safeguarded against negative impacts. Last, but not least, the BSP should not be considered a way to "buy the support" of local communities, but rather as part of the Corporate Social Responsibility of the dam construction and operation entities.
62. The social scientist of the ESP, when he comes on board, will provide more specific and operational analyses and recommendations regarding the BSP and the work with local stakeholders.
63. The ESP also wants to emphasize the need to continue the work with stakeholders, within and inside the Benefit Sharing Program. There is a need to listen to all stakeholders, not just to the ones supporting the project, and to continue to appropriately process complaints, appeals, and grievances.

### 5.3.10. Capacity Building

- 64. In compliance with WB's OP/BP 4.01 on Environmental Assessment, the PMU should have the full capacity to enforce the ESMP and the RAP. As far as the RAP, CDR is equipped with an Expropriation Department that is used to handle the compensation to displaced persons and communities. This is an important part of the RAP, but there is also the need of capacity to help restore income for the displaced population. **As far as the ESMP, PMU's capacity is presently low and the Project Director urgently needs specific assistance and manpower.**
- 65. The ESP notes that support from E&S experts to CDR Project Director's and to the key stakeholders is on the critical path of dam construction. This is consistent with the PAD. That E&S tech Assistance should help with the design and supervision of all non-contractor-related activities, as well as future contractor supervision and cooperation with the supervising engineer's E&S team.
- 66. **There should be explicit plans for reporting on ESMP/RAP progress and ESP recommendations follow-up in a more operational way than presently described in the ESIA/ESMP.**

### 5.3.11. Enforcement as a transversal theme

- 67. Whatever action is taken in the updating of the ESIA/ESMP or in tender specifications and such, the key concern for WSAP PMU and donors should be the eventual enforcement of the measures described. These measures are only as good as their future implementations. Effective enforcement of environmental and social rules is a recurrent problem in all international development projects and Lebanon is no exception. The field visit helped the ESP visualize the wide variety of potential implementation/enforcement issues that the ESMP will likely face: settlement of newcomers that visibly want to integrate and occupy part of the site of the future reservoir (children going to school, reuse of existing building, new plastic tunnel cultivations, refurbishing of existing housing,...), as well as open conduct of illegal activities like sand mining. For WSAP and the implementation of the ESMP, this means that all measures to be taken need to be accompanied by strict reporting, monitoring and field control.

## 6. Recommendations of the Mission

- 68. They are presented in table form to facilitate follow-up.

Priority area	Recommendation	By when
Construction ESMP (CESMP)	PMU's Project Director should immediately hire a short-term Consultant to draft the relevant prescriptions in the tender documents and in the Terms of Reference of the Supervising Engineer. Once the contractor and the supervising engineers are recruited, the contractual relationship between them and PMU should contain all the relevant commitments along with the sanctions in case of non-compliance.	As soon as possible (based on CDR's future response to this report)
Cultural heritage	Project Director should immediately re-establish direct relationship with the Directorate General of Antiquities (DGA) in order to acquire an operational Action Plan for actions concerning both Tangible (Physical Resources) and Intangible Heritage, as well as for <b>the actions to be undertaken within the</b>	As soon as possible (based on CDR's future response to this report)

	<p>buffer zone, which should be implemented in the Terms of Reference of the Supervising Engineer and Contractor.</p> <p>Cultural Heritage issues that could arise during the construction of the Dam and associated infrastructure in the Valley have been significantly understated in the ESIA and earlier communications and this should also be immediately amended (by either adding a detailed DGA Action Plan and ESP's recommendations or an Annex to the ESIA) in order to include in ToR. More recommendations are available in the Annex 1 and in Section 5.3.2 of this report.</p>	
Dam safety	The work undertaken by the DRB, the PMU and donors should continue, with an intervention by the ESP at a much later stage, when plans, programs and activities to implement the "soft" aspects of Dam Safety Plan are being designed and implemented: early warning system, downstream population education, training and communication, and emergency recovery plan in particular	Before the final construction of the Bisri dam
Involuntary resettlement	The field mission of ESP's social scientist should take place as soon as possible and the report and recommendations of that mission should be integrated into ESP's first mission report. In the meanwhile, clarity from WSAP PMU should be obtained about the final amount budgeted for the RAP and, in particular, the plans and budget for income restoration.	Field mission to be preferably held before or during May 2016
Natural habitats	A consultancy should be immediately commissioned to identify an appropriate environmental offset and to conduct the feasibility study for that offset. An overall budget for actions pertaining to biodiversity and natural habitats conservation should be elaborated and cleared by CDR and the WB.	As soon as possible (based on CDR's future response to this report)
Public health	A Public Health Management Plan of Action should be designed and its feasibility established. A final budget for the activities, as well as the institutional arrangements for effective implementation, should be determined and cleared between CDR and the WB. ESP may, in due time, suggest the temporary inclusion of a Public Health specialist in one or two field missions.	Before the final construction of the Bisri dam
Reservoir and shoreline	A Reservoir and Shoreline Management Plan of Action should be designed and its feasibility established. A final budget for the activities, as well as the institutional arrangements for effective implementation, should be determined and cleared between CDR and the WB.	Before the final construction of the Bisri dam
Miscellaneous	The E&S terms of reference in the tender documents should include a provision for pest management in terms of identifying potential application of OP 4.09. More broadly, the E&S technical assistance to the PMU should conduct a scoping exercise to determine the risks of triggering OP 4.09 as well as WB non-safeguard policies.	Tender documentation: like for CESMP. For the scoping exercise: before the finalization of the construction of the dam
Stakeholder involvement	ESP's social scientist to handle and to set a calendar for implementation of a global BSP/stakeholder/complaint strategy.	See "resettlement" recommendation
Capacity building	CDR Project Manager's efforts should be complemented by E&S	As soon as



	experts reporting to him and interacting with the key institutional and non-institutional stakeholders. Technical Assistant to help with the design and supervision of all non-contractor-related activities, plus contractor supervision. There should be explicit plans for reporting on ESMP/RAP progress and ESP recommendations follow-up.	possible
Enforcement	All documents coming out of the existing and future ESIA/ESMP stream should be checked for their relevance and operability in terms of enforcement.	On a recurrent basis

## 7. Next steps

69. It is recommended that this ESP first mission report be disseminated, once in final form, to all the key stakeholders identified in the PAD. *“CDR will implement the project and will coordinate with representatives from key stakeholders including the MOEW, Ministry of Finance, BMLWE, Ministry of Environment and Ministry of Culture”* (WB Project Appraisal Document)

## 8. Bibliography and Webography

### Legal and analytical documents

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2. ESIA Volume 2 (Aug, 2014)
3. Resettlement Action Plan (May, 2014)
4. World Bank, International Bank for Reconstruction and Development. Project Appraisal Document on a Proposed Loan (PAD) (Sept, 2014)
5. CDR, Terms of Reference for Construction Supervision & Quality Assurance Plan Consultancy Services for Bisri Dam Construction Works (Aug, 2014)
6. CDR, Procurement of WSAP Construction of Bisri Dam Contract ICB No: WSAP-W1
  - a. Vol. 1 Instructions to Bidders and Conditions of Contract (version: July, 2015)
  - b. Vol. 2 Technical Specifications(version: July, 2015)
  - c. Vol. 3 Bill of Quantities (version: July, 2015)
7. Dam Breach Model. Mise a Jour des etudes et assistance technique pour la construction du barrage de Bisri (Nov, 2014)
8. Dam Review Board, Reports 1–5 (Nov, 2013–May, 2015)
9. World Bank’s aide-memoires before and after WSAP effectiveness

### Other legal documents including conventions and policies

10. **Lebanese Law** esp. [Law N.37 regarding Cultural Property](#) (updated in 2008); [Law N.37 regarding Cultural Property \(official translation\)](#) † (2008)
11. [UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage of 1972](#) (ratified by Lebanon on 03/02/1983)
12. [UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage of 2003](#) (accepted by Lebanon on 08/01/2007)
13. [UNESCO Recommendation on the Safeguarding of Traditional Culture and Folklore of 1989](#)
14. [UNESCO Universal Declaration on Cultural Diversity of 2001](#)
15. [World Bank Safeguard policy on Physical Cultural Resources OP/BP 4.11](#)

### Scientific documents, articles and books

16. Jakubiak, K. (2012), Eshmoun Valley preliminary report after the third season of the Polish–Lebanese survey. *PAM 20 (Research 2008)*: 295–301.

17. Jakubiak, K. & Neska, M. (2005), Eshmoun Valley. The Eshmoun Valley survey, 2004 Interim report. *PAM*: 441–446.
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19. Khalil, W. (2015), *L'Occupation et le réseau routier dans le Mont Liban entre l'époque Hellénistique et la fin de l'époque Mamelouke. L'exemple du haut Chouf*. In: R. Harfouche and P. Poupet, *Du Mont Liban aux Sierras d'Espagne. Sols, eau et sociétés en montagne. Autour du projet franco-libanais CEDRE "Nahr Ibrahim"*. Oxford: Archaeopress: 27–37.
20. Khalil, W. (nb), *Trail of the Barouk River Valley (Moukhtara–Marj Bisri; Aamatour • Ain Qani • Baadarane • Bater • Botmeh • Haret Jandal Jebaa • Khreibeh • Maasser el Chouf • Moukhtara • Mrosti • Niha)*. Booklet produced by The Federation of Municipalities of the Higher Chouf (F.M.H.C.) and funded by Italian Ministry of Foreign Affairs.
21. Khalil, W. (nb), *The southern part of the Shouf Biosphere Reserve is a potential Geo-Park*. Proposal brochure.
22. Khalil, W. & Hani, N. (2014), *Shouf Biosphere Reserve. Field Guide and Information Booklet*.
23. *Reformulation de l'évaluation Environnementale et Sociale du Projet Hydroélectrique de Lom Pangar - plan de gestion environnemental et social pour la construction du barrage et des autres infrastructures*

## 9. List of meetings, persons and institution representatives met

### 9.1. Environmental Specialist and Panel Chairman

- visited the location of the construction site as well as the site of the future hydropower plant;
- attended meetings with a Consultant who prepared ESMP and ESIA
- attended meetings and site visit with the Technical Consultants (Geology)
- attended meetings with World Bank team and CDR team
- attended a joint meeting with the Dam Safety Review Board
- attended a meeting with Beirut Water Establishment's Director General
- attended a meeting with CDR's land use planning expert Dr Sami Feghali
- solicited and had a meeting with the Head of CDR's Expropriation Management Unit Mr Ali Abdalbaki (tel. 03866868)
- attended a meeting with CDR President, Dam designer/engineer, Technical consultants, Project Director and DSRB

### 9.2. Cultural Anthropologist

- visited the location of the construction site as well as locations of Mar Mousa church/chapel and Marj Bisri site including the Roman temple and a bridge, as well as the site of the future hydropower plant;
- attended meetings with a Consultant who prepared ESMP and ESIA
- attended meetings and site visit with the Technical Consultants (Geology)
- attended meetings with World Bank team and CDR team
- attended a joint meeting with the Dam Safety Review Board
- attended a meeting with Beirut Water Establishment's Director General, Dr Joseph Nseir;
- attended a meeting with CDR President, Dam designer/engineer, Technical consultants, Project Director and DSRB
- attended a meeting with Directorate General of Antiquities in Beirut including General Director Mr Sarkis El. Khoury, CDR Senior Archaeology Coordinator Mr Jean Yasim and DGA Saida staff member Mrs Myriam Ziade
- independently established a meeting with A/Prof. Wissam Khalil of Lebanese University
- independently established a meeting with ex-DGA acting General Director and advisor to the Minister of Culture Dr Assaad Saif

## Annex 1 – Detailed findings and recommendations of the Cultural Anthropologist

70. The Expert has been informed that an overdue (most likely due to the change in Directorship) operational Action Plan is currently under preparation by the DGA. It is envisaged that this should include:

Stages 1 and 2 of the Action Plan to be implemented prior to the commencement of the Dam Construction

- survey and mapping inventorying sites for future investigations to establish funding and timeframes
- geophysical, geoarchaeological and soundings survey at key sites targeted for excavations to establish their extent and to make appropriate infrastructural, resources and financial provisions

71. The table below shows the suggested breakdown of Stages of work/Field teams and their activities

To be hired as soon as possible and continue through the project	To start with the beginning of the project + *	To start during the project and continue after the project's completion + *
S1 – Survey team	S3 – Excavations teams (number of sites to be excavated contemporaneously)	S4 – Conservation team
S2* – Geophysical and mapping team	S3 – Chance findings team	S4 – Maintenance, storage and curatorship team
S2* – Geoarchaeological, palaeoenvironmental and soundings team	S3 – Architectural ‘re-location /resettlement’ team	S5 – Publication and reporting team
	S3 - Vernacular architecture	S5 – Exhibition /Museum team and Community Archaeology
	S3 – Intangible heritage team (including ethnography, folklore and traditions)	
	S3 – Public Archaeology team	
	S4* – Conservation + FPU team	

72. Funding of post-ex analyses, reporting and communication of results (including publication plan) should be included in the budget.

73. Storage, management, maintenance and conservation and curatorship of monuments, sites and artefacts should be administered resources (both financial and human) as well as infrastructure as mentioned above in point 30 above This should be cared for before the commencement of the project and future activities and accountable institutions to be identified and appropriately funded after the completion of the project.

74. Specific Archaeological Site types and Periods of special interest at Wadi Bisri (underlined sites of special significance)

- a. Prehistoric archaeology

- i. Bisri Plains and its potential for yielding prehistoric sites
    - ii. Palaeolithic
    - iii. Neolithic
    - iv. Chalcolithic
  - b. Early Historic/Pre-Roman (Bronze Age, Persian and Hellenistic archaeology)
  - c. Roman Archaeology
  - d. Medieval archaeology (Byzantine, Fatimid, crusade, mamEluk)
  - e. Ottoman archaeology
  - f. Vernacular architecture and archaeology
    - v. The Mar Mousa Church re-location
  - g. Sepulchral archaeology of all periods
  - h. Communication and Infrastructure remains
  - i. Intangible Heritage (folklore and traditions)
75. Sites of significant interest that need to be excavated/addressed (minimum list)
- a. **Marj Bisri archaeological site** with temple complex/sanctuary, roman bridge, temenos wall and probably a village
  - b. Structures of early historic/pre-roman dates **under the Mar Mousa church** (Persian/Hellenistic, also known under Aramaic name Malloula)
  - c. **Roman site of Bostra** (Aramaic name) on the left abutment under the forest
  - d. A number of **chosen tombs** to be excavated – the best examples
  - e. **Neolithic site** on the right abutment
  - f. Geoarchaeological and palaeoenvironmental work to **reconstruct ancient changing landscape and climate**
  - g. **Chance findings**
  - h. **Inventory of sites in buffer zone**
76. Terms of Reference for a Scientific Director: It is crucial that the DGA (in communication with CDR) makes a concerted effort for a fast selection of a suitable candidate to fill a role of a Scientific Director. The candidate should have extensive experience of managing large salvage archaeology projects. It is essential that the candidate has strong academic credentials and an experience in the region and ideally in Lebanon. Such person should hold at least MSc qualifications (ideally a PhD) in Archaeology of the Middle East and should have at least 10 years of experience in Project Management and supervisory position on large salvage projects in the region and beyond. Upon the commencement of this post the candidate should provide a standardised form of documentation that will be expected from the team leaders and should structure standardised reporting procedures. The role of the Scientific Director will be to oversee the works of different Field and other teams and to combine their reports and present them to the ESP panel and its Cultural Heritage (Cultural Anthropologist) specialist biannually, based on their monthly reporting schedule based on progress reports provided by each Team Leader. The candidate should be selected based on merit, experience, qualifications and recommendations.
77. Field teams and their Terms of Reference and activities (including laboratory analyses and reporting): The Scientific Director will nominate the team leaders for each part of the project to run concurrently during the construction and to chose, based on merit, qualifications and recommendations, their own teams. The team leaders should be specialists in their discipline and should have extensive experience in running fieldwork projects, post-ex reporting and analyses as well as reporting and strong publication record. They should also have an extensive experience in

supervising teams working on salvage projects and working to tight deadlines. The team members that they are to chose should be top specialists in their field with experience working in salvage and commercial archaeological and heritage projects and should be selected based on merit, qualifications, experience and recommendations. Each team leader is responsible of providing monthly progress reports to the Scientific Director and a detailed bi-annual report that would be compiled for ESP prior to their mission. Team Leaders and their teams are accountable to the Scientific Directors and are accountable, indirectly, to ESP.

78. The non-exhaustive list of such teams includes:

a. **Survey team** – appointed to re-establish the locations of known sites (106 from Polish-Lebanese Survey of 2004, 2005 and 2008, 8 of W. Khalil's survey and any other sites known to DGA or from Spanish survey) as well as to survey the areas, which have not been a part of those previous surveys. The members of this team should have extensive experience in field-walking, site prospection, recording and photographing as well as reporting. They should be able to create detailed GIS maps and 3D modelling of all sites in the Valleys and feed this information to Excavations, Geoarch and Geophysical teams. The work of this team should be commenced immediately at the very beginning of the project.

b. **Excavations teams** – a number of teams should be established to concurrently excavate known sites of high significance as well as any other future chance finds and sites found by the Survey, Geoarch and Chance Findings teams. The team members and sub-team leaders should have extensive fieldwork and excavations experience on salvage or research projects ideally in the Middle Eastern region. These should include site documentation, recording of stratigraphy and artefacts, photography and reporting. It is envisaged that if a number of teams are contracted for this work they should all use standardised recording system following same Context sheets and recording their findings using Single-context recording system (i.e. of MoLAS), GIS mapping, and where applicable 3D modelling of the sites stratigraphy and recorded architecture (i.e. using Agisoft software). These teams should closely collaborate with one another and should have close relationship with the Conservation team and feed off information provided by Survey, Geoarch, Geophysical and Chance Findings teams. It is envisaged that at least 3 such teams will be created at and commence their work on known sites with the beginning of the project. These should include, in a first place, and not exclusively: Marj Bisri temple and sanctuary complex excavations team; Mar Mousa ancient and medieval site excavations team; Sepulchral clearing, excavations and recording team; Prehistoric archaeology survey, recording and excavations team.

c. **Geophysical team** – should conduct surveys on all chosen settlement sites of significance. Methods such as geomagnetics, GPR, resistivity, etc. should be used to obtain best results in the particular terrain and type of environment and should be fed into Excavations as well as Vernacular teams.

d. **Geoarchaeological and palaeoenvironmental team** (Geoarch team for short) – palaeoenvironmental reconstruction should be derived from the data provided by the Technical Consultant and supplemented by additional fieldwork and laboratory analyses. This is crucial for reconstructing the palaeoenvironmental, climatic and landscape changes that occurred in the valley during the Quaternary and that have had an impact on human livelihoods in different time periods. The team should have experience in geoarchaeological fieldwork and in laboratory analyses and should have access to laboratory facilities to perform their analyses. It is envisaged that sedimentary analyses supplemented by pollen, phytoliths and other microfossils analyses as well as absolute dating that could be performed on some of the cores already available from CPTu soundings conducted by

Technical Consultant and which should be made available to this team especially from the area of so-called 'Bisri Plains/Flats' located at the mouth of the Valley at Dam locale. Additional coring and sampling should be performed if needed. This should be supplemented by absolute dating using best available techniques such as OSL and maybe also TL or C14 dating. Geoarch team should also include Archaeobotanist and provide expert opinion on the land use changes and fluctuating forest types and trees cover in the past. Geoarch team should feed its information to the excavations team and should collaborate closely with the Survey Team.

- e. **Vernacular architecture and archaeology team** (Vernacular team for short) – this team should comprise specialists in both vernacular architecture and archaeology as well as 19<sup>th</sup>–20<sup>th</sup> century domestic traditions and history, land use etc. The role of this team will be to find, record, document, as well as clear and excavate (if necessary along with the Excavations team) sites of importance for understanding the life in the valley between the 19<sup>th</sup> and 20<sup>th</sup> centuries. This team should work closely with the 'relocation' team, especially in relation to the moving of the Mar Mousa chapel/church to a new location as well as with Excavations team
- f. **Conservation team** – to work collaboratively with other teams on conservation, preservation and protection of finds, monuments and sites of special interest. This team should also have very close ties with the Finds Processing and Storage as well as Relocation teams.
- g. **Relocation team** – this team should work closely with Conservation and Vernacular teams to provide expert services in relocating the Mar Mousa chapel/church as well as any other sites or monuments that will be earmarked for such relocation as the project develops including the chance finds. This team should also have ties with Excavations and Survey team. The team members should be specialists in relocation of architectural objects and the team should certainly include a Conservator.
- h. **Finds Processing and Storage team** – this team should work directly with Excavations, Survey and Chance Findings teams, which will feed finds and materials to it as well as reciprocate to Conservation team with chosen finds. Members of this team should be specialist registrars with experience of working on large, parallel projects and with drawing and photographic experience. Members of this team should include (at least): Registrar, Photographer, and Illustrator.
- i. **Chance findings team** – to be present during all excavation works in the Valley and on the slopes, during the construction of access roads and any earthmoving works that might be carried out during the construction of the dam, associated infrastructure and workers camp etc. The work of this team should feed directly into Excavations team and Conservation team and it should also work closely with the Finds Processing and Storage team.



## Annex 2 – References of good international industry practices (GIIP) for selected themes/areas

As a contribution to the appropriate management of the E&S aspects of the WSAP, and partly in response to explicit demands by CDR, the ESP has shared with the PMU working documents (all in French) on the following themes/areas:

- Example of the Terms of reference for E&S technical assistance to a dam project developer during dam construction;
- The Construction ESMP for a large dam project in Cameroon (Lom Pangar)
- The E&S conditions for a large dam project in the Lao Republic (Nam Theun)

The ESP by no way guarantees that these documents represent best international practices in any of the fields covered by the Panel. These documents are only provided in the spirit of collegial knowledge sharing to serve the purpose of facilitating PMU's work – in particular the urgent task of integrating all E&S aspects into the tender documents for the future contractor and the future supervising engineer – and continue to comply with the E&S policies, rules and regulations applicable. The use of these documents by CDR will not prevent the Panel from exerting its future review functions with serenity, independence and impartiality.